

THE HEALTH OF PACIFIC ISLANDS PEOPLE IN NEW ZEALAND



PUBLIC HEALTH COMMISSION
RANGAPU HAUORA TUMATANUI



ANALYSIS AND MONITORING REPORT 2

THE HEALTH OF PACIFIC ISLANDS PEOPLE IN NEW ZEALAND

**Murray Bathgate
Donnell Alexander
Arbutus Mitikulena
Barry Borman
Alison Roberts
Michele Grigg**

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Preface

In monitoring the state of the public health in New Zealand, the experiences and situations of the different ethnic communities which constitute our society must be taken into account. Like age, gender and socio-economic position, ethnicity has been shown internationally to be a principal factor in determining population health status.

The Pacific Islands community in New Zealand is deserving of consideration in this regard for at least two reasons.

Firstly, it is one of the fastest growing ethnic minority communities in New Zealand. At the 1991 census, Pacific Islands people constituted 4.9 percent of the population. By the year 2031, it is estimated that the Pacific Islands population will have grown by 114 percent and constitute 7.2 percent of the total population. Clearly, the health of this community will have a growing influence on the health of the New Zealand population as a whole.

Secondly, relatively little is known about the health of Pacific Islands people in New Zealand. A modest number of studies have examined various aspects of their health. However, there is little available which provides a general picture of the health status of Pacific Islands people.

The Health of Pacific Islands People in New Zealand aims to summarise the status of the health of Pacific Islands people in this country. The information contained in the report will be used by the Public Health Commission (PHC) to assist in identifying the health needs of Pacific Islands people, and in formulating the advice it will offer to the Minister of Health on how those needs should be addressed in future years. We hope this report will also be of interest to the Pacific Islands communities in New Zealand and to the community at large, providing information for informed public debate about health needs and priorities.

The scope and quality of analysis in reports of this type are constrained by the availability and quality of the source data. The relatively small size of the Pacific Islands community in New Zealand, the paucity of data and research in many areas, and suspected poor statistical enumeration and classification, make reliable statistical analysis difficult and increase considerably the degree of uncertainty normally associated with statistical conclusions. These difficulties are mentioned throughout the report, and some comparisons are made between nationally-based health statistics and those collected in community-based surveys.

The Health of Pacific Islands People in New Zealand was prepared after a programme of consultation with Pacific Islands communities in different parts of the country. The programme, conducted jointly with the Ministry of Health, canvassed Pacific Islands people about their views concerning the state of health of their communities and issues affecting them. Originally, it was intended that there would be a separate chapter on the consultations, but Pacific Islands people's opinions about their health have been included in the first chapter. The policy advice proffered at the consultations is not discussed in this report, but is being evaluated in relation to programme development.

This report is the second in an *Analysis & Monitoring* series to be published by the PHC. Readers who would like to send comments or suggestions for future reports are invited to write to the Public Health Commission, P.O. Box 1795, Wellington.

P. Brown

Paul Brown
Group Director
Analysis and Monitoring

Public Health Commission
November 1994

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This report was prepared by the Analysis and Monitoring Group of the Public Health Commission. The team was ably lead by Murray Bathgate, PhD; assisted by Donnell Alexander, MSc, Dip Diet R D; Arby Mitikulena, DSM, Dip Pharm, Dip Paed, Dip Obst, D Comm H; Barry Borman PhD; Alison Roberts, FRACP, MCCM (NZ), FAFPHM; and Michelle Grigg, M Soc Sc.

The report has been formally reviewed by Dr Ian Prior, Wellington School of Medicine; Dr Robert Scragg, School of Medicine, University of Auckland; and Dr Colin Tukuitonga, North Health Regional Health Authority. Specific draft chapters were formally reviewed by Associate Professor Malama Meleisea, Centre of Pacific Studies, University of Auckland; and Winsome Parnell, Department of Nutrition, University of Otago.

Assistance and advice in preparing the report and criticism about drafts were received from a number of other people within the PHC and from other agencies. Paul Brown, PHC, contributed a section on census and health statistics for Pacific Islands people, Associate Professor Charlotte Paul, Medical School, University of Otago, commented on early drafts of the report and the cancer information in particular, while Dr Boyd Swinburn, Medical Director, The National Heart Foundation of New Zealand, commented on national death registration and hospitalisation data for Pacific Islands people concerning coronary heart disease. We are indebted also to members of Pacific Islands communities in Auckland, Tokoroa, Napier, Palmerston North, Wellington, Christchurch and Dunedin who gave generously of their time and views when we consulted them. Logotasi Iosefa and Sonja Easterbrook-Smith of the Ministry of Health collaborated with the PHC in this programme of joint consultations.

Conventions

Throughout the report, the term “Pacific Islands people” is used in preference to the term “Pacific Island people”. This recognises the fact that there are many islands in the Pacific, and underscores the ethnic diversity of the Pacific Islands population in New Zealand.

Where the terms “Pacific Island Polynesian” and “Pacific Island Ethnic Group” are used, these refer specifically to that population of Pacific Islands ancestry identified by Statistics New Zealand from information collected in the Censuses of Population and Dwellings (see Chapter 2).

In various parts of the report, some features of the health status of Pacific Islands peoples are compared with those of Europeans. Pacific Islands people refer to Europeans as “Palagi” (pronounced “Pa-langi”) and this term is used throughout. The term “European” is used only where it occurs in quotations from papers, etc, cited in the report.

The term “Islands” is a common abbreviation for the Pacific Islands.

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Chapter 1

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Introduction

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Overview

This chapter considers the context in which the analysis of Pacific Islands people's health status in New Zealand was undertaken by the Public Health Commission (PHC), the nature of the information available, and the contents of the various chapters.

It begins with a short account of the composition of the Pacific Islands population in New Zealand.

This is followed by a review of long-term changes in the health profile of some Pacific Islands countries that supply migrants to New Zealand. The review is necessary because Pacific Islands people have experienced an increase in certain health risks in their own countries, well before their arrival in New Zealand. Furthermore, reference to the changes also helps to understand better certain features of the health profile of Pacific Islands people in New Zealand, and to place in context some trends that run parallel with those in the larger region of the south-west Pacific.

Next, there is a discussion of the views of Pacific Islands people themselves about the status of their health in New Zealand, and their access to and use of health services. The account is based on the information collected by the PHC at meetings throughout the country in 1993-1994.

The last part of the chapter focuses on the information available to characterise the health of the Pacific Islands population, some limitations of the study, and the reliability of official statistical data on hospitalisations and mortality and enumeration of the Pacific Islands population in censuses.

This paves the way for an analysis of the demography of Pacific Islands people in New Zealand (Chapter 2), the changing socioeconomic environment (Chapter 3), changing diet and nutrition and some of the health risk factors (Chapter 4), the recent level of mortality and hospitalisations for the Pacific Islands population as a whole (Chapter 5), the health status of Pacific Islands people in different life cycle groups (Chapter 6), and the main conclusions drawn from the information surveyed (Chapter 7).

Pacific Islands people in New Zealand

The Pacific Islands population living in New Zealand is heterogeneous, being comprised not only of people of the Samoan, Tongan, Cook Islands, Tokelauan, Niuean, Fijian and Tuvaluan ethnic groups, which are the largest, but also of people from the Melanesian countries of Papua New Guinea, Vanuatu and the Solomon Islands, as well as from Kiribati and several other small countries in atoll-dominated Micronesia. Each group is quite distinct, having its own language and culture, but for the most part throughout this report, the analysis of health status is for the Pacific Islands population as a whole. This is due primarily to the lack of information on separate Pacific Islands groups in the recording of, or publication of, official health statistics, particularly those on deaths and admissions to hospitals.

Contributing to the heterogeneity of the Pacific Islands population is the fact that it is made up of people born in the Pacific Islands as well as people born in New Zealand. There has been continuous movement of people to New Zealand in increasing numbers since the Second World War, with some staying permanently and others returning to their country of origin after a period of work. Some notable differences between the New Zealand and Pacific Islands-born populations are evident in recent census data (Krishnan et al, 1994; Bedford, 1994). In general, those born in the Pacific Islands are less likely to hold post-school qualifications, and are more likely to have unskilled jobs and lower incomes. Little is known about possible differences in the health status of the two subsets of the Pacific Islands population in New Zealand, and it has not been possible to make any assessment or provide separate information for them in this report. Indeed, such an analysis would be confounded by the fact that people living in the Pacific Islands sometimes come to New Zealand to receive specialist medical services. These people appear in the health statistics (eg, hospital admission records) of New Zealand, along with other Pacific Islands people, even though they return home after treatment.

One other important characteristic of the Pacific Islands population in New Zealand is that it includes people of diverse *multiple* ethnicity. Not only does it include people of mixed Pacific Islands ancestry (eg, Samoan/Niuean) but also people of other ethnic groups (eg, Samoan/Palagi, Samoan/Chinese, Samoan/New Zealand Maori). Indeed, in 1991, about 14,000 people in New Zealand were of mixed Pacific Islands/New Zealand Maori ethnicity, the size of this group increasing steadily over the 20 years. In all, about 167,000 people belonged to the Pacific Island Ethnic Group in 1991, compared with 104,000 in 1981, and they made up 4.9 percent of the national population.

Health trends in the Pacific Islands

Since the early 1950s, the countries in the south-west Pacific that provide the bulk of the migrants to New Zealand (ie, Western Samoa, the Cook Islands, Tonga, Niue, Fiji and Tokelau), have experienced a steady increase in per capita incomes arising from an expansion of cash cropping as well as growth in urban-based wage labour employment. Running parallel with the long-term increase in incomes and the rise in the proportion of the population living in urban centres, there have been social changes, greater consumption of alcohol and tobacco, an increase in the consumption of processed, imported foods (rice, sugar, flour and tinned meats, for example), and a weakening dependence on locally grown crops (taro, yam and sweet potato). In some instances, reduced use of traditional root crops has resulted from the spread of blight (in the case of taro-dependent communities), but, more generally, the change reflects the greater amount of time devoted to cash cropping rather than subsistence production in the case of rural-dwellers, and, in some instances, the relatively high prices of indigenous foods in the urban food markets compared with wages received, in the case of urban-dwellers.

A number of studies have identified a wide range of changes in the health of the people of the Pacific Islands. These include changes associated with both wide-ranging dietary change (including the use of tinned milk to feed infants in preference to breast milk), and greater "urbanisation" or "modernisation" resulting in psycho/socio-cultural difficulties of adjustment (eg, greater use of alcohol, a rise in suicide, injury by violence and mental breakdown). As well, there is the impact of on-going, long-term public health campaigns against various endemic communicable diseases. Broadly speaking, while the proportion of all hospital admissions and deaths resulting from infectious and parasitic diseases (eg, tuberculosis, leprosy, hookworm, yaws, filariasis, dengue fever, gastro-intestinal infections) has been falling in some Pacific Island countries, the proportion of cases arising from chronic non-communicable diseases, that are mostly linked with changed diets and lifestyles, has been increasing (Taylor, 1983).

Coyne, Badcock and Taylor (1984) have provided a summary of the findings of many papers for different Pacific Islands countries concerning changes in the incidence of diseases associated with diet change and the shift from a rural, traditional environment to urban residence. In general, these include increases in dental caries, obesity, hypertension, coronary heart disease, gout, diabetes (ie, non insulin-dependent, adult onset type diabetes mellitus), and cancer. According to Reed, the switch to a diet rich in protein, sugar, salt and animal fats (as found in tinned meats), from one high in carbohydrate, is leading to increases in blood cholesterol and glucose levels which are known risk factors for cardiovascular disease, with cardiovascular diseases becoming a leading cause of death in the most highly urbanised Pacific Islands countries (Reed, 1975).

Changes have been charted for most countries in the South Pacific.

In the Cook Islands, by 1980-1981, cardiovascular disease had become the major cause of premature death among adult men and women, the risk being greatest for those living in Rarotonga, the centre of cash cropping as well as the location of the urban capital. According to Taylor et al (1983), Rarotongans started to use more imported foods in their diet after 1950, following the development of cash cropping and urban employment and residence. By the mid-1980s, the percentage of energy they derived from fat was higher than that in the rural diet (Coyne, Badcock and Taylor, 1984), with much of the carbohydrate consumption coming from sucrose. A study in the mid 1960s showed that Rarotongans were more obese and had a higher level of vascular disease than rural people of the northern Cook Islands, who had low

incomes, a traditional diet, a relatively low level of salt intake and relatively low blood pressure (Prior et al, 1966; Murphy, 1955). A report in 1984 referred to the ever-growing reliance of Rarotongans on imported foods, especially the rising consumption of sugar, salt and animal fat, and the decline in consumption of bulky starchy food and fibre compared with those living on the outer islands, together with the growing prevalence of diabetes mellitus, and higher rates of hypertension, obesity and coronary (ischaemic) heart disease in the Rarotongan population (Dumbrell et al, 1984).

Similar changes have been noted in Samoa. Many medical studies of the changing health status of the Samoan population in selected sites (traditional villages, Apia, the urban capital, and Hawaii, to where many have migrated) were conducted in the 1970s and early 1980s. These studies have shown that with the shift from traditional village life to urban life, cardiovascular and degenerative diseases, such as cancer and diabetes mellitus, increase. There is also an increase in death and hospitalisation from trauma (eg, homicide, suicide, motor vehicle accidents) (Baker et al, 1986). Studies of youth suggest health status changes with "modernisation"; the "stressors" at work in this process being wage employment outside the family, the greater availability of alcohol, and changes in the perceptions of food (Hanna and Fitzgerald, 1993). In the case of American Samoa, it is considered that the transition from a mortality based almost entirely on infectious disease to one based on degenerative and traumatic causes was well underway by the early 1950s, and essentially complete by the early 1960s (Baker et al, 1986).

Tokelau, comprising just three atolls, is another country whose changing health status has been studied.

A survey of the Tokelau atolls in 1963 showed the persistence of the traditional diet, based on taro, breadfruit, coconuts and fish, with pork, chicken and fruits being eaten at feasts (Davidson, 1975). Blood pressure was notably low and did not increase significantly with age, and there were few cases of hypertension (Prior et al, 1977).

Following a major hurricane in 1966, which affected food supply and brought into focus the overcrowded conditions on the atolls and the limited opportunities for development, the New Zealand Government established a programme to resettle people in New Zealand; Tokelauans having been entitled to New Zealand citizenship since 1948. By 1973, there were 2,000 Tokelauans living in New Zealand compared with 1,600 living on the atolls. Associated with the resettlement, a programme was introduced to examine the health of assisted migrants shortly after arrival in New Zealand, complemented by further health surveys in the Tokelau Islands. The aim was to ascertain the impact of migration to New Zealand on the health status of the Tokelauans, and the likely impact of diet and socioeconomic change on the community residing on the atolls. The programme became known as the Tokelau Island Migrant Study, or TIMS, and is extensively documented in a recently published book (Wessen, 1992). It has provided a unique set of data, particularly in terms of charting the changing health status of an entire generation living in both Tokelau and New Zealand.

Several surveys were conducted as part of TIMS during the late 1960s, 1970s and 1980s, the last survey being in 1982. Dietary change was one of the major changes detected, occurring not only in New Zealand but also in the atolls following increased shipping contacts with New Zealand. In New Zealand, people did not have access to their traditional foods. They came to depend more on bread and potatoes as staples, and red meat rather than fish as the main source of protein. Body weight gains and an increase in the incidence of obesity among migrants were subsequently noted, following the same pattern as that recorded for Samoan migrants to the United States. There was also an increase in the use of salt in both Tokelau and New Zealand following greater consumption of imported salt-enriched canned foods; and an increase in the consumption of tobacco and alcohol, with the consumption level being greater among the migrants. The higher level of tobacco consumption in New Zealand exacerbated

bronchitic symptoms and there was an increase in the number of cases reported. The level of asthma was much higher in the migrant population as well.

Over a period of time, it was found that the incidence of diabetes was higher among migrants than non-migrants. In particular, there was a large increase in diabetes among Tokelauan women surveyed in New Zealand in the early 1970s. The prevalence of gout in those living in New Zealand also increased. The levels among migrants and non-migrants were initially similar, but the gap widened thereafter with the level in the migrant population in New Zealand becoming four to five times higher than the level in the population resident in Tokelau.

Other chronic illnesses that increased among Tokelauan migrants to New Zealand included varicose veins, hypertension and heart disease. Risk factors in New Zealand included the higher intake of energy, salt, carbohydrate and cholesterol, the greater consumption of tobacco, and the development of obesity (Coyne et al, 1984; Prior et al, 1974; Prior et al, 1977; Prior et al, 1987; Stanhope, 1975; Stanhope and Prior, 1976; Stanhope and Prior, 1979; Stanhope and Prior, 1980; Tonkin, 1975; Stanhope and Prior, 1980; Salmond et al, 1985; Salmond et al, 1989; Ward et al, 1980; Wessen, 1992).

The changes in the health of the people of the Cook Islands, Samoa and Tokelau – and the Tokelauan community in New Zealand – follow the stages of the “epidemiologic transition” (Mackenbach, 1994). Zimmet and Whitehouse (1981) characterised this transition with reference to the Pacific Islands. Three stages are postulated:

- Stage 1 - age of pestilence and famine.
- Stage 2 - age of receding pandemics.
- Stage 3 - age of degenerative and man-made diseases.

The first of these stages (eg, where tropical diseases such as yaws, hookworm, dengue fever, filariasis and other infectious/parasitic diseases remained unchecked and were the dominant cause of mortality) has long been passed. Conditions typical of the third stage, such as diabetes, gout and cardiovascular disease including hypertension, are now much more common in most Pacific Island countries, although to varying degrees according to differences in income levels and diet change, etc. Differences between rural and urban areas within countries are also evident.

Taylor and others have attempted to rank Pacific Island countries in relation to the “epidemiologic transition”. In 1980, countries which had mainly a “traditional” pattern of causes of death (ie, where infectious and parasitic diseases still accounted for the bulk of deaths) included Papua New Guinea, the Solomon Islands, Vanuatu and Kiribati. Those with a “mixed” pattern of causes (ie, where proportionately more deaths occurred from degenerative, man-made diseases) included Western Samoa, Tonga and Fiji. Countries with mainly a “modernised” pattern of death included New Caledonia and Fiji (the Indian population) (Taylor et al, 1989). Recent evidence indicates that Western Samoa, in particular, has moved further up the scale: the crude prevalence of diabetes there, for example, was found to have doubled in a recent 13-year follow-up study (Simmons et al, 1994).

The preceding discussion highlights several points pertinent to New Zealand. In particular, it can be concluded that New Zealand has long ceased to receive migrants from Pacific Islands countries whose health profiles are dominated primarily by communicable rather than degenerative diseases, and whose inhabitants depend exclusively on traditional, locally grown fruits, root crops and fish. Instead, it receives migrants from a population pool which has experienced a steady decline in the importance of communicable diseases, a diet that includes more imported western foods, and a rise in diabetes, heart disease and cancer. In particular, the Tokelau Islands Migrant Study gives an indication of the types of changes to health that have been taking place within New Zealand among Pacific Islands migrants over the longer term:

Pacific Islands people's perceptions of their health status

Between December 1993 and February 1994, the PHC, in conjunction with the Ministry of Health, held nine meetings with representatives of the Pacific Islands communities in Wellington, Dunedin, Christchurch, Palmerston North, Hastings, Tokoroa, West Auckland (Waitakere), and South Auckland (Mangere and Papatoetoe). A cross-section of the Pacific Islands community attended the meetings, including Pacific Islands health professionals and church leaders. In all, about 300 people attended.

At each meeting, the PHC asked a common set of questions about what people thought of their health status and how it could be improved. The communities provided a wealth of information, and reports are available for each of the meetings. While many recommendations were made concerning policy, these are not discussed here, but have been used to assist the development of policy advice on the provision of information in various languages to the Pacific Islands community concerning ways to safeguard and improve health (PHC, in press).

One of the points emphasised by the participants was the need to determine the current status of the physical health of Pacific Islands people from available statistics. Another was the need to review the impact the socioeconomic environment was having on Pacific Islands people's health, as well as drug and alcohol abuse, violence and other behaviours. An attempt is made in this report to provide information addressing both points.

Those attending the meetings alluded to the differences between the lifestyles of people living in the Islands, or, indeed, the one they themselves had left, and their lifestyle in New Zealand. In contrast, they considered there were no major differences between the various Islands communities within New Zealand in their lifestyles – or health problems.

In general, the participants suggested that Pacific Islands people in New Zealand had a less healthy diet than their counterparts in the Islands, having poorer access to traditional foods such as fish, fruits and taro, being more dependent on red meat, bread and potatoes, and consuming more salt (directly and indirectly, through greater consumption of salted beef, for example), sugar and fat. The lack of sufficient money was considered to be a major factor affecting diet, as people depend on cheap but often fatty meat (eg, mutton flaps, brisket) rather than fish. Lack of knowledge about how to obtain an adequate level of nutrition on a low income was also acknowledged. In addition, it was suggested that fatty meat is provided at cheap prices because of a view of retailers that Pacific Islands people enjoy eating such meat. Mixed views were expressed about whether Pacific Islands people were attempting to improve their health by eating less fat, salt and sugar and taking more regular exercise. Some said they were making changes, others said they found it difficult to change, particularly when the lavish provision of food and the hearty enjoyment of it was expected at weddings, funerals and other occasions.

Cigarette consumption and the use of alcoholic beverages were considered to be much greater in New Zealand, because they were more readily available and people had higher incomes than those living in the Islands. It was also observed that the violent consequences of over-use of alcohol were often better controlled in the Islands *via* village support structures; social controls and sanctions against violence, outside the formal legal system, being much more lax in New Zealand.

Furthermore; the level of domestic violence was considered to be greater here. The higher perceived level was attributed to both the greater stresses in New Zealand (low incomes, money worries, unemployment, the need to meet financial commitments to the churches as well as weddings and funerals) and to a “closed house” situation. The term “closed house” was explained as follows. Because the population identifying with one particular island locality may be scattered over many suburbs in a New Zealand urban centre, there is far less contact between households than there is in the villages in the Islands. This greater social isolation, and laxity of social sanctions against unacceptable behaviour, means women and children are less likely to report violence to other members of their island group – or for the latter to see it occur. It was acknowledged that violence, sexual abuse and child abuse are just as much public health issues as poor diet:

Social control over children was considered to be lax in New Zealand. As expressed by one person, “Islands-born [children] respect their elders and don’t speak a lot and they follow their custom and culture. New Zealand-born tend to be outspoken and express their feelings more openly; and take things much more seriously than Islands-born children...”. It was generally considered that because of the lack of discipline by parents, some children in New Zealand have far greater freedom than their counterparts in the Islands. With the higher level of violence within families and parental neglect, this provides conditions conducive to substance abuse by children or indulgence in crime.

Finally, but not least, the mental health of Pacific Islands people living in New Zealand was considered to be poorer. Over-use of alcohol, the greater stress placed on families because of the higher level of violence and overcrowding, as well as poor parenting and the greater loneliness some people experienced in New Zealand, were seen to contribute to mental health problems.

When it came to considering whether there were any particular health conditions or social behaviours/situations impairing health status that might be increasing in their communities, the participants identified the following:

- a. Socioeconomic and behavioural:
 - unemployment
 - low incomes, affecting diet and ability to afford health services
 - failure/inability to access health services due to language problems, culturally inappropriate environments, low personal esteem, preference for traditional cures, etc
 - drug abuse, especially among young people
 - alcohol abuse
 - smoking
 - domestic violence
 - suicide
- b. Specific physical/mental conditions:
 - obesity
 - diabetes
 - coronary heart disease
 - strokes (cerebrovascular disease)
 - hypertension
 - rheumatic fever
 - asthma
 - gout
 - arthritis
 - hepatitis B and C
 - cervical cancer
 - breast cancer

- glue ear among children (otitis media with effusion)
- bronchitis (especially among children)
- mental health (especially young people and adult males).

The physical/mental conditions are not listed in order of importance. However, in the socioeconomic area, at nearly all the meetings, unemployment and low incomes were viewed as being a direct or indirect cause of a number of behavioural and physical health problems, and were referred to time and again.

The PHC did not set out to verify whether Pacific Islands people's perceptions are correct (ie, that specific adverse behaviours [violence, suicide, drug and alcohol abuse] and particular physical health conditions *are* increasing). An analysis of trends through time is not presented in this report. Rather, the PHC has used the information provided to ensure that what Pacific Islands people considered to be important health problems were covered. It is of interest that there was a consistent agreement from one meeting to the next on the conditions Pacific Islands people referred to as increasing and of concern to them. Indeed, the above list is quite similar to a list of major health problems of Pacific Islands people in New Zealand identified by health professionals of Pacific Islands ethnicity at a workshop in Auckland in 1992 (Ministry of Pacific Island Affairs, 1993).

The participants at the PHC's meetings considered there was a wide range of causes for the increase in the various conditions. In the case of some of the physical conditions, they believed the following connections explained the change:

- a. Diabetes
 - changes of lifestyle and types of food eaten
 - over-eating and lack of exercise
 - lack of a balanced diet comprising Pacific Islands foods
 - unawareness of the cause of diabetes
- b. Heart problems
 - an increase in rheumatic fever in childhood
 - stress
 - inclusion of too much fat in the diet
- c. High blood pressure
 - consumption of too much salt and fat
 - stress and worries about money
 - overcrowding, which contributes to stress
 - smoking and drinking
- d. Asthma
 - dust and pollen
 - passive smoking
 - overcrowding
- e. Arthritis
 - residence in a cooler climate
 - lack of exercise
- f. Lung cancer
 - smoking
- g. Bowel cancer
 - insufficient fibre in the diet
- h. Cervical and breast cancer
 - delay in seeing a doctor
 - reluctance to have smears taken.

Views were expressed about the health problems of Pacific Islands people in different life cycle groups.

In the case of young children, it was felt that the level of immunisation against childhood diseases in the first few years of life needed to be raised. "Glue ear" (otitis media with effusion) was also acknowledged to be a problem because it affected children's hearing ability and, therefore, learning ability at school. Respiratory problems and asthma were other problems mentioned. Many considered some parents lacked parenting skills, and saw the need for improvement in parenting to ensure better child and family health. This included education about nutrition.

Child abuse was seldom mentioned at the meetings. This reflects, perhaps, the fact that it is a controversial issue for Pacific Islands people.

For adolescents, the problem of substance abuse (consumption of alcohol, sniffing of glue and drug use) was often mentioned. However, some participants perceived that the general health among some young people might be improving, with growing numbers becoming health-conscious, taking up physical exercise and eating more nutritious foods. Smoking among young people was also perceived to be decreasing by some participants, but there was no general consensus on this. However, the importance of sporting heroes and healthy older people over the age of 70 years, especially of Pacific Islands ethnicity, as positive role models encouraging greater interest in personal health among the young was emphasised at several meetings.

Drinking and violence were more commonly mentioned in discussions about adult male health. Depression was considered a major malady among Pacific Islands men in New Zealand, for they are more dependent on money to meet the basic necessities of life but, with low incomes and unemployment, have a far less secure base for ensuring these needs are met compared with their counterparts in the Islands. For women, breast and cervical cancer were singled out as problem areas, with Pacific Islands women being reluctant to visit doctors to talk about their bodies or have cervical smears taken.

In the case of older people, it was felt that many became inactive and house-bound in New Zealand, spending much of their time watching television. It was claimed that in the Islands they would be "up-and-about" much more, engaging in gardening and fishing, etc. The same was said about men and women of younger age, those in the Islands being considered to be much fitter because they had to spend a greater proportion of their time in physical activities associated with producing food. Participants consistently pointed out that Pacific Islands people value their older people, and children and relatives prefer to care for them in their own homes up to the time they die.

Generally speaking, the PHC found the participants to be well aware of what causes poor health among Pacific Islands peoples, and how the problems could be addressed. They did not consider any particular disease or condition among them was decreasing. Areas that were not discussed at the meetings included physical deformity (birth defects), family planning, abortion and acquired physical disabilities. The first three are sensitive topics for Pacific Islands people.

To summarise, the Pacific Islands people attending the consultation meetings perceived their health status in New Zealand to have deteriorated, singled out particular health conditions they thought were increasing, and identified some of the changes in the social and economic environment influencing their health status. While they made recommendations about how external, government-funded agencies might address their needs better, they were also able to point to a modest number of initiatives they had undertaken in recent years to provide health services to Pacific Islands people in a culturally appropriate way in various centres throughout New Zealand.

Those initiatives include radio programmes in Pacific Islands languages on health and information on the health services available; and voluntary work by church groups, particular Pacific Islands ethnic groups, and combined Islands groups, to inform people about health, take family members to see nurses and doctors, or visit the mentally ill in hospitals and take them on outings. Some church groups hold sessions on cooking, nutrition and physical exercise; and resource centres have been developed to provide information. Also, in some areas voluntary groups of Pacific Islands health professionals provide medical services to Pacific Islands people (eg, screening for diabetes, immunisation of children, cervical screening). In a few areas (eg, Waitakere, Tokoroa), Pacific Islands health centres have been established.

These initiatives reflect the desire of Pacific Islands people in New Zealand to be active in addressing their health problems. In the words of a participant at the PHC's meeting in Wellington: there is a "need for Pacific Islands people to be initiators and not reactors. Not to dance to someone else's music but to tune up our own guitars..."

Access to and use of primary health services

As pointed out by one participant:

"What is the point in community health when you have a lot of equipment but our people don't come in or don't understand; when our people are not educated...[and] don't know where to go to get health care."

Information was provided during the consultations that Pacific Islands people under-utilise health services in New Zealand. It is important to consider this feature, and the reasons for it. It could be expected, for instance, that where people have poor access to primary health care (ie, to nurses and doctors in the public, private or voluntary sector), the possibility they might be hospitalised at some stage becomes much greater. If, on the other hand, people have good or improving access to primary health services, hospitalisation rates should be lower.

The barriers to full use of primary health care services by Pacific Islands people identified by participants at the meetings were as follows:

- There is a language barrier. The insufficient numbers of Pacific Islands health professionals means that Pacific Islands people rely on the services of people of other ethnic backgrounds. Some Pacific Islands people may not be able to explain to them their problems, understand the advice given to them, or read the instructions on prescriptions they receive. Because of these difficulties, they may limit the use of their services.
- There is a cultural barrier. Pacific Islands people may feel "scared" or "shy" in discussing their problems with a doctor or nurse of different ethnic origin. They also find it difficult to talk about their bodies, or be physically examined.
- There is a lack of information written in Pacific Islands languages about health care and health services. One of the reasons why some mothers do not have their children immunised is that they lack knowledge of the benefits, and where to go.

- There is a cost barrier. For many Pacific Islands people on low incomes, or without employment, the fees charged by doctors are too high, and they will not seek attention unless they are in extreme pain, etc. Many visit doctors only as a last resort, and do not have regular checkups. Because of the cost, prescriptions may not be taken up.
- Some Pacific Islands people place personal health very low down in their list of priorities. This may be because they cannot afford health care; or there are competing demands on household income (eg, the wish to make monetary contributions to the church may override expenditure on health needs); or because they have low self-esteem and concern about their personal well-being.
- Some place reliance first and foremost on traditional Pacific Islands medicines, and visit a doctor only if these do not work. Herbal concoctions have been used for centuries, with the older generation in New Zealand being most familiar with these and offering preparations for particular complaints.
- Pacific Islands people prefer to shelter the elderly and the physically and mentally disabled at home rather than present them for residence at rest homes and for medical attention at clinics and hospitals. Health services do not reach these people because they are not directed at the homes of Pacific Islands people.

As the participants pointed out, one of the outcomes of these features is that Pacific Islands people may not receive medical attention until their malady has reached an advanced form.

Statistical information on Pacific Islands people's utilisation of health services was collected in the 1992-1993 Household Health Survey. Some of the findings, and a comparison of the level of use of services compared with Palagi, are summarised below. The percentage figures were adjusted for age and sex to take into account the different composition of the two populations (Statistics New Zealand and Ministry of Health, 1993).

- Of the Pacific Islands people surveyed, 23 percent said they did not visit a general practitioner in the previous year, while 63 percent said they made between one and five visits. The figures for Palagi were 22 and 62 percent respectively.
- In the previous four weeks, 22 percent of Pacific Islands people had visited a pharmacist or chemist, compared with 24 percent of Palagi.
- In the previous year, 32 percent of Pacific Islands people did not receive any prescription items (Palagi, 30 percent); 43 percent received between one and four items (Palagi, 42 percent); ten percent received five to nine items (Palagi, 13 percent); and nine percent received ten items (Palagi, 14 percent).
- In the previous year, 16 percent of Pacific Islands people had visited a medical specialist, compared with 24 percent of Palagi.
- In the previous four weeks, 14 percent of Pacific Islands people visited a nurse, compared with nine percent of Palagi.
- In the previous four weeks, eight percent of Pacific Islands people had made use of dental services, compared with 11 percent of Palagi.
- In the previous year, 14 percent of Pacific Islands people had been admitted to a public or private hospital, compared with 13 percent of Palagi.

In the same survey, 19 percent of Pacific Islands people interviewed described their health status as "not so good", or "poor", compared with eight percent of Palagis, these figures also being adjusted for differences in the age and sex composition of the two populations.

Analysis of Pacific Islands people's health

The analysis of the health of Pacific Islands people in New Zealand presented in the remaining chapters of this report is based on a review of the literature and an analysis of official statistics.

Chapter 2 looks at major features of the Pacific Islands population in New Zealand. It covers population growth, migration, fertility and mortality, the age structure of the population and population projections, the latter predicting a doubling of the Pacific Islands population over the next 40 years, and a sevenfold increase in the population aged 65 and over. This projected change implies there will be major changes in the relative importance of particular diseases and conditions in the Pacific Islands population, given that a range of them are concentrated in particular age groups (eg, among older people, diabetes and pneumonia).

Chapter 3 discusses the socioeconomic environment and health. Employment and the opportunity to obtain incomes higher than those available in the Islands have been the underlying reasons for the migration of Pacific Islands people to New Zealand, but in recent years jobs, particularly unskilled ones migrants depend on, have become much more difficult to obtain following contraction in the economy, and there has been a rapid rise in unemployment among Pacific Islands peoples. This, and low incomes, has had an impact on family well-being. Chapter 3 also discusses features of Pacific Islands households and families, housing, housing quality, overcrowding and health. This is followed by sections on parenting, youth offending, substance abuse, domestic violence and the use of refugees, adult criminal offending and the ability of Pacific Islands people to cope with stress.

Chapter 4 focuses on the diet and nutrition of the Pacific Islands population in New Zealand, and the diet-related risk factors. There are separate sections on the health and nutrition needs of infants, children, youth and adults. The diet-related risk factors covered include obesity and body weight, blood lipid levels, blood pressure and hypertension, gout and hyperuricaemia, and impaired glucose tolerance. There are also sections on other, "lifestyle", risk factors, namely smoking, alcohol-use and physical inactivity.

Chapter 5 provides an overview of the health status of the Pacific Islands population as a whole based on mortality and hospitalisation data for the period 1987-1991. Incidence rates for particular causes of death and hospitalisation are identified, followed by sections on mental health and physical disability.

Chapter 6 examines the health status of different life cycle groups within the Pacific Islands population, these being children aged 0-14 years, young people aged 15-24 years, men and women aged 25-44 and 45-64 years, and older people over the age of 65 years. Incidence rates for various causes of death and hospitalisation, and for admissions for psychiatric care, are provided in this chapter as well.

Some major conclusions are presented in Chapter 7. However, key findings are highlighted at the beginning of each of the chapters.

Some limitations of the study

The analysis undertaken in this report is a broad-based one, focusing on the Pacific Islands population as a whole.

As pointed out in the introduction, there is a dearth of statistics for particular ethnic groups within the Pacific Islands population. In addition, it has not been possible to compare the health status of Pacific Islands-born *vis-à-vis* New Zealand-born people of Pacific Islands ethnicity.

There are differences between Pacific Islands people in the level of education they have received, their employment status, the type of work they engage in, and their incomes. However, it has not been possible to determine exactly how, and to what extent, these “class” differences are associated with differences in health status. This is an area that needs to be considered in future research. The results of a study by Pearce et al (1984), using 1974-1978 mortality information, suggests it is worthy of investigation. They found that, at that time, the mortality rate among Pacific Islands males aged 15-64 years was 972 per 100,000 for unskilled manual workers and 827 per 100,000 for semi-skilled manual workers. This compared with 556 per 100,000 for those engaged in higher/lower professional, managerial and remaining non-manual occupations (also see Davis, 1984).

One other area not covered in this report concerns Pacific Islands people’s views about sickness and traditional health practices. Those wishing to find out more about these should read the reports of Kinloch (1985), Ma’ia’i (1986), Finau (1994) and Laing and Mitaera (1994).

Reliability of statistics for Pacific Islands people

Many of the statistics used throughout the report are derived from administrative sources, such as hospital admissions, and official sources, such as death registrations and population surveys. Statistics from any source are subject to some degree of error arising from the nature of the data and the statistical production process. Ethnic statistics present special problems because, in addition to the types of error associated with other statistics; they may also be subject to error arising from ethnic misclassification and the relative small size of the ethnic population.

Several factors affect the quality of Pacific Islands people’s statistics in this report:

- Relevance and consistency of ethnic definitions.
- Completeness of enumeration or registration of Pacific Islands people.
- Reliability of ethnic classification.
- Volatility due to small numbers.

Relevance and consistency of ethnic definitions

Definitions of Pacific Islands ethnicity in the New Zealand population censuses have varied. Different populations have been defined, from Pacific Island Polynesian, in vogue through to the early 1980s, to the term Pacific Island Ethnic Group, defined differently, which is currently used. These changing definitions affect the denominator used to calculate incidence rates of particular diseases in hospitalisations or death statistics. The different definitions of the Pacific Islands population are discussed in Chapter 2, while the denominator population used in calculating particular rates, and some of the difficulties, is discussed in Chapter 5. Definition problems in the collection of statistics for the Pacific Islands numerator are also discussed in Chapter 5.

Completeness of enumeration or registration of Pacific Islands people and reliability of ethnic classifications

There is some evidence that Pacific Islands people are under-counted in the five-yearly population census. The level of under-counting is likely to be at least two to three percent and is probably higher. The Department of Statistics has compared the results of successive population censuses since 1945. The "error of closure", which averages about two percent for the total population, compares the population estimated from the previous census, adjusting for subsequent births, deaths and migration, with the result of the current census. However, the under-count of Pacific Islands people is likely to be higher than two percent because the Pacific Islands population has a younger age structure (under-counting is higher among younger age groups) and because of the migrant status of the population. In the 1976 population census there was a considerable under-enumeration of Pacific Islands people. At that time, the Government had clamped down on migrants whose residency permits had expired (Brown, 1983). At the time of the 1991 census, the Department of Labour estimated there were 20,000 overstayers in New Zealand, 60 percent of whom were from Samoa and Tonga.

Under-counting in population statistics also occurs as a result of misclassification in the component elements of population estimates (base census population, births, deaths and migration). Under-counting due to misclassification in the component elements was estimated in one study to be in the vicinity of 12 percent for Pacific Islands births, 57 percent for deaths, 21 percent for migration arrivals and nine percent for migration departures (Brown, 1983). Much of the misclassification has been attributed to Pacific Islands people being incorrectly classified into a residual "other" category arising from the non-recording of data or mistaken recording. However, these estimates of misclassification are indicative only and need to be treated with some caution. The study on which they were based was designed primarily to measure misclassification of Maori, not Pacific Islands people, and the estimates are themselves subject to the type of errors discussed in this section.

Ethnic misclassification of deaths and hospital admissions also affects the accuracy of the numerator statistics used in the calculation of rates. The way misclassification occurs, and the extent of it, is discussed in detail in the introduction to Chapter 5.

The overall effect of misclassification is that Pacific Islands people's mortality and morbidity levels and rates are likely to be understated. In regard to all-cause mortality, this means that the apparent favourable position of Pacific Islands people relative to the total population which emerges from the mortality data presented in Chapter 5 may be exaggerated. To check this, there is a section in Chapter 5 which provides a recalculation of mortality rates on the assumption of an under-reporting level of 57 percent, a figure estimated by Brown (1983) for 1981.

*Volatility due to
small numbers*

Error may also occur from random variation. The Pacific Islands population in New Zealand is relatively small and the incidence of many causes of morbidity and mortality are relatively rare. These two factors acting in concert mean there will be considerable volatility in levels and rates over time, and comparisons at any point in time (such as a particular year) may be unreliable. To reduce the level of unreliability resulting from volatility over time, data for five consecutive years (1987-1991) have been combined for the analyses provided in Chapters 5 and 6.

References

- Baker PT, Hanna JM, Baker TS. The Changing Samoans. Behaviour and Health in Transition. Research Monographs on Human Population Biology Monograph No. 5. Oxford: Oxford University Press, 1986.
- Bedford R. Holding the fort? Pacific Island Polynesian women in the workforce, 1991. In: Population Association of New Zealand, Ethnicity and Gender, Population Trends and Policy Challenges in the 1990s. Proceedings of a Conference, Wellington, July 1993. Wellington: Population Association of New Zealand, 1994: 251-65.
- Brown PG. An Investigation of Official Ethnic Statistics. Occasional Paper No. 5. Wellington: Department of Statistics, 1983.
- Coyne T, Badcock J, Taylor R. The effects of urbanisation and western diet on the health of Pacific Island populations. Technical Paper No. 186. Noumea: South Pacific Commission, 1984.
- Dumbrell S, Taylor R, Koteka G, et al. Prevention and Control of Non-communicable Disease: Present Activities in the Cook Islands. Report No. 2. Noumea: South Pacific Commission, 1984.
- Davidson F. The Tokelau Island Migrant Study: Atoll Diet. In: Stanhope JM (ed). Migration and Health in New Zealand and the Pacific. Proceedings of a Seminar on Migration and Related Social and Health Problems in New Zealand. Wellington: Wellington Hospital Epidemiology Unit, 1975.
- Davis P. Class, ethnicity and mortality: The impact of economic change. In: Spoonley P, MacPherson C, Pearson D, Sedgwick C (eds). *Tauivi. Racism and Ethnicity in New Zealand*. Palmerston North: The Dunmore Press Ltd, 1984.
- Finau SA. Traditional health practices in a modern Pacific: a dilemma or blessing? *NZ Med J* 1994; 107: 14-17.
- Hanna JM, Fitzgerald MH. Acculturation and symptoms: A comparative study of reported health symptoms in three Samoan communities. *Soc Sci Med* 1993; 36(9): 1169-80.
- Kinloch P. Talking Health but Doing Sickness. *Studies in Samoan Health*. Wellington: Victoria University Press, 1985.
- Krishnan V, Schoeffel P, Warren J. The Challenge of Change: Pacific Islands Communities in New Zealand 1986-1993. Wellington: New Zealand Institute for Social Research and Development Ltd, 1994.
- Laing P, Mitaera J. Samoan and Cook Islanders' perspectives on health. In: Spicer J, Trlin A, Walton JA (eds). *Social Dimensions of Health and Disease. New Zealand Perspectives*. Palmerston North: The Dunmore Press Ltd, 1994.
- Mackenbach JP. The epidemiologic transition theory. *J Epidemiol and Comm Health* 1994; 48: 329-32.
- Mai'ai'i S. The Polynesian perspective of health care delivery in general practice. *The Journal of General Practice*, August 1986: 45-48.
- Ministry of Pacific Island Affairs. Pacific Island Health Professionals Workshop, 2 June 1993. Wellington: Ministry of Pacific Island Affairs, 1993.
- Murphy W. Some observations on blood pressures in the humid tropics. *NZ Med J* 1955; 54: 64-71.
- Pearce NE, et al. Mortality and social class in New Zealand III: Male mortality by ethnic group. *NZ Med J* 1984; 97: 31-5.
- Prior IAM, Harvey HPB, Neave MN, et al. The Health of Two Groups of Cook Island Maori. Medical Research Council of New Zealand and the Department of Health. Wellington: Government Printer, 1966.
- Prior IAM, Stanhope JM, Grimley Evans J, et al. The Tokelau migrant study. *Int J Epidemiol* 1974; 3 (3): 225-32.
- Prior IAM, Hooper A, Huntsman J, et al. The Tokelau Island Migrant Study. In: Harrison G (ed). *Population Structure and Human Variation*. Cambridge: Cambridge University Press, 1977.

- Prior IAM, Welby TJ, Ostbye T, et al. Migration and gout: the Tokelau Island migrant study. *Brit Med J* 1987; 295 (6596): 457-61.
- PHC. Pacific Island Health Information. The Public Health Commission's advice to the Minister of Health 1994-1995. Wellington: Public Health Commission. In Press.
- Reed, D. An ecological approach to urbanization and health in the South Pacific. In: JM Stanhope (ed). *Migration and Health in New Zealand and the Pacific. Proceedings of a Seminar on Migration and Related Social and Health Problems in New Zealand.* Wellington: Wellington Hospital Epidemiology Unit, 1975.
- Salmond CE, Joseph JG, Prior IAM, et al. Longitudinal analysis of the relationship between blood pressure and migration: The Tokelau Island Migrant Study. *Am J Epidemiol* 1985; 122 (2): 291-301.
- Salmond CE, Prior IAM, Wessen AF. Blood pressure patterns and migration: A 14-year cohort study of adult Tokelauans. *Am J Epidemiol* 1989; 130 (1): 37-52.
- Simmons D, Gatland B, Fleming, et al. Prevalence of known diabetes in a multiethnic community. *NZ Med J* 1994; 107: 219-222.
- Stanhope JM. The Tokelau Island Migrant Study: disease prevalence among residents in the atolls and New Zealand. In: Stanhope JM (ed). *Migration and Health in New Zealand and the Pacific.* Wellington: Wellington Hospital Epidemiology Unit, 1975.
- Stanhope JM, Prior IA. The Tokelau Island Migrant Study: Prevalence of various conditions before migration. *Int J Epidemiol* 1976; 5(3): 259-66.
- Stanhope JM, Prior IAM. The Tokelau Island Migrant Study: Alcohol consumption in two environments. *NZ Med J* 1979; 90 (648): 419-21.
- Stanhope JM, Prior IAM. The Tokelau Island Migrant Study: Prevalence and incidence of diabetes mellitus. *NZ Med J* 1980; 92 (673): 417-21.
- Statistics New Zealand, Ministry of Health. *A Picture of Health.* Wellington: Statistics New Zealand and Ministry of Health, 1993.
- Taylor R. *Prevention and Control of Non-Communicable Disease in Pacific Island Nations: Prospects and Constraints.* Noumea: South Pacific Commission, 1983.
- Taylor R, Dumbrell S, Koteka G, Mokoputu K. *Prevention and Control of Non-Communicable Disease: Present Activities in the Cook Islands.* Noumea: South Pacific Commission, 1983.
- Taylor R, Lewis ND, Levy S. Societies in transition: Mortality patterns in Pacific Island populations. *Int J Epidemiol* 1989; 18 (3): 634-46.
- Tonkin, S. Tokelau Island Children's Study: Common Diseases. In: Stanhope JM (ed). *Migration and Health in New Zealand and the Pacific. Proceedings of a Seminar on Migration and Related Social and Health Problems in New Zealand.* Wellington: Wellington Hospital Epidemiology Unit, 1975.
- Ward RH, Chin PG, Prior IA. Tokelau Island Migrant Study: Effect of migration on the familial aggregation of blood pressure. *Hypertension* 1980; 2 (suppl): 43-54.
- Wessen AF (ed). *Migration and Health in a Small Society: The Case of Tokelau.* Research Monograph on Human Population Biology, No. 8. Oxford: Clarendon Press, 1992.
- Zimmert P, Whitehouse S. Pacific Islands of Nauru, Tuvalu and Western Samoa. In: Trowell H, Burkitt D (eds). *Western Diseases: Their Emergence and Prevention.* Cambridge: Harvard University Press, 1981.

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Chapter 2

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Demographic Characteristics
of the Pacific Islands
Community in New Zealand

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Introduction

This chapter considers some of the main demographic characteristics of the Pacific Islands community in New Zealand.

It begins with a discussion on the changing definitions of the Pacific Islands population in the five-yearly Census of Population and Dwellings, as this affects any calculation of the population growth rate, as well as the denominator used to calculate the rates of incidence of particular diseases and other conditions affecting health status (Chapters 5 and 6). Following this, recent changes in the size of each ethnic component within the Pacific Islands population as a whole in New Zealand are examined. This leads to a discussion on population growth rates and recent changes in the factors that control growth, these being migration between the Pacific Islands and New Zealand, and mortality and fertility levels of the Pacific Islands population within this country. Projections for the Pacific Islands population through to the next century are also described. The chapter concludes with an analysis of the age composition of the population, as well as population projections for each age group and the implications of these.

Key points

- *The Pacific Islands population has been defined in a variety of ways in the population censuses.*
- *In 1991, the Pacific Island Ethnic Group made up 4.9 percent of the national population.*
- *Between 1986 and 1991, the population of the Pacific Island Ethnic Group increased at an average of 5.6 percent per annum, the rate being eight times higher than the rate of increase in the national population as a whole.*
- *The population belonging to the Pacific Island Ethnic Group was under-enumerated in 1991.*
- *People of Samoan and Cook Islands ancestry make up 72 percent of the population of the Pacific Island Ethnic Group.*
- *Nearly 67 percent of the Pacific Islands population live in the Auckland Regional Council Area, and 16 percent in the Wellington Regional Council Area.*
- *Immigration has always been a major factor in the growth of the Pacific Islands population in New Zealand.*
- *In recent years, the size of the net gain from migration has diminished. In 1992, there was an excess of permanent departures over permanent arrivals.*
- *The crude birth rate for the Pacific Islands population is more than double the total New Zealand rate, but the crude death rate is only one-third the national rate. Under-reporting of deaths occurs.*
- *While the total fertility rate of women in the Pacific Island Ethnic Group has been falling, it is still much higher than the national rate.*
- *Fewer Pacific Islands women than Palagi women use formal contraception.*
- *Pacific Islands women have a very high rate of medically supervised abortion.*
- *The Pacific Islands population has a much younger age structure than the total population, and this will lead to significant population growth over the next three decades.*
- *Under “medium” assumptions about future fertility, mortality and net migration gain, the Pacific Islands population in New Zealand is projected to increase from 153,000 in 1991 to 197,000 in 2001, and 327,000 by 2031, with its share of the total New Zealand population in the latter year expected to be around 7.2 percent.*

Census definition of the Pacific Islands population

The Department of Statistics (now Statistics New Zealand) has employed different definitions for the Pacific Islands population enumerated in the 1981, 1986 and 1991 censuses (Department of Statistics, 1981; 1988a; 1993a). One of the reasons for this is that through time there has been a steady increase in intermarriage with other sections of the population.

Definition prior to 1986

Prior to 1986, the Pacific Islands population was defined in two separate ways, and two sets of totals were provided in the census bulletins:

- a. Pacific Island Polynesian: comprising persons who specified themselves as being of "half or more Pacific Island Polynesian Origin", with the exception of people who were half New Zealand Maori and half Pacific Island Polynesian.
- b. Pacific Island Polynesian Descent: comprising persons who specified themselves as having any degree of "Pacific Island Polynesian" ancestry at the 1981 census and those taken earlier.

Growth in the populations according to the pre-1986 definitions above was as follows:

TABLE 2.1: *Pacific Island Polynesian and Pacific Island Polynesian Descent populations recorded in censuses, 1945-1981*

Census date	Pacific Island Polynesian	Pacific Island Polynesian Descent
Sept 1945	2,159	2,168
April 1951	3,624	4,145
April 1956	8,103	8,878
April 1961	14,340	15,947
March 1966	26,271	28,881
March 1971	40,918	48,190
March 1976	61,354	71,333
March 1981	89,697	-

Source: Department of Statistics, 1988a.

Definition in the 1986 census

In the 1986 census, a new question was introduced which allowed people to indicate the ethnic group they identified with. This, and the abolition (to the maximum degree possible) of the traditional ethnic origin priority order for persons of mixed origin, led to a revision of the totals for the Pacific Island Polynesian Population given in earlier censuses (Table 2.2).

TABLE 2.2: *Populations of solely Pacific Island Polynesian and Pacific Island Polynesian Origin or Descent recorded in censuses, 1945-1986*

Census date	Solely Pacific Island Polynesian ⁽¹⁾	Pacific Island Polynesian Origin or Descent ⁽²⁾
Sept 1945	557	2,159
April 1951	1,684	3,624
April 1956	4,120	8,103
April 1961	7,889	14,340
March 1966	16,842	26,271
March 1971	32,419	43,752
March 1976	51,790	65,694
March 1981	76,739	93,941
March 1986	99,269	127,906

Source: Department of Statistics, 1988a.

(1) Comprises persons of "Solely Pacific Island Polynesian Origin" at the 1986 census, and those at earlier censuses who were re-classified to this category in accordance with the classification based on single ethnic origin.

(2) Comprises persons of "Solely Pacific Island Polynesian Origin" or of "two" or "three ethnic origins", one of which was Pacific Island Polynesian at the 1986 census, and those at earlier censuses who have been re-classified to this category in accordance with the classification based on origin or descent.

Definition in the 1991 census

In the 1991 census report on the Pacific Islands population (Department of Statistics, 1993a), a new set of figures for 1981, 1986 and 1991 appeared for the population defined as being of the "Pacific Island Ethnic Group". That group was defined as referring to "those persons who [themselves in the census] stated a Pacific Island ethnic group as either their sole ethnic group, or as one of several ethnic groups they belonged to".

TABLE 2.3: *Population change in the Pacific Island Ethnic Group, based on the 1991 definition of the Pacific Islands population*

Census	Pacific Island Ethnic Group
1981	104,262
1986	130,293
1991	167,073

Source: Department of Statistics 1993a, Table 43.

In 1986, 96,873 of the 130,293 people in the Pacific Island Ethnic Group belonged to a single group within it (eg, Samoan), and the remainder either to at least two Pacific Islands groups (eg, Samoan and Tokelauan), or with other ethnic groups such as Maori, Indian, Chinese and European. In 1991, people of sole Pacific Islands ethnic origin numbered 130,158 and Pacific Islands people of mixed origin 36,915. Included among the latter were 14,133 people who identified with both a Pacific Islands ethnic group and the Maori ethnic group (their number increasing from 10,926 in 1986) (Department of Statistics, 1993b).

Of the population of 167,073 in 1991, 82,119 had been born in New Zealand (49.2 percent) compared with 84,954 (50.8 percent) born elsewhere. Information on the country of birth for the 130,293 people belonging to the Pacific Island Ethnic Group in 1986 has not been published. However, of those classified as being "of Pacific Island Polynesian origin" in 1986 (125,853 – a figure different from that in Table 2.2), 62,091 had been born in New Zealand (49.3 percent) (Department of Statistics, 1988b).

Growth rate

The figures given in Table 2.3 indicate that, between 1981 and 1986, the population of the Pacific Island Ethnic Group increased at a rate of 5.0 percent per annum, with the rate increasing to 5.6 percent per annum between 1986 and 1991. These rates were well in excess of the annual growth rates for the New Zealand population as a whole (0.8 and 0.7 percent).

As a result of its higher growth rates, the Pacific Island Ethnic Group's share of the national population has been increasing steadily. In 1981, 3.3 percent of New Zealand's population belonged to the Pacific Island Ethnic Group, the proportion rising to 4.9 percent in 1991.

Under-enumeration

It is stressed that the figures just cited refer only to the Pacific Islands population enumerated on Census Night. In general discussions with some Pacific Islands leaders during the PHC's consultations, it was acknowledged that under-enumeration of the Pacific Island population occurs in censuses. Some people avoid Census Officers and filling in the personal questionnaires because they do not understand the forms or fear that, because they have stayed longer than their visitor permits allow, they will be identified and deported. The extent of under-enumeration is not known, but it could be quite considerable.

Evidence of under-enumeration was obtained in the course of a door-to-door survey of known diabetes cases in Otara, South Auckland, between April and October 1992. It was found that the Pacific Islands population enumerated (14,802) was 32 percent *larger* than the population enumerated in the same area in the 1991 census taken a year earlier (11,169). The degree of difference was considerably less for Maori and Palagi: their populations in the door-to-door survey were 97.4 and 94.5 percent of their 1991 census populations respectively (Simmons et al, 1994).

Ethnic components

People of Samoan ethnicity form the largest component of the Pacific Island Ethnic Group, making up 50 percent of that population in 1991. Cook Island people form the second largest group (22 percent), followed by people of Tongan, Niuean, Fijian and Tokelauan origin.

Between 1986 and 1991, the Tongan population recorded the highest growth rate (14.1 percent per annum), and the Cook Islands population the lowest (2.9 percent per annum). Details on the size and growth of the different communities living in New Zealand are provided in Table 2.4.

TABLE 2.4: *Sizes of the different Pacific Islands communities in New Zealand*

Ethnic Group	Numbers			Percentage Annual Growth	
	1981	1986	1991	1981-86	1986-91
Samoan	48,939	66,252	85,743	7.1	5.9
Cook Islands	27,894	33,120	37,857	3.7	2.9
Tongan	8,982	13,611	23,175	10.3	14.1
Niuean	9,993	12,501	14,424	5.0	3.1
Fijian	3,006	4,266	5,097	8.4	3.9
Tokelauan	2,937	3,315	4,146	2.6	5.0
Total	101,751	133,065	170,442	6.2	5.6

Source: Department of Statistics, 1981, 1988a, 1993a.

It should be noted that the totals in Table 2.4 are different from those in Table 2.3. The reason for the difference is that the totals for each ethnic group in Table 2.4 include persons belonging to two or more ethnic groups (eg, Samoan plus Cook Islands). Dual ethnicity is eliminated and the number reduces for 1986 and 1991 when the Pacific Islands group is considered as a whole (as in Table 2.3).

Population distribution

Since the early 1950s, the bulk of the Pacific Islands population has always been concentrated in the Auckland urban region, followed by the Wellington urban region. In recent years, however, there has been a build-up in the number of Pacific Islands people living in other regions such as the Waikato, the Bay of Plenty, Hawke's Bay and Canterbury. The Pacific Islands population is concentrated in particular urban areas within each of these regions. The distribution of the population belonging to the Pacific Island Ethnic Group in 1991 is indicated in Table 2.5.

TABLE 2.5: *Distribution of the Pacific Island Ethnic Group in 1991*

Regional Council Area	Population	Percent Distribution
Auckland	111,315	66.6
Wellington	26,055	15.6
Waikato	7,236	4.3
Canterbury	5,823	3.5
Manawatu-Wanganui	3,426	1.9
Bay of Plenty	3,276	1.9
Hawke's Bay	2,520	1.5
Otago	2,325	1.4
Northland	1,635	1.0
Southland	1,545	0.9
Taranaki	636	0.4
Nelson-Marlborough	588	0.3
Gisborne	525	0.3
West Coast	147	0.1
Total NZ	167,052	100.0

Source: Department of Statistics, 1993a.

Components of population growth

The factors determining the growth of the Pacific Islands population in New Zealand are net migration (ie, the excess of people arriving over those departing), and the levels of fertility and mortality in the resident population.

There are different types of movements from the Pacific Islands to New Zealand. Some movements are of short-term duration, characterised by people coming to New Zealand to visit relatives, or returning to their own country to visit relatives. Indeed, some Pacific Islands people have homes both in New Zealand and the Pacific Islands, and reside alternately at them. Other movements to New Zealand are permanent or long-term.

Some features of movement between the Pacific Islands and New Zealand were identified in the Tokelau Migrant Study. The investigators found the term "migration", referring to a definitive "one-time" experience, to be untenable, noting that during the study there was a great deal of movement backwards and forwards between Tokelau and New Zealand. Indeed, it was found that only 39 percent of the migrants to New Zealand did not leave New Zealand for a visit to Tokelau at some stage between 1967 and 1982, and that of those classified as "non-migrants" who lived in Tokelau during this period, 60 percent spent at least two months "abroad" (Wessen, 1992).

It is not possible to obtain an accurate picture of the recent movement of Pacific Islands people alone to and from New Zealand from any of the available arrival and departure data collated by Statistics New Zealand. This is because information on the ethnicity of people travelling to and from New Zealand is no longer collected. The lack of such information in turn makes it very difficult to assess the impact of migration between the Pacific Islands and New Zealand on the growth rate of the Pacific Islands population within New Zealand itself.

Movement between the Pacific Islands and New Zealand

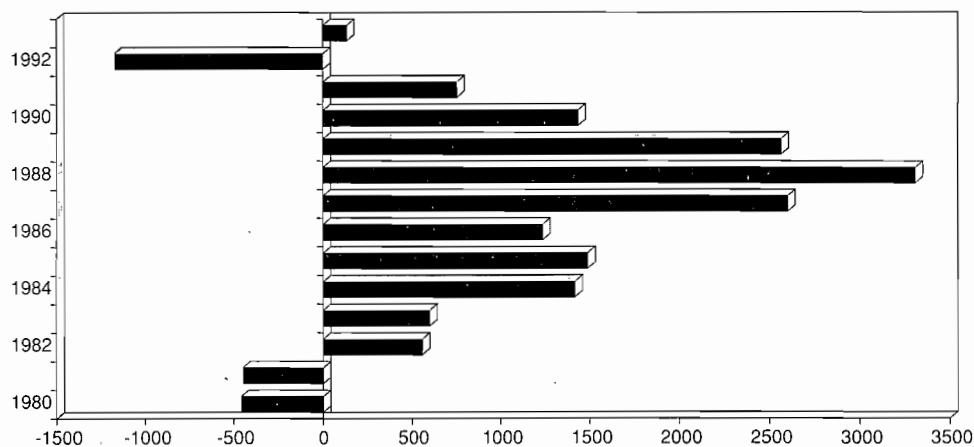
The annual data that are available on movement between the Pacific Islands and New Zealand include: total *passenger movements* to/from Pacific Island destinations (Cook Islands, Fiji/Niue and Western Samoa); and total *permanent and long-term arrivals* in New Zealand from the named Pacific Island country of last residence, as well as *permanent and long-term departures* from New Zealand to those countries. In both cases, the data include non-Pacific Islands people (eg, tourists and New Zealanders returning from a Pacific Islands country in which they had been working for several years). However, the data on permanent and long-term arrivals and departures (Appendices 1, 2 and 3) would appear to contain a much higher proportion of Pacific Islands migrants than is the case with the passenger data, and provides the basis for the discussion that follows.

Western Samoa has always been a major source area of permanent and long-term arrivals in New Zealand (Appendix 1). Since 1988, however, Fiji has been the single most important provider of immigrants. Many of these are not ethnic Fijians, but of Indian origin. In the early 1980s, the Cook Islands was the second most important source, but since then it has slipped to fifth place. Papua New Guinea (PNG) is a major source of immigrants, but it is probable many of the arrivals are expatriate New Zealanders and other non-Papua New Guineans who have departed from the country after a period of work there. The steady fall in the number of permanent and long-term arrivals from PNG during the 1980s runs parallel with the major exodus of New Zealanders from that country following independence, and the attempt to increase the proportion of nationals in the workforce. The total number of permanent and long-term arrivals from Pacific Islands countries has fallen steadily since reaching a peak of 6,000 in 1986. The decline is especially evident for Western Samoa, the Cook Islands and Niue. The reverse applies in the case of Fiji and Tonga (Appendix 2).

Western Samoa, the Cook Islands, Fiji and Tonga are the main destinations for permanent and long-term emigrants from New Zealand. The movement of people from New Zealand to these countries is just as strong as the movement from them to New Zealand. This reflects a high level of “circulation”, with many Pacific Islands people resident in New Zealand returning to their home islands for visits or to reside permanently.

The excess of permanent and long-term arrivals over permanent and long-term departures between New Zealand and each Pacific Island country is shown in Appendix 3. Figure 2.1 summarises the excess of total arrivals over total departures based on the information given in Appendix 3.

FIGURE 2.1: *Excess of permanent and long-term arrivals from the Pacific Islands over permanent and long-term departures to the Pacific Islands, 1980-1993*



Source: Derived from the information in Appendix 3.

There was a steady gain in net migration between 1982 and 1986, with a very large increase occurring between 1987-1989 (Figure 2.1). The rise appears to reflect the easing of restrictions on migration. Major changes were introduced following the review of New Zealand's immigration policy in 1986, including the relaxation of regulations concerning family reunification, relaxation of restrictions on the number of children allowed to migrate with their parents (previously four), and relaxation of visa requirements for short-term visitors (Brake, 1993).

The reduction in the net gain from 1990 onwards, followed by an excess of permanent departures over permanent arrivals in 1992, would appear to have resulted from both a tightening up of conditions of entry for family reunifications for permanent and long-term migrants to New Zealand, rising unemployment and the lack of jobs for would-be migrants from the Pacific Islands, and the departure of Pacific Islands people from New Zealand because of unemployment, etc. Information provided in Appendix 4, where the numbers of males and females in each age group in 1986 are compared with the numbers in 1991, reveals that while gains occurred in all age groups in the female population over the five-year period, there were losses among males in nearly all the age groups over 30 years. Even after allowing for the possibility of age misstatement in either of the two censuses, the difference between males and females is too striking to suggest anything other than that there was a net outflow of men between 1986 and 1991, but a net inflow of children and young people up to the age of 29 years as well as women over that age.

In general, migration has been making a much smaller contribution to the growth of the Pacific Islands population in New Zealand over the last three years compared with the situation up until 1991 (Figure 2.1). According to Brake (1993), the net intercensal migration gain from Pacific Islands countries between 1981 and 1986 was 13,879, and between 1986 and 1991, 30,360.

***Crude birth and
crude death rates***

Two sets of data on the crude birth and crude death rates of the Pacific Island population resident in New Zealand are available. Both rates are per 1,000 mean population.

Published data

TABLE 2.6: *Annual crude birth and crude death rates for the Pacific Island Ethnic Group*

<i>Crude Birth Rate (CBR)</i>			
Year ended	Census population ⁽¹⁾	Live births in the year ⁽²⁾	CBR/1000 ⁽³⁾
March 1981	104,262	2,938	28.2
March 1986	130,293	3,211	24.6
March 1991	167,073	4,911	29.4
<i>Crude Death Rate (CDR)</i>			
Year ended	Census population	Deaths in the year ⁽³⁾	CDR/1000
March 1981	104,262	176	1.7
March 1986	130,293	194	1.5
March 1991	167,073	305	1.8

Sources: (1) Department of Statistics, 1993a, Table 43. (2) Department of Statistics, 1993c, Table 2.1. (3) Department of Statistics, 1993c, Table 4.1.

The information in Table 2.6 is not reliable. In particular, the number of recorded deaths appears to be too low. While the Pacific Islands population does have a relatively young age structure, and while some people may return to the Islands when they retire, these two factors alone do not appear to be sufficient to explain the small number of deaths in New Zealand. Under-reporting of deaths has also occurred, perhaps because some undertakers have misclassified some Pacific Islands people as “Maori” or being of some other ethnic origin in their death registrations, or failed to record any ethnic classification at all.

Unpublished data

Special tabulations of the crude birth and crude death rates for the Pacific Islands population grouped into time periods larger than a single year were prepared for the PHC by Statistics New Zealand (Table 2.7). The larger time periods increase the recorded number of events, and thus decrease the variation evident on an annual basis.

TABLE 2.7: *Annual crude birth and crude death rates for the Pacific Islands population in New Zealand*

Period	Crude Birth Rate ⁽¹⁾	Crude Death Rate ⁽²⁾
1980-1982	38.1	2.4
1985-1987	35.2	2.1
1990-1992	35.8	2.2

Source: Statistics New Zealand.

(1) Births per 1,000 Pacific Islands population (sole ethnic group) enumerated at the 1981, 1986 and 1991 Censuses of Population and Dwellings. The rates are based on registered births of persons defined as having half or more Pacific Islands blood.

(2) Deaths per 1,000 Pacific Islands population (sole ethnic group) enumerated at the 1981, 1986 and 1991 Censuses of Population and Dwellings. The rates are based on registered deaths of persons defined as having half or more Pacific Islands blood.

The Pacific Islands crude birth rates (CBRs) given in Table 2.7 are more than double those for the New Zealand population as a whole. The national CBR was 16.1 in 1981, 16.1 in 1986 and 17.6 in 1991 (Department of Statistics, 1993c). The Pacific Islands crude death rates (CDRs), on the other hand, are only one-third the level of the national rates, the latter being 8.0 in 1981, 8.3 in 1986 and 7.8 in 1991. The comments about likely errors in the classification of deceased Pacific Islands people referred to earlier in relation to the published data apply here as well.

The rate of natural increase of the Pacific Islands population in New Zealand (ie, where the impact of international migration is excluded from consideration) is calculated by subtracting the CDR from the CBR. The rate of natural increase for both the Pacific Islands population and the national population in each of the years is estimated in the table below.

TABLE 2.8: *Estimated annual rate of natural increase per 1,000 population for the Pacific Islands population in New Zealand*

Period	Population	
	Pacific Islands	Total New Zealand
1980-1982	35.7	8.1
1985-1987	33.1	7.9
1990-1992	33.6	9.8

Source: Department of Statistics, 1993c.

Fertility

There is a lack of recent published information on key fertility indicators for the Pacific Islands population. However, Statistics New Zealand has provided the PHC with special tabulations for the total fertility rate and age-specific fertility rates.

Total fertility rate

The total fertility rate (TFR) in a particular year is the average number of births a woman would have during her reproductive life if she was exposed to the fertility rates characteristic of various childbearing age-groups prevailing in that year.

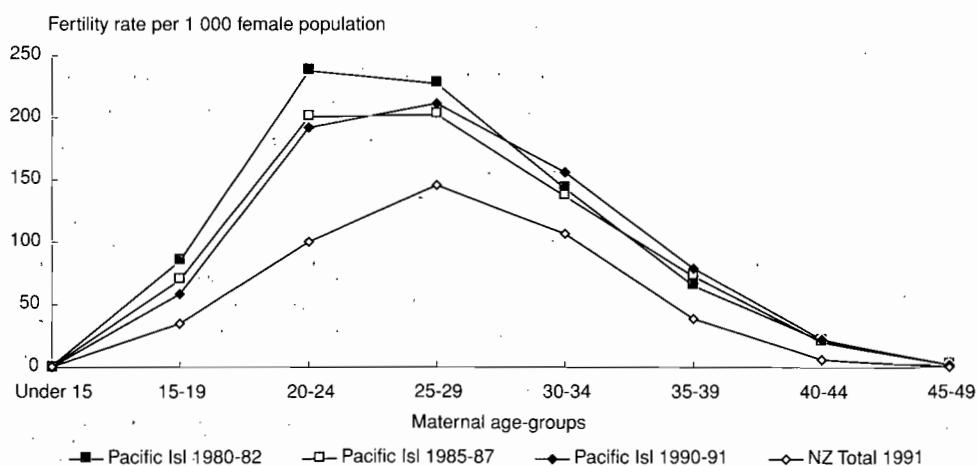
The TFR for maternal age-groups (10-49 years) in the Pacific Islands population (sole ethnic group) has fallen over the last decade, but has still been higher than the TFR for the total New Zealand maternal population (10-49 years). In the period 1980-1982, the TFR for Pacific Islands women was 3.9 (2.0 for the national maternal population in 1981); falling to 3.5 for the period 1985-1987 (1.9 nationally in 1986), before rising slightly to 3.6 for the period 1990-1992 (2.2 nationally in 1991).

Because of their higher fertility, women of Pacific Islands ethnic origin are disproportionately represented among all women receiving services at the time of childbirth. In the New Zealand Cot Death Study, which covered 78 percent of New Zealand live births in the period 1988-1990, as much as 9.7 percent of the "control" infants were of Pacific Islands ethnic origin (Mitchell et al, 1992). In the case of Auckland, where Pacific Islands people make up 12 percent of the population, it has been estimated that 20 percent of all births in that region in 1992 were to Pacific Islands women (Colin Tukuitonga, North Health, personal communication, 1993).

Fertility rates by age group

Over time there has been a fall in the fertility rate (births per 1,000 women) among Pacific Islands women in the 15-29 age range, but an increase in the fertility rate among those aged 30-44 years. This trend follows the same one occurring in the total New Zealand population. However, the fertility rates in all age groups of Pacific Islands women in 1990-1991 were still well above those recorded for all New Zealand women (Figure 2.2).

FIGURE 2.2: Age-specific fertility rates, Pacific Islands population (sole ethnic group), for the period 1990-1992



Source: The data for the Pacific Islands population were compiled for the PHC by Statistics New Zealand. The information for Total New Zealand in 1991 is in Department of Statistics 1993c, Table 2.5.

Family planning

Tukuitonga (1990) has observed that Pacific Islands women have a relatively high fertility rate because Pacific Islands people prefer large families. Tukuitonga has also noted that very little information on contraceptive knowledge, attitudes and practice among Pacific Islands women in New Zealand has been published. While, as Tukuitonga observes, it is often thought that Pacific Islands women do not make use of formal contraception to the same extent as other women, the available literature is ambiguous on this point. In one review of statistics for two family planning clinics in Auckland in 1986, it was found that whereas Pacific Islands women made up only 4.2 percent of the female population of the region aged 15-44 years, they represented nine percent of the clients of the two clinics (Tukuitonga, 1990). In another report, reviewing the contraceptive practices of 1,000 women attending Parkview Clinic in Wellington in 1988-1989, it was found that the proportion of women who presented for abortions and who were not using formal contraception was highest among those of Pacific Islands ethnic origin (60.3 percent) (North and Sparrow, 1991).

Abortion

Tukuitonga considers that to some extent abortion is used as a form of contraception by Pacific Islands women. In particular, he notes that older Pacific Islands women are reluctant to use contraceptives because of the traditional expectations of their spouses to have large families, and the wish to avoid discussing their reproductive systems with doctors or staff at clinics (Tukuitonga, 1990).

Several studies have drawn attention to the relatively high incidence of medically supervised abortions among Pacific Islands women compared with their Maori and Palagi counterparts.

A major study on abortion in New Zealand by Sceats in 1983 revealed that “Pacific Island women have substantially higher levels of induced abortion at every age than either Maori or European-origin women” (Sceats, 1985). Furthermore, Sceats found that the general abortion rate (22.1 per 1,000 women aged 15-44 years) was almost double that for Maori (12.6) and almost three times the Palagi rate (8.8). Another feature was that, whereas 61 percent of the Palagi abortion patients in 1983 had yet to have a live-born child, the proportion of Pacific Islands women in this category was only 36 percent, suggesting that abortion was being used by parous women as a means to control family size. In all, 44 percent of the Pacific Islands abortion patients had already had two or more children compared with 26 percent of the Palagi patients.

According to Tukuitonga (1990), the total number of abortions among Pacific Islands women in New Zealand increased by 78 percent between 1983 and 1987 (ie, from 603 to 1,078), a figure well above the increases of 25 and 12 percent recorded for Maori and Palagi women respectively. Tukuitonga believes the rise in abortion was due perhaps to a rise in the need to limit family size because of an increase in the economic burden of large families, and perhaps also to a growing awareness about the availability of abortion. In an analysis of the national data for 1987, Tukuitonga found that while 59 percent of abortions conducted for Pacific Islands women were among those who had never married, married women accounted for 72 percent of the abortions carried out for women aged 35 years and over (Tukuitonga, 1990).

An analysis of long term change in the use of abortion has also been provided by North and Sparrow (1991). In their study of the records of Parkview Clinic in Wellington concerning the termination of pregnancies, they found that 7.2 per cent of the first 1,000 patients after July 1980 (the year the clinic was opened) were Pacific Islands women. By 1986, their share of the clientele had risen to 13.1 percent. Inasmuch as Pacific Islands women made up 3.0 percent of the female population aged 16-44 years in the Wellington region in 1981, and 3.1 percent in 1986, it is apparent that their use

of abortion was disproportionately high compared with women of other ethnic groups, and the increase in its use was quite considerable. Because Pacific Islands women presenting for terminations also had the lowest use of formal contraception among all clients, North and Sparrow drew the same conclusion as Tukuitonga: namely, that abortion is an important method of fertility control for Pacific Islands women in New Zealand. North and Sparrow considered that the high rate of non-contraceptive use among Pacific Islands women seeking abortions warrants further research. It might also be suggested that the number of abortions individual women undergo during their whole reproductive period of life also needs to be examined, as well as the impact of continual use of abortion on their health status.

The Ministry of Health has investigated "unintended pregnancy" in New Zealand, and has identified the high level of abortion among Pacific Islands women as being indicative of this situation. According to statistics prepared for the Ministry by Statistics New Zealand, the Total Abortion Rate for Pacific Islands women based on information between 1990 and 1992 was 1,020 per 1,000 women. For non-Maori/non-Pacific Islands women, the prevailing Total Abortion Rate was a much lower 376 per 1,000 women. The Ministry concluded that there is a need to improve the access of Pacific Islands women to culturally appropriate, high quality contraceptive services, and a need to ensure that cost is not a barrier to the use of contraception (Ministry of Health, 1994a; 1994b).

Recently, a pilot study on abortion among Pacific Islands women was completed for the New Zealand Family Planning Association (Asiasiga, 1994). Pacific Islands women were consulted at a *fono* on contraception, as well as through group interviews, talk-back radio and telephone interviews. It was felt that health service providers do need to be aware of the attitudes of Pacific Islands people to contraception, as these contribute to unplanned pregnancies and the relatively high level of abortion. Major findings listed in the report include the following:

- Pacific Islands parents regard sex as *tapu* or sacred, so there is a lack of discussion between parents and children.
- Pacific Islands people often oppose the use of contraception on religious grounds.
- Pacific Islands people often prefer to use traditional Pacific Islands methods of contraception.
- Because most Pacific Islands families are in the lower income bracket, contraceptives are relatively costly and may not be a high priority.

It was considered that to reduce the use of abortion, more community education and information about contraception was needed, especially about the different types of contraceptives available and their advantages and disadvantages. It was also noted it is important to make greater use of Pacific Islands nurses and health workers from each of the Pacific Islands communities to educate and inform people.

The report was presented to the Pacific Islands community in Porirua in May 1994. The New Zealand Family Planning Association is now liaising with a Pacific Islands working group to develop plans for training, service provision and more research.

Another recent study on the contraceptive knowledge and practices of women attending the abortion service at Epsom Day Unit, Green Lane Hospital, Auckland, confirmed that Pacific Islands women were the least likely to have received adequate contraceptive education or to have been using a method of contraception. Nearly 21 percent of the women seeking termination of a pregnancy at the unit during the study period were Pacific Islands women, 19 percent of whom were aged 15-19 years and a further 62 percent 20-29 years (Young, et al, 1994).

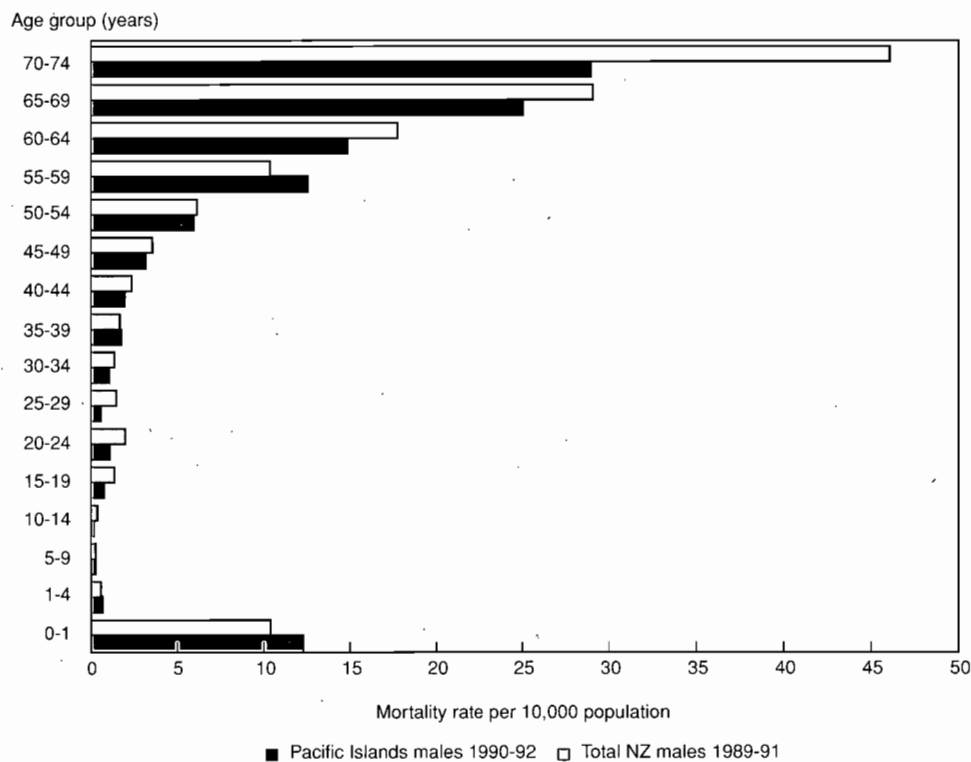
Mortality

Figures 2.3 and 2.4 compare the recent age-specific mortality rates for Pacific Islands males and females with those for the total New Zealand population.

The mortality rates for Pacific Islands infants (aged 0-1 year) are higher than those for the total population. It is also noticeable that between the ages of one and 54 years in the case of males, and one and 49 years in the case of females, the mortality rates for Pacific Islands people are similar to those for the national population as a whole. On the other hand, apart from males aged 55-59 years, the Pacific Islands mortality rates are lower than the national rates in the oldest age groups.

It is not possible to explain the patterns evident in the two graphs. Indeed, the continuous movement of Pacific Islands people between New Zealand and the Islands, and the probable under-reporting of the deaths of Pacific Islands people because of the failure of undertakers, etc, to correctly report the ethnicity of the deceased, suggest that the information used to compile Figures 2.6 and 2.7 is not error-free. In addition, the numerator population (deceased persons of "half or more Pacific Islands blood") used by Statistics New Zealand to calculate the mortality rates was defined differently from the denominator population (the 1991 Pacific Islands population of "sole ethnic group").

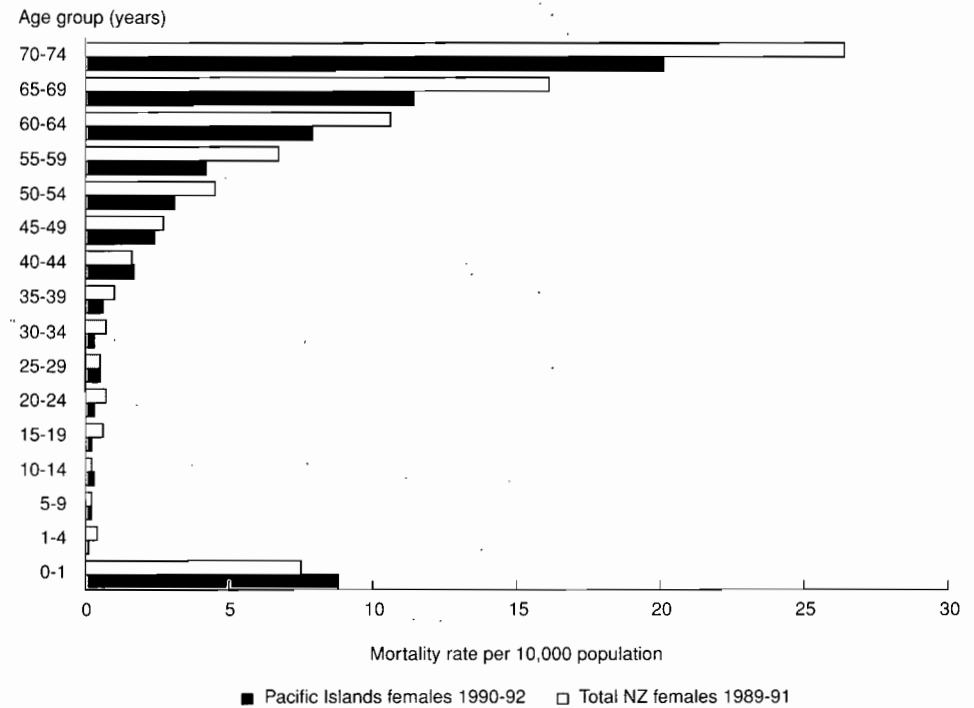
FIGURE 2.3: Comparison of age-specific mortality rates for Pacific Islands males 1990-1992 and all New Zealand males 1989-1991



Note: The rates for the Pacific Islands population are for the "sole ethnic group" category enumerated in the 1991 Census of Population and Dwellings. The rates are based on registered deaths of persons of "half or more Pacific Islands blood". All rates are average annual rates for the period concerned.

Source: Compiled from information in Table 4.4, Department of Statistics, 1993c, and tables on Pacific Islands age-specific mortality rates prepared for the PHC by Statistics New Zealand.

FIGURE 2.4: Comparison of age-specific mortality rates for Pacific Islands females 1990-1992 and all New Zealand females 1989-1991



Note: The rates for the Pacific Island population are for the "sole ethnic group" category enumerated in the 1991 Census of Population and Dwellings. The rates are based on registered deaths of persons of "half or more Pacific Islands blood". All rates are average annual rates for the period concerned.

Source: Compiled from information in Table 4.4, Department of Statistics 1993c, and tables on Pacific Islands age-specific mortality rates prepared for the PHC by Statistics New Zealand.

Additional information on age-specific mortality rates is provided in Chapter 6, and should not be confused with the rates provided in figures 2.3 and 2.4. The rates in Chapter 6 are calculated from mortality data provided by the New Zealand Health Information Service and cover larger age groups for a five year period 1987-1991, and not an average annual one between 1990-1992, as is the case in Figures 2.3 and 2.4.

Projected population growth

The first population projections for the Pacific Islands population were published by Statistics New Zealand in 1993. Using information collected in the 1991 census, 11 projections through to the year 2031 were developed using different scenarios for future levels of fertility, mortality, migration and inter-ethnic mobility (ie, low, medium, and high levels in each case). The projections appear in Table 2.9.

The 1991 "base year" population used to prepare the projections was the New Zealand resident population belonging to the "Pacific Island Ethnic group". As that ethnic classification was based on the concept of self-identification, it therefore excluded those people of Pacific Islands ancestry who did not identify themselves as Pacific Islands people. The base 1991 population also excluded 14,133 people who identified with both the Pacific Island Ethnic Group and the Maori Ethnic Group. In other words, the base population used for the projections was the 1991 population of 167,073 as listed in Table 2.3 of this chapter, less the 14,133 people who also belonged to the Maori Ethnic Group. This gave a base population of 152,940, rounded to 153,000.

Of the eleven alternative projections, Statistics New Zealand considers the middle projection (series 6) to be the "most suitable for assessing future changes in the Pacific

Islands population (ie, medium fertility, medium inter-ethnic mobility, and net migration gain of 500 per annum)". The two "extreme" series, 1 and 11, "represent the most pessimistic and optimistic growth series respectively" (Statistics New Zealand, 1993).

The main conclusions about future growth of the Pacific Islands population based on the series 6 projection are as follows.

- Between 1991 and 2001, the Pacific Islands population is projected to increase from 153,000 to 197,000, reaching 327,000 by the year 2031 (an increase of 114 percent in 40 years).
- The annual rate of growth in the Pacific Islands population is projected to fall from 2.9 percent in 1991-1992 to 1.4 percent by 2031 (compared with a drop in the annual growth rate from 1.2 to 0.4 percent in the total New Zealand population over the same period). The reasons why the Pacific Islands growth rate will be higher than the national growth rate include net migration gain from the Pacific Islands, the relatively larger proportion of people in the main reproductive groups, and the higher fertility among Pacific Islands women.
- The Pacific Islands population's share of the total population will rise to 7.2 percent by the year 2031.

TABLE 2.9: Projected Pacific Islands population for 1991-2031(in thousands)

		Alternative Projection Series:					
Assumption		1	2	3	4	5	6
Fertility:		low	low	medium	medium	medium	medium
Mortality:		high	medium	high	medium	medium	medium
Migration:		0	500	500	0	500	500
Inter-ethnic mobility:		high	medium	medium	medium	high	medium
Year to 31 March							
1991 (Base)		153	153	153	153	153	153
2001		185	195	197	191	193	197
2011		210	231	237	225	229	238
2021		232	266	279	261	265	281
2031		252	301	324	299	303	327
Assumption		7	8	9	10	11	
Year to 31 March							
Fertility:		medium	medium	medium	high	high	
Mortality:		medium	medium	low	medium	low	
Migration:		500	1,000	500	500	1,000	
Inter-ethnic mobility:		low	medium	medium	medium	low	
1991 (Base)		153	153	153	153	153	
2001		201	202	197	199	209	
2011		247	250	239	245	268	
2021		297	301	282	296	336	
2031		352	354	329	353	414	

Note: Migration refers to the assumed net annual migration gain, in hundreds. Inter-ethnic mobility refers to the situation where people may change their own ethnic classification from one census to the next.

Source: Statistics New Zealand, 10 Sept 1993.

Age composition of the Pacific Islands population

General features

When compared with the national population, the Pacific Islands population has a relatively young age structure (Table 2.10).

TABLE 2.10: *Age structure (percent distribution) of the Pacific Islands and national populations, 1991*

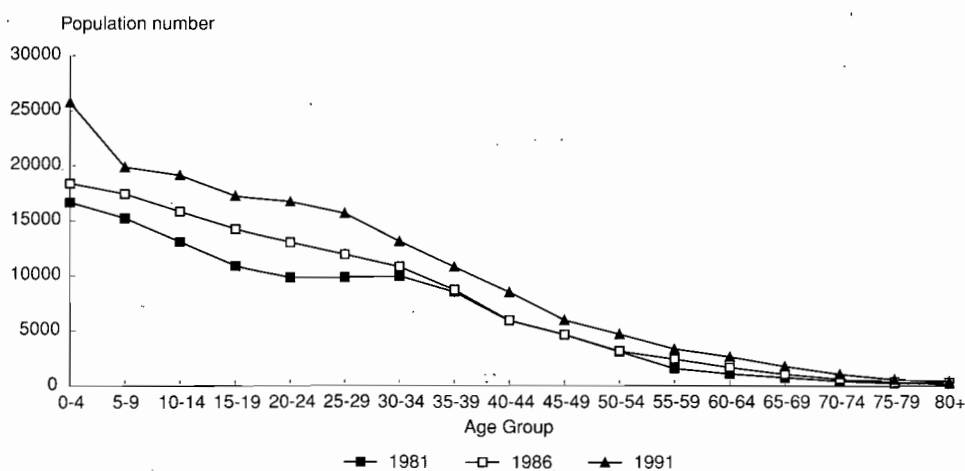
Age group	Pacific Islands ⁽¹⁾	Total New Zealand
0-14	38.7	23.3
15-59	57.5	61.3
60+	3.8	15.4
Total	100.0	100.0

Source: Department of Statistics, 1991 Census of Population and Dwellings.

(1) Pacific Island Ethnic Group population (see Appendix 4).

The Pacific Island Ethnic Group population lacks the relatively high proportion of people over the age of 60 years typical of the national population, although there have been increases in the absolute number of older people from one census to the next (Figure 2.5). What is especially revealing is that whereas the national population has been gaining numbers mainly in the 20-45 year age group, the Pacific Islands component, though adding numbers throughout the profile in each of the three censuses, has been gaining greatest numbers in the population under the age of 29 years. A rise in fertility between 1986 and 1991, as reflected in the increase in the population aged 0-4 years in 1991, is also evident.

FIGURE 2.5: *Age structure of the Pacific Island Ethnic Group, 1981-1991*



Source: Department of Statistics 1981, 1986 and 1991 Censuses of Population and Dwellings.

Because of the higher fertility, Pacific Islands children are over-represented among all children in New Zealand in the under-five age group. Pacific Islands “pre-schoolers” made up 9.3 percent of the national pre-school population in 1991 (Davey 1993).

It is instructive to compare the child dependency and aged dependency ratios for the Pacific Islands and national populations (Table 2.11). The child dependency ratio is the population aged 0-14 years expressed as a percentage of the population aged 15-59 years; while the aged dependency ratio is the population aged 60 years and over expressed as a percentage of the population aged 15-59 years. Both ratios are useful not only in identifying differences in the age structure of populations, but also for determining the “level of burden” of family needs (of children and the elderly) placed on people of labour force age who are assumed to be parents, providers and the guardians of the others.

TABLE 2.11 *The child and aged dependency ratios for the Pacific Islands and total New Zealand populations, for 1981, 1986 and 1991*

	1981	1986	1991
Child dependency			
Pacific Islands ⁽¹⁾	70.1	69.0	67.4
Total New Zealand	45.5	40.0	37.9
Aged dependency			
Pacific Islands ⁽¹⁾	4.0	5.1	6.6
Total New Zealand	23.4	24.2	25.2
Total dependency			
Pacific Islands ⁽¹⁾	74.1	74.1	74.0
Total New Zealand	68.9	64.2	63.1

Source: Department of Statistics 1981, 1986 and 1991 Censuses of Population and Dwellings.

(1) Pacific Island Ethnic Group population.

The Pacific Islands child dependency ratio is quite high, being well above that for the national population. The aged dependency ratio on the other hand is quite low; although extended households that incorporate the elderly are actually more common in the Pacific Islands population than in the national population. The Pacific Islands population also has a higher proportion of low income earners, and a higher proportion of unemployed people, so the burden of dependence placed on it in relation to its cash resources is far greater than the level of burden within the New Zealand population as a whole.

Projected change in age structure

The recent projections for the Pacific Islands population prepared by Statistics New Zealand referred to earlier contain detailed information on the projected changes in the number of people in each age group. Information for three of the series is provided in Table 2.12. The series are the same as those defined in Table 2.9.

Series 6 – the series considered by Statistics New Zealand to be most suitable for assessing future changes – suggests that whereas Pacific Islands children (aged 0-14 years) represented seven percent of all the children in New Zealand in 1991, their share will increase to as much as 11 percent by 2031. It is also projected that during the same period the Pacific Islands population aged 15-39 years will double, and the number of elderly Pacific Islands people over the age of 65 years will increase sevenfold.

The median age of the Pacific Islands population will also rise, from 22 years currently to 27.9 years in 2031. In 1991, elderly Pacific Islands people made up three percent of the total Pacific Islands population, but by 2031 the figure is projected to increase to eight percent.

Figures 2.6 and 2.7 show the projected changes in the profiles of the Pacific Islands and total New Zealand populations between 1991 and the year 2011. The differences are striking. Whereas the New Zealand population as a whole will experience contraction in the number of people under the age of 30 years and an increase in the proportion over that age, the Pacific Islands population will retain a relatively youthful profile. However, a possible lower level of fertility could occur, which would affect the numbers in the 0-14 years age group and contribute to a rise in the proportion of the population aged 45-64 years.

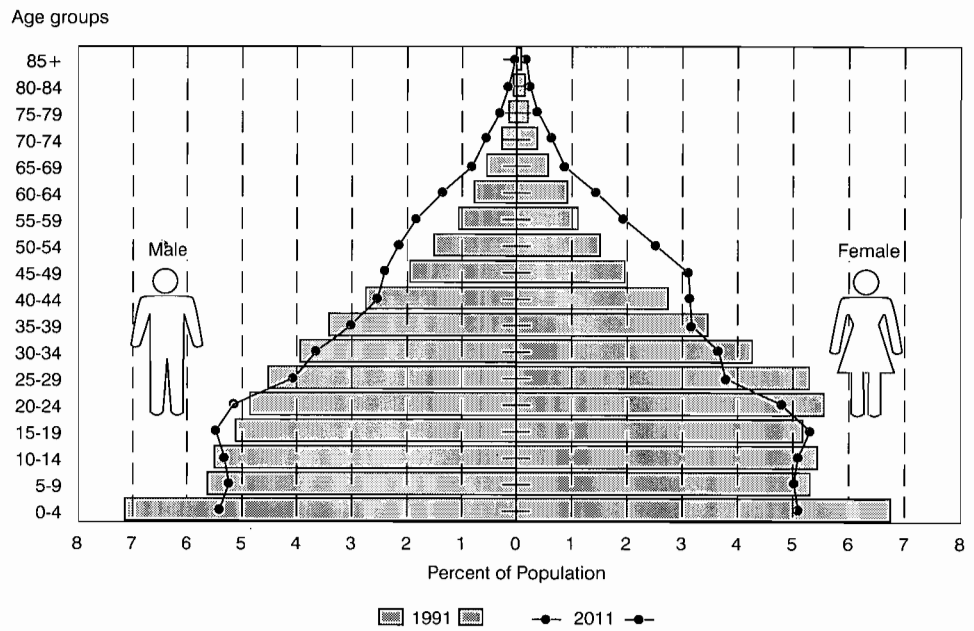
The projected changes suggest the disease profile for the Pacific Islands population as a whole (described in Chapter 5) will change, with degenerative diseases becoming more apparent (eg, cancer and heart disease), and diseases of early childhood diminishing. This point is returned to in Chapter 7.

TABLE 2.12: *Projected Pacific Islands population by age group for 1991-2031*

Alternative projection series	1991 (Base)	2001	2011	2021	2031
1. Aged 0-14 years (thousands)					
Series 1	55	65	62	61	65
Series 6	55	70	75	81	92
Series 11	55	78	89	103	127
2. Aged 15-24 years (thousands)					
Series 1	32	37	46	44	42
Series 6	32	38	50	54	56
Series 11	32	40	54	64	71
3. Aged 25-39 years (thousands)					
Series 1	38	42	46	57	60
Series 6	38	44	52	66	76
Series 11	38	47	57	75	93
4. Aged 40-64 years (thousands)					
Series 1	25	36	47	55	63
Series 6	25	38	52	64	76
Series 11	25	40	57	73	90
5. Aged 65 plus years (in thousands)					
Series 1	4	6	8	14	21
Series 6	4	6	10	17	27
Series 11	4	6	11	20	33
Median age, years					
Series 1	22.0	22.4	24.3	27.3	29.6
Series 6	22.0	22.3	23.7	26.1	27.9
Series 11	22.0	22.1	23.1	25.0	26.3

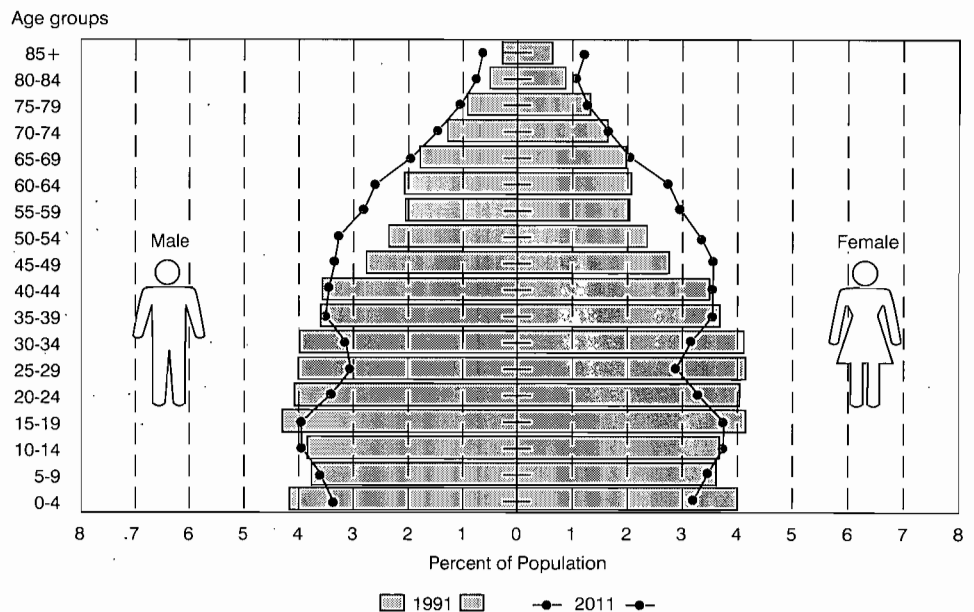
Source: Statistics New Zealand, 10 September 1993.

FIGURE 2.6: Age-sex structure, Pacific Island Ethnic Group, 1991 and 2011



Source: Department of Statistics, 1993a, and Statistics New Zealand, 10 September 1993

FIGURE 2.7: Age-sex structure, total New Zealand population, 1991 and 2011



Source: Department of Statistics, 1993a, and Statistics New Zealand, 10 September 1993.

References

- Asiasiga L. Abortion and Pacific Islands Women. A Pilot Study for the New Zealand Family Planning Association. Wellington: NZFPA, 1994.
- Brake, K. Immigration of Pacific Islanders to New Zealand, 1986-1991: Policies, patterns and outcomes. *New Zealand Population Review*, May/November 1993; 19 (1 and 2): 173-203.
- Davey J. From Birth to Death III. Wellington: Institute of Policy Studies, Victoria University of Wellington, 1993.
- Department of Statistics. Pacific Island Polynesians. Volume 8B of the 1981 New Zealand Census of Population and Dwellings. Wellington: Department of Statistics, 1981.
- Department of Statistics. Pacific Island Polynesian Population and Dwellings. Report 10, Series C of the 1986 New Zealand Census of Population and Dwellings. Wellington: Department of Statistics, 1988a.
- Department of Statistics. Birthplaces and Ethnic origin. Report 6, Series C of the 1986 New Zealand Census of Population and Dwellings. Wellington: Department of Statistics, 1988b.
- Department of Statistics. Pacific Island Population and Dwellings. A Report from the 1991 Census of Population and Dwellings. Wellington: Department of Statistics, 1993a.
- Department of Statistics. New Zealand's Multicultural Society. A report from the 1991 Census of Population and Dwellings. Wellington: Department of Statistics, 1993b.
- Department of Statistics. Demographic Trends 1992. Wellington: Department of Statistics, 1993c.
- Ministry of Health. Reproductive Health Policy Proposals to Reduce Unintended Pregnancy. Unpublished report released under the Official Information Act. Wellington: Ministry of Health, 1993a.
- Ministry of Health. National strategy to address unwanted pregnancy. *Health*, April 1993b; 5 (11).
- Mitchell EA, Taylor RPK, Ford AW, et al. Four modifiable and other major risk factors for cot death: The New Zealand study. *J Paediatr Child Health* 1992; 28, Suppl 1: S3-8.
- North DA, Sparrow MJ. Trends in the contraceptive practices of women seeking abortions in the 1980s. *NZ Med J* 1991; 104 (910):156-8.
- Sceats J. Induced abortion in New Zealand 1976-1983. Prepared for the Abortion Supervisory Committee. Wellington: Government Print, 1985.
- Simmons D, Gatland B, Fleming C, Leakehe L, Scragg R. Prevalence of known diabetes in a multiethnic community. *NZ Med J* 1994; 107: 219-222.
- Statistics New Zealand. Hot off the Press. Pacific Island Population Projections. Wellington: Department of Statistics, 10 September 1993.
- Tukuitonga, C. The Health of Pacific Island People in New Zealand. Unpublished Report for New Zealand College of Community Medicine Examination, 1990.
- Wessen AF (ed). Migration and Health in a Small Society: the case of Tokelau. Research Monograph on Human Population Biology, No. 8. Clarendon Press: Oxford, 1992.
- Young LK, Farquhar CM, Roberts HE, et al. The contraceptive practices of women seeking termination of pregnancy in an Auckland clinic. *NZ Med J* 1994; 107: 189-191.

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Chapter 3

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Socioeconomic
Environment and Health

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Introduction

This chapter discusses some aspects of the socioeconomic circumstances of Pacific Islands people which have an impact on their health status.

The chapter is divided into two parts. The first part focuses on the economic environment. It looks at the rise in unemployment among Pacific Islands peoples, and income and expenditure, and gives an indication of the extent to which the current economic circumstances of Pacific Islands people compare with those for the nation as a whole. The health implications are spelt out wherever information is available. The second part focuses on social features, including household composition and family types, the quality of housing occupied, overcrowding, parenting, youth offending, substance abuse, domestic violence and adult criminal offending. The chapter concludes with a section on stress and health. Some related features are discussed in other chapters (eg, alcohol consumption is referred to in Chapter 4).

The economic environment has changed profoundly over the last decade, and while there is some statistical information available to trace the change as far as it affects Pacific Islands people (eg, income and unemployment), there is a lack of information in some crucial areas concerning the impact of change on health status. Areas where there is a lack of information include the impact of unemployment, reduced income and rises in Housing New Zealand rents since 1991 on family health and social well-being.

Key points

- *The Pacific Islands labour force has a high unemployment rate (ie, 23 percent compared with 9.5 percent for the total New Zealand labour force in March 1994).*
- *Unemployment in the Pacific Islands population is concentrated among young people aged 15-34.*
- *Nearly 80 percent of Pacific Islands income earners have incomes less than \$20,000 per annum, compared with 64 percent of income earners in the total population.*
- *Real disposable incomes have fallen for many families because of unemployment, wage cuts, dependence on part-time rather than full-time work, and cuts to benefits.*
- *Economic hardship exists and is manifested in reduced expenditure on health care and food.*
- *Households are getting smaller, but are still large relative to those in the total population.*
- *There has been an increase in marriage breakdown, and a rise in the proportion of sole parent families, which now account for 32 percent of all Pacific Islands families.*
- *A high proportion of Pacific Islands children are being brought up in a situation of economic disadvantage: 31 percent of Pacific Islands children under four years of age live in sole parent families which on average have lower incomes than two-parent families.*
- *A relatively high proportion of Pacific Islands teenagers live in large households in extended family situations.*
- *Most elderly live in extended family households rather than alone, as is the case among Palagi elderly.*
- *The level of home ownership is low, and there is dependence on state-provided rental units. The effect of recent changes to the arrangements for subsidising accommodation on the socioeconomic circumstances, and the health, of Pacific Islands families has yet to be researched.*
- *There have been changes in parenting, with children having much greater freedom in New Zealand than they would in the Islands.*
- *Dishonesty offences are the main offences committed by Pacific Islands juveniles. There is evidence that the level of offending is little different between Pacific Islands and other children when statistics are controlled for environmental and family factors.*
- *Lack of employment, overcrowding, alcohol abuse and pressure on household budgets contribute to domestic violence.*
- *Pacific Islands women and children make up 9.5 percent of the clientele of the National Collective of Independent Women's Refuges. Only 1.7 percent of the staff of refuges are Pacific Islands women.*
- *Convictions for violent offences are relatively high. Pacific Islands people account for 5.7 percent of all non-traffic offences resulting in a conviction, but 12 percent of all convictions for violence.*

Economic environment

Employment and unemployment

The chapter begins with an account on unemployment, because this was identified by Pacific Islands people in the course of the PHC's consultations with them to be one of the major changes that is having a deleterious impact on their health and socioeconomic well-being.

Rise in the general level of unemployment

A high proportion of Pacific Islands people aged 15 years and over living in New Zealand do not have any school qualifications (ie, School Certificate or better, or an overseas qualification). Whereas in 1991, 56 percent of the national population aged 15 years and over had such qualifications, the figure for Pacific Islands people was only 44 percent (Department of Statistics, 1993a). The relative lack of formal educational qualifications means that for decades Pacific Islands people in New Zealand have depended mostly on unskilled/semi-skilled employment, primarily in the manufacturing sector.

During the restructuring of the New Zealand economy over the last 15 years, there has been a decline in demand for unskilled as opposed to skilled workers, with job loss occurring in the manufacturing sector in particular. Because of their dependence on unskilled jobs in processing industries, Pacific Islands people have been more exposed to the risk of losing jobs, and of not being able to obtain jobs, than most other groups in the community.

Census data reveal that the total number of Pacific Islands people who were unemployed and actively seeking work at the time each census was conducted rose from 3,645 in 1986 to 11,607 in 1991. The actual unemployment rate within the Pacific Islands population labour force (ie, the number of people in the part-time and full-time labour forces plus those unemployed and seeking work in the four weeks before the census) has risen as follows:

TABLE 3.1: *Percentage of the Pacific Islands labour force unemployed at the last three censuses*

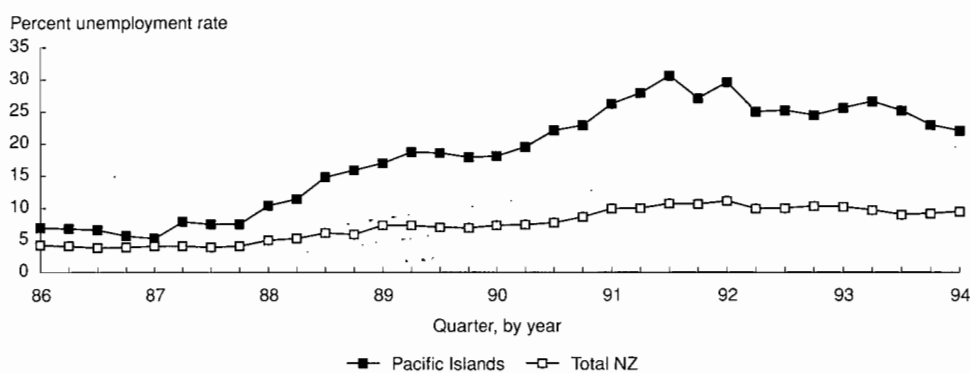
Census date	Male	Female
1981	10.2	10.0
1986	6.9	7.0
1991	21.5	20.0

Source: Department of Statistics, 1981, 1986 and 1991 Censuses of Population and Dwellings.

The Pacific Islands community was especially hard hit by unemployment between 1986 and 1991. The labour force unemployment figures of 21.5 and 20.0 percent respectively for males and females in 1991 were double those for the total population (10.2 and 10.0 percent). Expressed another way, whereas in 1991, 3.6 percent of the labour force was comprised of Pacific Islands people (ie, 55,638 of 1,547,822), Pacific Islands people made up 7.1 percent of those unemployed and seeking work (ie, 11,607 of 163,770) (Department of Statistics, 1993a).

The five-yearly population census provides a crude measure of unemployment, although it is useful for tracking long-term trends, especially over five or more enumerations. The Household Labour Force Survey provides the official measure of employment and unemployment. It is designed to measure changes between quarters, is seasonally adjusted, and provides the best indication of employment trends in the labour force. Information from surveys for the quarters March 1986 to March 1994 inclusive is provided in Figure 3.1.

FIGURE 3.1: *Percentage of Pacific Islands labour force unemployed, by quarters, March 1986-March 1994 from the Household Labour Force Surveys, seasonally adjusted*



Source: Department of Statistics, 1993b; tabulations prepared for the PHC.

The level of unemployment among Pacific Islands people peaked at 30.6 percent in the quarter ended September 1991, falling to 22.1 percent in the quarter ended March 1994. Had there not been a large increase in the flow of people to the Islands during the early 1990s, and a reduction in the inflow of people to New Zealand from the Islands (Figure 2.1 and Appendices 3 and 4), the level of unemployment within the Pacific Islands labour force could well have been even higher than that recorded between 1991 and 1993.

According to Krishnan et al (1994), the proportion of the Pacific Islands population of working age (15 years and over) who were employed for one or more hours per week, or unemployed but seeking work, fell from 71 percent in 1986 to 60 percent at the time of the 1991 census. They observed that while the economic recession and high unemployment had discouraged some people from entering the labour force, there had also been increased participation in education and training. This was particularly evident among young people aged 15-19 years, for whom the decline in labour force participation between 1986 and 1991 was substantial. The 50-59 year age group also experienced a pronounced fall in labour force participation. They considered that some older Pacific Islands men, who may have been forced out of the labour force by the loss of jobs in industries which traditionally employed them, had probably been forced into early retirement.

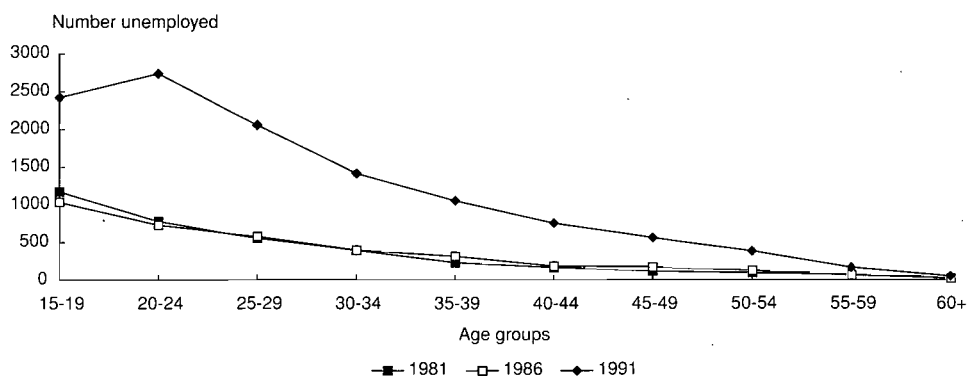
Differences between the Islands communities

Brake (1994) has commented on the link between tertiary qualifications and employment/unemployment among Pacific Islands people. In 1991, the proportion of Fijian men and women reporting they had tertiary qualifications was higher than that for Samoans and Tongans, with Fijians also having a lower level of unemployment.

Age groups affected by unemployment

As indicated in Figure 3.2, the increase in the total number of unemployed Pacific Islands people has been concentrated primarily in the population aged 15-34 years.

FIGURE 3.2: *Number of unemployed people in the Pacific Island Ethnic Group, 1981, 1986 and 1991*

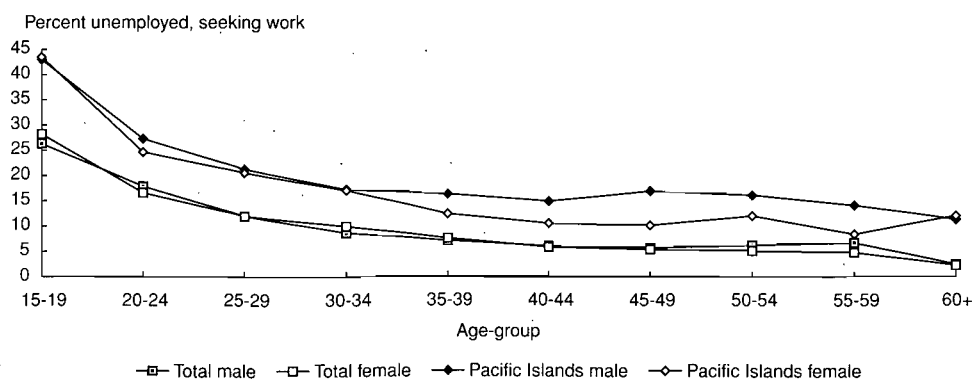


Source: Department of Statistics, 1981, 1986 and 1991 Censuses of Population and Dwellings.

As much as 44.5 percent of unemployed Pacific Islands people in 1991 were aged between 15 and 24 years – a disproportionately high level, given that only 33.1 percent of the Pacific Island Ethnic Group population aged 15 years and over belonged to this particular age group.

Details on the percentage of the labour force in each age group who were unemployed at the time of the 1991 census appear in Figure 3.3. While unemployment was concentrated in younger age groups (as it was in the general population), the relative impact was greater in the older age group. That is to say, the difference between the Pacific Islands and total population in the percentage of the labour force unemployed was wider in the 45-49 and 50-54 year age groups than it was in the 20-24, 25-29 and 30-34 year age groups. This suggests it had become more difficult for older Pacific Islands people than others of their own age to find work.

FIGURE 3.3: *Percent of the Pacific Island Ethnic Group labour force unemployed in 1991 compared with the total population*



Source: Department of Statistics, 1991 Census of Population and Dwellings.

General effects of unemployment on health

Pacific Islands participants at the PHC's meetings in 1994 perceived the lack of employment in recent years to be one of the major factors contributing to poor health among them. They pointed out that lack of employment restricted their ability to meet health costs or access health care, and resulted in some people losing interest in life, and smoking and drinking more. Cases of depression, other mental problems and violence among unemployed people were also referred to.

While there is much anecdotal information about the health of families of unemployed Pacific Islands parents in New Zealand as, indeed, there is for those of other ethnic groups, statistical data are lacking (see Public Health Association of New Zealand, 1992). Bethwaite, Baker, Pearce and Kawachi (1990) have made a plea for more research, and their comments apply as much to Pacific Islands people as to Maori and Palagi. They wrote:

“The pathways that lead from unemployment ...to ill health remain speculative. The simplest hypothesis links unemployment to a low standard of living. Reduced income impacts adversely on lifestyle and health seeking behaviours. The evidence of alcohol use is conflicting...with the unemployed having a different drinking pattern rather than consuming more alcohol...The damage to psychological health is easier to grasp...The unemployed have restricted social contacts, lack a normal time structure to their day, have reduced scope for decision making and lessened satisfaction from achievements. Furthermore the unemployed experience a reduction in social position and status with a component of humiliation and frustration associated with job seeking and rejection.”

While many studies world-wide have established the link between unemployment and deterioration of health, Ezzy (1993) has added a note of caution to the analysis of the relationship, particularly in regard to mental health.

“[Some] people [can become] adapted to being unemployed, finding it less unpleasant than employment because they [can] only gain work in oppressive occupations where monetary rewards [are] barely greater than those gained from social welfare. More recent empirical research demonstrates that the experience of the unemployed varies considerably depending on a variety of factors including: the person's age, gender, income, social support, reason for job loss, commitment to employment, satisfaction with previous work, expectation of returning to work, and length of unemployment.”

Given the different culture, the different social and family structure, the dependence on unskilled and semi-skilled jobs, and the low incomes received, the impact of unemployment on the mental and physical health of Pacific Islands people may be different to the impact on Palagi. Only a cross-cultural study could determine this. In the absence of such a study, evidence of the impact of unemployment in other countries and cultures should not be applied uncritically to assess the likely impact on the Pacific Islands population in New Zealand.

Personal incomes

The 1991 census indicated that just over 80 percent of Pacific Islands income earners had total incomes under \$20,000 in 1991, compared with 64 percent of income earners within the total population. The extent to which Pacific Islands people predominated in the lower income groups compared with the total population is shown in Table 3.2.

TABLE 3.2: *Distribution of income earners by income group in 1991*

Income group	Percent distribution of income earners in 1991	
	Pacific Islands	Total New Zealand
\$0 or less	11.9	5.0
\$1-\$5,000	10.0	9.4
\$5,001- \$10,000	25.3	22.5
\$10,001-\$15,000	17.1	15.8
\$15,001-\$20,000	14.9	11.4
\$20,001-\$30,000	15.3	18.0
\$30,001-\$40,000	3.8	9.1
\$40,001-\$50,000	1.1	4.3
\$50,000 and over	0.6	4.5
Total	100.0	100.0

Source: Based on data in Department of Statistics, 1993a.

The proportion of all income earners earning less than \$20,000 per annum in 1991 was highest in the Tongan and Tokelauan communities, the figures being 84.7 and 82.1 percent respectively. The proportions for the other communities were: 66.7 percent for Fijians, 77.8 percent for Cook Islanders, 78.5 percent for Niueans, and 79.3 percent for Samoans.

According to Brake (1994), Samoans and Tongans are more heavily concentrated in the lowest income group (defined as under \$15,000) than are Fijians, reflecting the higher proportion of Fijian men and women possessing tertiary qualifications and their lower level of unemployment.

A limited analysis of household as opposed to personal income was carried out by Davey (1993). The proportion of households in the low, middle, and high income quintiles in 1991 was determined in relation to their demographic composition (ie, households with people under one year of age, 1-4, 5-14, 15-19, 20-39, 40-59, 60-74, and 75 years and over). Because of the greater prevalence of extended family living, some Pacific Islands households have several income earners and do record a comparatively high total income (but not necessarily per capita income) compared with Palagi households.

Several factors have led to a decline in actual incomes for some Pacific Islands families in New Zealand during the last five years. These include:

- The declining value of real disposable incomes for wage and salary workers at the bottom end of the income scale. Real disposable income is income adjusted for income tax liability and inflation, as measured by the Consumers Price Index compiled by Statistics New Zealand. Using March 1981 as the base year with an index value of 1,000, the Real Disposable Incomes Index in March 1988 for the lowest 20 percent of wage and salary workers was 940; by December 1993 it was 922 after reaching a low of 911 in September (Department of Statistics, 1993c; Statistics New Zealand 1994.) The majority of Pacific Islands workers belong to this bottom income quintile.
- The rise in unemployment, resulting in an increase in the number and proportion of people dependent on state-provided income-support payments.
- The lack of growth in full-time jobs, compared with a steady increase in lower-paid, part-time positions which a growing number of people have to depend on.

The increase since 1986 in the proportion of Pacific Islands adults receiving welfare benefits (eg, unemployment benefit, sickness benefit, and emergency benefits) has been quite steep. In the case of those aged 20-39 years, the proportion of the group receiving a benefit rose from 40 to 68 percent between the 1986 and 1991 censuses. For the group aged 40-59 years, the increase was from 40 to 54 percent. The greater dependence on welfare benefits runs parallel with the decrease in the full-time labour force participation rate. Between 1981 and 1991, the proportion of Pacific Islands men aged 20-39 years in the full-time labour force fell from 96 to 77 percent. For males aged 40-59 years the proportion fell from 94 to 70 percent and for females from 49 to 43 percent (Davey, 1993).

While proportionately more Pacific Islands families now receive welfare benefits the value of the benefits has declined. In April 1991, benefits were cut (eg, the benefit for a solo parent with one child was reduced from \$255.14 to \$227.93 a week) (Jackman, 1993). There have also been changes in eligibility for certain benefits (eg, in August 1991, the minimum qualifying age for the domestic purposes benefit for sole parents was raised from 16 years to 18 years). According to Jackman (1993), before the changes were made the Department of Social Welfare identified Pacific Islands people to be over-represented in the different benefit categories, and more likely than most other groups to be affected by the cuts.

*Expenditure:
economic hardship
and health*

Pacific Islands people consulted by the PHC considered they had experienced a disproportionately high level of hardship during the previous five years.

Difficulties had been experienced not just because Pacific Islands people receive relatively low personal incomes and have a higher rate of unemployment, but also because they have more children and have major social commitments, such as contributions to churches and the remittance of money to family members in the Islands. In addition, funerals and weddings can place demand on limited family resources. According to Tukuitonga (1990), these traditional commitments, on top of the need to meet everyday living expenses, have perpetuated an underclass economic existence in New Zealand for many families. Moreover, because few have budgetary skills, some families continue this form of existence indefinitely (Tukuitonga, 1990).

Thomson (1993) has claimed there is a link between poor economic circumstances and the dental health status of pre-school children. Thomson found that while the dental health of Palagi children in the Manawatu-Wanganui Area Health Board region increased slightly between 1991 and 1992, that of Pacific Islands and Maori children deteriorated. The mean number of missing and filled teeth (MFT) for Pacific Islands children was 2.27 in 1991, but 3.47 in 1992. Changes in the mean MFT for Maori children were from 3.32 to 3.43, and for Palagi children from 1.44 to 1.37. Pacific Islands children showed a substantial rise in the prevalence of tooth decay (dental caries). Thomson attributed the deterioration in the dental health of Pacific Islands and Maori children to the growing economic difficulties experienced by their families. However, as Thomson did not provide information on family incomes and socioeconomic circumstances, this assertion cannot be verified.

Economic difficulties may have a significant influence on health. Situations referred to in the PHC's consultations with the Pacific Islands community included the dependence of families with not enough money on poor quality, overcrowded and damp housing; the difficulty in maintaining an adequate diet; and lack of enough money to purchase sufficient heating and clothes, or afford visits to a general practitioner or dentist. These circumstances have also been referred to by Tukuitonga (1990), who considers that Pacific Islands children are admitted to hospitals more frequently than the children of other ethnic groups, often in a more severe state, because families cannot afford adequate medical care.

The recent Quality of Life Survey, conducted by Auckland University for the City of Manukau, provided some evidence of the relative deprivation of Pacific Islands people in that particular part of the Auckland region (Manukau City, 1993). There were 370 randomly-selected households in the survey, of which 23 percent were headed by a Pacific Islands person. Of 681 respondents, 153 were Pacific Islands people. The proportion of Pacific Islands households was considered to be adequate for statistical purposes, with the maximum sampling error involved with the sample size being estimated at plus or minus five percent. The report notes that:

“...many of those carrying out the interviewing were [non-Palagi], although it was not possible to match appropriate ethnicities. Although some language difficulties were experienced, interviewers did not report more doubts about validity or reliability in relation to [non-Palagi] households. It is possible that ...Polynesian groups may have been particularly shy at having sensitive matters probed by this survey, however, there seems no obvious reason to doubt the overall integrity of [the] findings.”

Some of the areas where Pacific Islands people were disadvantaged relative to Palagi are listed below.

- Approximately 52 percent of the Pacific Islands people surveyed said they had been “affected by the Employment Contracts Act”, compared with 22 percent of Palagi respondents. The proportion of Pacific Islands people stating they were affected by the 1991 benefits cuts was also higher than among Palagi. Overall, 63 percent of Pacific Islands people were dissatisfied with their incomes (Palagi, 24 percent), and 46 percent were dissatisfied with access to employment (Palagi, 22 percent).
- Nearly 53 percent of Pacific Islands people described their financial situation as “bad” compared with 16 percent of Palagi; and 45 percent said they were worse off than a year earlier (Palagi, 35 percent).
- Whereas 50 percent of the Palagi heads of households reported they experienced no problems meeting their housing costs, the figure for Pacific Islands heads was only 32 percent. Indeed, 40 percent of Pacific Islands heads (but only 12 percent of Palagi heads) said they experienced “quite a few difficulties”.
- About 68 percent of Pacific Islands households could not afford “necessary things” (Palagi, 29 percent) and 87 percent said they experienced financial problems because of children (Palagi, 66 percent).
- Many Pacific Islands households said they often had to choose between buying food and paying bills (67 percent compared with 17 percent of Palagi households), and 62 percent said that because of financial problems they had to give up buying certain types of food (Palagi, 27 percent). Nearly 90 percent of the Pacific Islands households reported they experienced financial difficulties buying food (Palagi, 38 percent), about one-third describing their problems in this regard to be major ones.
- The proportion of Pacific Islands people who put off visits to health professionals was also greater than that for Palagi. Nearly 66 percent of Pacific Islands people reported putting off visits to doctors (Palagi 35 percent), and 68 percent visits to dentists (Palagi 41 percent). In addition, 48 percent of Pacific Islands respondents said they had not had prescriptions filled (Palagi 12 percent).

Social environment

Households and families

The households of Pacific Islands people contain relatively more people than do the households of most other ethnic groups in New Zealand. In 1991, when the national average household size was 2.8, the average for the Pacific Islands population was 4.2. Households headed by a Pacific Island person appear to have been getting smaller, however. In 1981, the average contained 4.7 people. Census data also indicate that in 1981, 53 percent of the total Pacific Islands population in New Zealand lived in households containing six or more people, but by 1991 the figure had declined to 42 percent.

In 1991, “one family only” households were the dominant household type, making up 64 percent of the number. This proportion was similar to the proportion such households formed in the New Zealand population as a whole (66 percent). Households composed of two or more families are a relatively common household type in the Pacific Islands population (8.5 percent compared with 1.7 percent in the total population), but single person households are not so common (5.3 percent compared with 20 percent nationally). Single-parent one-family households, though, appear to be increasing rapidly in number. In 1991, they accounted for 12.9 percent of all Pacific Islands households, a figure well above the national one of 9.2 percent. In 1986, such households represented 9.8 percent of the households of the population defined as being “Pacific Island Polynesian” (Department of Statistics, 1988). Although the 1986 and 1991 populations were defined differently, the different proportions of single-parent one-family households recorded in the two censuses may reflect an increase in the incidence of separation and divorce over the five-year period. In 1986, 5.5 percent of Pacific Islands males and 6.5 percent of females aged 15 and over who specified their marital status were either separated or divorced (Department of Statistics, 1988). By 1991, the figures had increased to 6.0 and 8.3 percent respectively (Department of Statistics, 1993a). Details on the composition of households appear in Table 3.3.

TABLE 3.3: *Household composition of the Pacific Island Ethnic Group in private dwellings in 1991*

Usual household composition	Household numbers	Percent
<i>One family only</i>		
Couples with/without children	20,919	51.3
One-parent family	5,256	12.9
Sub-total	26,175	64.2
<i>One family plus others</i>		
Couples with/without children plus others	4,794	11.7
One-parent family plus others	2,109	5.2
Sub-total	6,903	16.9
<i>Other</i>		
Two families with/without others	3,153	7.7
Three or more families	336	0.8
Non-family households	1,401	3.4
One-person households	2,154	5.3
Not elsewhere classified	693	1.7
Sub-total	7,737	18.9
Total	40,815	100.0

Source: Department of Statistics 1993a.

Rochford (1993) has recently examined the growth of sole parent families (as distinct from households) in the Pacific Islands population. Between 1987 and 1991, the number of Pacific Islands sole parents increased sixfold from 1,290 to 7,959 (ie, from a three percent share of all New Zealand sole parents to a seven percent share), with 32 percent of Pacific Islands families by 1991 being single-parent families compared with only 18 percent of Palagi families. The majority of Pacific Islands sole parents (who on average are younger than Palagi sole parents) have only one or two children, with more than half having at least one child under five years of age. Pacific Islands sole parents more commonly live with another family or with individual relatives than is the case among people of other ethnic groups, and are highly concentrated in the Auckland urban areas.

Rochford also found that Pacific Islands sole parents are less well off than Palagi sole parents, 74 percent of them in 1991 earning under \$15,000 per annum. Two-thirds of their number were not in the paid labour force in 1991, while a further 10 percent were unemployed and seeking work. While 84 percent of sole parents of Pacific Islands ethnicity were not engaged in full-time employment, only 75 percent reported they received full state-provided income maintenance at any time in the year preceding the census. Rochford (1993) considered this could indicate that some may be unaware of their eligibility for a benefit, and in other cases that they relied more on income support from their family than do other sole parents in New Zealand.

Davey (1993) has also looked at recent changes in the types of families and types of households in the Pacific Islands population. In particular, Davey looked at the family and income circumstances of people in each major life cycle group. A summary of the main findings is provided below.

Children aged 0-4 years

Davey found that the proportion of all Pacific Islands children under one year of age being brought up in single-parent households had risen from five percent in 1981 to 13 percent in 1991. The latter figure is much higher than that for Palagi children (seven percent). From the perspective of family type, 31 percent of Pacific Islands children under one year of age lived with a sole parent in 1991 (14 percent in 1981), principally with their mother, not father. The proportion of infants living in two-parent Pacific Islands families in 1991 (69 percent) was well below the proportion of Palagi infants of the same age group living in this situation (88 percent).

More Pacific Islands children aged 1-4 years are also being brought up in single-parent households: 16 percent in 1991 (Palagi, ten percent), compared with seven percent in 1981 (Palagi, five percent). When considered in terms of family type, the proportion of Pacific Islands children aged 1-4 living in a sole parent family in 1991 was identical to that for those under one year (ie, 31 percent compared with 14 percent in 1981).

The figures cited above mean that a growing proportion of young Pacific Islands children are being brought up in a situation of economic disadvantage. Davey (1993) provides information which shows that in 1991 only half the Pacific Islands children under one year of age who lived in single parent households had fathers in the labour force, with the situation being worse for those (the bulk) living with their mother: only one-tenth of these women had full-time or part-time jobs. The economic circumstances for Pacific Islands children living in two-parent families as far as the employment status of their parents was concerned was relatively better. About 83 percent of the children under one year in these families had fathers in employment, and in 27 percent of the cases the mothers worked. For those aged 1-4 years, the figures were 84 and 40 percent respectively. On the whole, though, children under five years in both single and two parent families are disadvantaged relative to Palagi children as far as total household income is concerned. In 1991, 64 percent of Pacific Islands children under five years lived in households that had incomes in the bottom two quintiles of the national income

structure. Davey notes that the relative disadvantage of Pacific Islands children with respect to household income could well be worse if the fact that Pacific Islands people on average have larger households than the remainder of the population is taken into account.

Children aged 5-14 years

While the proportion of the population of New Zealand who are aged 5-14 years is shrinking, the higher fertility rate means this is not the case in the Pacific Islands population.

Between 1986 and 1991, the household income circumstances of Pacific Islands children aged 5-14 years deteriorated. There was a decline in the number of households in the top two quintiles of the national income range (from about 43 to 37 percent), and a rise in the number in the lower quintiles. This contrasted with an improvement in the household income circumstances of Palagi children aged 5-14 years. Furthermore, the percentage of Pacific Islands children being raised by sole fathers who were unemployed or did not participate in the labour force rose to 64 percent compared with 34 percent in 1986. The labour force non-participation rate for sole mothers raising Pacific Islands children aged 5-14 was 65 percent.

More Pacific Islands children are living in single parent households now: about 18 percent lived in such households in 1991 compared with about 12 percent of Palagi children. But while far fewer Pacific Islands children live in two-parent households, a far greater percentage live in extended family households – about 32 percent in 1991 compared with nine percent of Palagi children. About 40 percent of Pacific Islands children under five years also live in extended family households, the level being four times higher than that for their Palagi counterparts (ie, ten percent).

Youths aged 15-19 years

Around 46 percent of Pacific Islands youths lived in extended family households in 1991, and 37 percent in two-parent situations. This pattern has not changed much since 1981. Relatively fewer Pacific Islands youths live by themselves compared with Palagi youths, perhaps because they have no income (36 percent had no personal income in 1991 compared with 25 percent of Palagi). Not only do Pacific Islands youths live in more crowded conditions than Palagi youths, by virtue of the greater importance of extended family living, but they also live in households with lower incomes.

Young adults aged 20-39 years

In 1991, 39 percent of young Pacific Islands adults lived with a partner and children in their own household, with a further 42 percent living in extended households. Only 32 percent of the men aged 30-34 years and 35 percent of the men aged 35-39 years had incomes over \$20,000 (compared with 70 and 72 percent of Palagi), while 22 percent of all men in the group depended on the unemployment benefit in the 12 months prior to the 1991 census, well up on the figure of nine percent in 1981. During the decade 1981-1991, the proportion of Pacific Islands men aged 20-39 years who engaged in the full-time labour force shrank from 96 to 77 percent.

Mid-life adults aged 40-59 years

Davey (1993) notes that 46 percent of Pacific Islands people in this age range lived with a partner and children in 1991 (Palagi, 50 percent), 36 percent lived in extended family households (Palagi, only six percent), and eight percent lived as the head of a single-parent household.

Between 1986 and 1991, the economic circumstances of these households worsened, there being a fall in the proportion of households in the top two quintiles of the national income structure. In addition, between 1981 and 1991 the proportion of men and women aged 40-59 years who received some benefit support rose from 40 to 54 percent, compared with a rise from 28 to 36 percent among Palagi men and women of the same age group.

Young elderly aged 60-74 years

Elderly Pacific Islands people are becoming slightly more evident in the national population. In 1981, they made up 0.7 percent of the national population aged 60-74 years, but 1.4 percent in 1991.

Relatively few "young" elderly Pacific Islands people live alone, such people making up only seven percent of the population aged 60-74 years in 1991, compared with a figure of 24 percent among Palagi "young" elderly. On the other hand, nearly half of all Pacific Islands people aged 60-70 years in 1991 lived in extended family households in comparison with only seven percent of Palagi.

Proportionately fewer Pacific Islands than Palagi "young" elderly had personal incomes over \$20,000 in 1991, with most having incomes in the \$5,001-\$10,000 range. Davey (1993) suggests this indicates far fewer Pacific Islands elderly have incomes other than national superannuation. Furthermore, ten percent of the Pacific Islands elderly had incomes in 1991 below \$5,000, a feature which may reflect their ineligibility for national superannuation. Notwithstanding their relatively low personal incomes, however, the average incomes of the households elderly Pacific Islands people lived in were, by virtue of the presence of several income earners in the extended family, higher than those of the households of elderly Palagi.

Older elderly aged 75 years and over

Like the "young" elderly, the "older" Pacific Islands elderly population live primarily in extended family households, but to a greater degree. In 1991, 67 percent of the "older" Pacific Islands elderly lived in such households compared with only four percent of their Palagi counterparts. While the receipt of social welfare benefits is all but universal for people aged 75 years and over, Davey (1993) considers this is less true for Pacific Islands people. Whereas in 1991, 99 percent of Palagi aged 75 years and over received benefits, only 87 percent of Pacific Islands elderly claimed them. On the other hand, Pacific Islands elderly are more likely to have family support inasmuch as it is far more common for them to live in extended family households.

Housing

Tenure

Pacific Islands people more than other groups depend on renting their dwellings. In 1991, 51 percent of the dwellings they occupied were rented, compared with a figure of only 23 percent for the total population. Many Pacific Islands families are unable to enter into home ownership because they have insufficient disposable income for a deposit on a house. While they often require large houses because of their larger family size, such houses are not often available at the lower end of the housing market. Those Pacific Islands families who do enter into home ownership usually end up acquiring small houses that may not meet all the living-space requirements of their families.

The dependence on rental housing, and in particular public sector rental housing, means that Pacific Islands families exercise relatively limited choice over the housing they occupy, are more likely than other groups to live in high density housing situations (attached houses), and are also more likely to occupy houses of poorer quality. According to Papali'i (1991), in the context of their low incomes and high unemployment, the main housing problems faced by Pacific Islands people are affordability, overcrowding and home designs. Common complaints concerning house design have been that there is a lack of space, there are not enough rooms, the toilet is located in the bathroom (which may be culturally unacceptable), the kitchens are too small, and there is insufficient space to hold church and village group meetings or accommodate visitors, friends and kin. Many Pacific Islands families conduct their family life and social gatherings in cramped conditions and cite overcrowding and difficulties sharing housing more commonly than Palagi do in their applications for state housing assistance. The demand for four to seven bedroom homes by Pacific Islands families in the Manukau branch area of Housing New Zealand is especially acute and largely unmet. It has been calculated that the demand of the Pacific Islands population in this particular area constitutes 68 percent of the national demand for larger houses (Papali'i, 1991).

Affordability is still the primary housing issue for most Pacific Islands families. Recently, there have been changes to the arrangements for subsidising rental accommodation. While it might be assumed the changes could have an effect on the budgets of Pacific Islands clients, especially if they are unemployed or in low paying jobs, and there could be important health consequences (eg, poorer nutrition because of reduced expenditure on food), the impact of the changes has yet to be assessed thoroughly.

Housing quality and health

There is a link between housing quality and health. Poor, low quality housing can be described as housing that meets some or all of the following criteria: it is badly ventilated and lacks rudimentary insulation as well as basic washing and cooking facilities; it may be temporary (eg, tents, cars, caravans); and it has insufficient bedrooms, bathroom facilities or living space for all the occupants (ie, it is "overcrowded").

Barnett (1975) drew attention to the poor housing of Pacific Islands people in the Auckland area two decades ago and wrote that:

"In a bid to maintain...close family ties and also to obtain accommodation at the cheapest possible rental, large families and groups of families are occupying homes which are substandard and provided with little or no facilities. These environmental conditions in themselves are prejudicial to the maintenance of a decent standard of living. The result is that children are being nurtured in unsatisfactory environmental conditions and growing up with feelings of frustration and antipathy towards society."

Barnett considered poor, overcrowded housing was contributing to the high incidence of tuberculosis among Pacific Islands people. He also suggested that impetigo and scabies among school-age children, as well as respiratory problems and gastro-intestinal illnesses, were also associated with overcrowded housing. In the case of Polynesian infants, Kerr (1981) confirmed the association between respiratory problems and damp, cold living environments, the latter to an unknown degree reflecting the lack of sufficient money to heat homes adequately.

The National Housing Commission in 1987-1988 attempted to identify the extent of "serious housing need" in New Zealand, and in the course of their nationwide survey drew attention to the poor housing circumstances of Pacific Islands peoples. The Commission defined "serious housing need" to be the situation where households were living in overcrowded, substandard, unaffordable housing, and where their rehousing – or that of individual members – was desirable because of poor physical and mental health or abuse. About 17,500 households nationwide were deemed to have a serious housing need. As many as 10,500 of these were in central and south Auckland, of which 5,250 were headed by a Pacific Islands person. In Wellington, Pacific Islands people headed 400 of the 1,000 households with a serious housing need. In a detailed study of 158 respondents, (including health and social workers), who were asked to identify the conditions making up serious housing need, virtually all of them linked poor housing with poor health. There was no specific reference to the Pacific Islands community by the respondents but the following remarks would appear to have covered aspects of their situation.

"In Auckland, hospital social workers and public health nurses determined a strong link between readmissions of children to Princess Mary Hospital, and the housing conditions to which they had returned. They also identified the difficulty in containing the spread of infectious diseases in houses that were significantly overcrowded."

"These workers had also noted new-born babies being taken home to caravans, garages, or damp conditions. Common complaints linked to poor housing [included] asthma, chronic ear, nose and throat and chest ailments."

"Mental health problems were also frequently reported. High stress, depression, apathy, resignation and low self-esteem were commonly cited... These conditions were compounded by extended periods in unsatisfactory housing" (NHC, 1988).

Waldegrave and Sawrey (1994) have attempted to assess the current extent of serious housing need in New Zealand. They used guidelines prepared by the Housing Corporation in 1990 as to what constitutes "serious housing need". That definition covered unaffordability, inadequate structures, inadequate facilities, overcrowding and associated problems, sexual abuse, violence, and special unmet needs relating to disabilities or illness. Waldegrave and Sawrey claimed that 40,000 households in New Zealand experienced serious housing need in 1992, and 48,800 in 1993. They estimated that Pacific Islands households made up 21 percent of all such households in the former year and 16.8 percent in the latter.

When the fact that Pacific Islands people made up about five percent of the population in 1991 is taken into account, the data provided by Waldegrave and Sawrey suggest Pacific Islands people experience serious housing need disproportional to the total population by a factor of four to one. This figure is questionable, however. The survey was not extensive, covering only three urban areas and one rural area, the sample size being 42 percent of those in serious need as measured by the Housing Corporation waiting lists as at March 1992. In addition, much reliance was placed on asking agencies and community groups in the different areas for their estimates of the proportions of people in serious housing need, with numbers being estimated later using the regional Housing Corporation waiting lists.

Kearns, Smith and Abbott (1991) and Smith, Kearns and Abbott (1992) have provided useful information on housing problems as perceived by Pacific Islands households themselves. They examined the effect serious housing need was having on the mental health of two sections of the general population in Christchurch and Auckland: those on the waiting list for state rental housing, on the one hand, and people with established psychiatric disorders on the other. At the time of the survey, Pacific Islands households made up 45 percent of all the households on the waiting lists of the Housing Corporation in Auckland, and six percent of those in Christchurch.

Responses to questions on the major housing problems encountered were provided by 58 Pacific Islands households in the two centres (Table 3.4).

TABLE 3.4: *Housing problems of Pacific Islands households in Auckland and Christchurch, 1988*

Problem	Percent of respondents reporting the problem
Overcrowded, insufficient space	25.9
House too cold/damp	19.2
House too expensive	13.2
Poor condition of interior	7.8
Pests, vermin, dirt	3.2
Lacking facilities	2.3
Neighbourhood unsafe	2.0
Poor condition of exterior	1.7
Neighbourhood unsafe (traffic)	1.4
Neighbourhood too noisy	0.9
Nowhere safe for children to play	0.3

Source: Kearns, Smith and Abbott, 1991.

More Pacific Islands than Palagi households reported that housing expense was a major problem. As to health problems considered to be dwelling-related, those cited by Pacific Islands households included colds, running noses and influenza (reported by 19 percent of respondents), hygiene problems (four percent), asthma (three percent) and unspecified stress caused or exacerbated by housing (two percent) (Kearns, Smith and Abbott, 1991).

Concerning coping strategies, 15 percent of the Pacific Islands households said they were looking for a new place to live, but 14 percent were unsure what to do. Kearns, Smith and Abbott linked inability to take action with household size. They commented:

“[Palagi] households claim to take a more positive stance in trying to solve their housing problems. However this is likely related to their smaller household sizes. Faced with large households in an expensive city, it is no wonder that...Pacific Island households give up and can offer no explicit strategies for alleviating their problems.”

The 1993 Manukau City Quality of Life Survey referred to in an earlier section of this chapter also provided information on Pacific Islands people’s housing in that part of Auckland (Manukau City, 1993). Some key findings were:

- Of the Pacific Islands households, 24 percent contained six or more people compared with three percent of the Palagi households surveyed.
- Only 68 percent of Pacific Islands heads of households felt satisfied or very satisfied with their housing (Palagi, 84 percent).

- In the opinion of the interviewers, whereas only six percent of the Palagi houses surveyed were “fairly run down”, such an assessment was given to 12 percent of the houses occupied by Pacific Islands people.

These details, combined with other details from the survey listed earlier, suggest that the Pacific Islands community, at least in Manukau, is not only experiencing day-to-day household income-expenditure difficulties which might endanger their health status, but housing ones in the areas of affordability, overcrowding and physical quality that could also have a negative effect on health.

Crowding and overcrowding

Overcrowding warrants additional consideration because it is one of the most frequently cited causes of ill health attributed to poor housing.

Overcrowding is often considered to contribute to mental health problems, stress, respiratory problems and the spread of infectious diseases including tuberculosis. Those interviewed in the National Housing Commission survey in 1988 believed it contributed to violence, drinking and gambling, and to higher levels of asthmatic and bronchial conditions in children. It has also been reported that diseases of the ear are more common among children who come from overcrowded homes (Pomare, 1988), and that overcrowding is conducive to the spread of hepatitis B infection (Milne et al, 1987).

Despite its implications for health, measurement of the extent of overcrowding within the Pacific Islands population, or any other section of the national population, remains difficult.

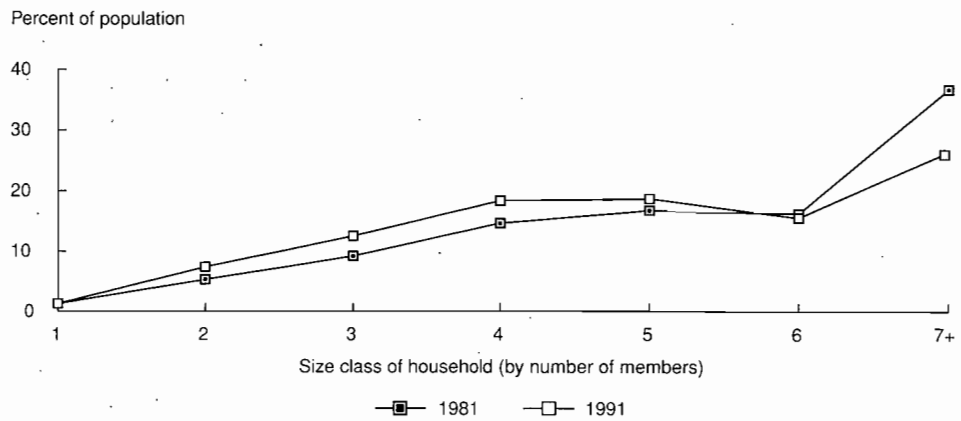
In 1985, the Department of Statistics analysed what it termed “crowding” (as distinct from “overcrowding”) among Pacific Islands and other households in New Zealand using information collected in the 1981 census (Department of Statistics, 1985). The Department defined “crowding” to exist where there was more than one person per room, counting bedrooms, living rooms and kitchen only. Using this definition, they found that while Pacific Islands people’s households represented only two percent of the total number of households in New Zealand, they made up 14 percent of all the “crowded” homes in the country. This high level was attributed to the larger size of Pacific Islands nuclear families, the system of extended living, lower incomes and the lack of housing choice.

Published data from the 1986 and 1991 censuses are deficient in identifying crowding. Statistics New Zealand has not published data from the last two censuses in the same format as the 1981 census (ie, the number of occupants in relation to the number of bedrooms and kitchen and living room). Our understanding of change in the degree of crowding in Pacific Islands households since 1981 is, therefore, limited to less precise measures.

One such surrogate “measure” is the average number of persons per private occupied dwelling. As already mentioned, the average size of Pacific Islands people’s households has been shrinking, reaching 4.2 people in 1991. A second “measure” is the proportion of the population living in households with one through to seven or more members.

Between 1981 and 1991, there was an increase in the proportion of the Pacific Islands population living in two, three, four and five member households, and a reduction in the proportion of the population living in households with six or more members (Figure 3.4). Notwithstanding this change, however, a greater proportion of the Pacific Islands than the national population still live in large households. For example, whereas 11 percent of the national population in 1991 lived in households with six or more members, the proportion of the Pacific Islands population in such households was 42 percent (Table 3.5).

FIGURE 3.4: *Percent of Pacific Islands population living in each size class of household*



Source: Department of Statistics, 1981 and 1991 Censuses of Population and Dwellings.

TABLE 3.5: *Number of persons living in each size class of household in the 1991 census*

Number in household	Pacific Islands		Total New Zealand	
	Population	Percent	Population	Percent
1	2,157	1.3	235,986	7.3
2	12,822	7.4	763,026	23.6
3	21,501	12.5	601,290	18.6
4	31,548	18.3	780,840	24.1
5	32,055	18.6	493,845	15.1
6	26,946	15.5	210,690	6.5
7 or more	45,498	26.4	152,238	4.6
Total	72,527	100.0	3,237,915	100.0

Source: Department of Statistics, 1991 Census of Population and Dwellings.

There are very large differences between the ethnic groups within the Pacific Islands community in the distribution of the population across the household-size groups. Whereas only 23 percent of the Fijian population lived in households containing six or more members in 1991, the proportions were 34 percent for Cook Islanders, 39 percent for Niueans, 46 percent for Samoans, 48 percent for Tongans, and 58.5 percent for Tokelauans.

It is not possible to assess the extent to which, other than high fertility, the cultural practice or preference for living in extended family situations influences the size of households *vis-à-vis* the need of families to share accommodation because of lack of sufficient money to afford separate housing. However, there was general agreement at the consultation meetings held by the PHC that overcrowding is a problem, with people being well aware of the link with communicable diseases, especially among

children. An indication of the problem is also evident in the complaints of Pacific Islands people concerning their housing in the study of serious housing need in Auckland and Christchurch conducted in 1988 (Kearns, Smith and Abbott, 1991). About 26 percent of the Pacific Islands people interviewed in 1988 said their current dwelling was overcrowded and had too little space, overcrowding in fact being the most important of the housing problems they referred to.

Parenting

Pacific Islands families devote a greater amount of time to child care than Palagi families, mainly because Pacific Islands women conceive more children during their reproductive life.

In the Islands, it is customary once children begin to walk to assign them to the care of older siblings, with those adults who are working around the village being expected to play a supervisory role. This allows parents to devote time to activities such as gardening. The system of child care in New Zealand is different.

“Having settled in New Zealand, parents find they must work long hours in order to survive in a different lifestyle in urban areas, and to be able to send extra funds to relatives back home...However, New Zealand neighbourhoods lack [the communal organisation found in Pacific Islands villages], and their everyday hazards...limit the extent to which children can move round on their own. Older siblings may be given the work of caring for young children, but as they too are facing the many demands of a new way of life such work can place an unfair burden on them.”

“Some parents meet the situation by choosing shift work so that one parent can remain at home, although some of this time is required for sleep. Others may call on nearby relatives or friends to help, or bring grandparents over to New Zealand specifically to do the child-minding. This may result in one adult minding up to four young children, a task which is very demanding and tiring for a whole day” (Social Advisory Council, 1985).

The supervision of young children remains family-centred for most families, although, in the decade since the above statement was prepared, more have made use of childcare centres, and unemployment has resulted in some fathers spending more time at home looking after children.

Metge and Kinloch (1980) have discussed the nature of child raising after the toddler stage. They noted that in Samoan families young children are expected to become independent as quickly as possible and look out not only for themselves but younger brothers and sisters as well. This means they must assert themselves and speak up, or take a back seat.

“To Palagis the Polynesian practice of throwing children into real-life situations and leaving them to fend for themselves can be dangerous and is even interpreted as neglect. Clinical staff in New Zealand hospitals keep Samoan children until they no longer need close supervision, because they have found that children discharged earlier have to be readmitted, having been immersed in the hurly-burly of family life without a protected convalescence” (Metge and Kinloch, 1980).

Tukuitonga (personal communication, July 1994) believes the interpretation of Metge and Kinloch to be one-sided. Tukuitonga considers that readmission of Pacific Islands children to hospitals is not due to the fact that children are left to fend for themselves but, rather, the failure of health workers to explain adequately their diagnosis and the follow-up requirements.

Metge and Kinloch went on to describe the disciplining of children.

“...approved and disapproved behaviour is rewarded or punished immediately, briefly and physically, with or without words – by a swift hug, a clip around the head or a twisted ear. This is intended in particular as a means of impressing the approval or disapproval on the child’s mind: a sensible child does not wait for a second blow but quickly gets out of reach – and is allowed to do so. If a beating is prolonged past a few blows, something has gone wrong. Properly, punishment should be succeeded before too long by an indication of affection, restoring the relation to equilibrium” (Metge and Kinloch, 1980).

The physical chastisement of children by Pacific Islands parents is an area which intermittently receives much media attention, especially where injuries occur. Ritchie and Ritchie, in their analysis of violence in New Zealand, have expressed the need for a cross-cultural view on child abuse.

“Throughout all Polynesian societies, high, low, old and new, status rivalry leads to respect behaviour. The greater justification given by Polynesian parents for the use of physical punishment in child rearing is the need to inculcate respect from the earliest age. And children who are hit hard at home find solace elsewhere, with other relatives or amongst their peers. The frequency of physical punishment in Polynesian families may seem surprising in cultures where small babies and toddlers are so valued and indulged and where great emphasis is placed on... the ethic of love” (Ritchie and Ritchie, 1993).

Ritchie and Ritchie also quoted the comments of the Western Samoan Consul to New Zealand in 1988, in reply to the allegation of a Palagi radio commentator that Pacific Islands cultures condone violence towards young people. The Consul said:

“Samoans certainly believe in some strict form of discipline which does include corporal punishment – I wouldn’t call it violence. Parents do chastise their children if need be, and they will administer the rod. But ninety percent of the time it is done properly and with love” (Ritchie and Ritchie, 1993).

Ritchie and Ritchie passed their own judgment on the matter:

“The consul’s admission, that in ten per cent of cases it is not done properly, is a clear indication that something should be done to change the situation. Just what, is of course a matter for Samoans to decide. But the need for changes to be made is clear” (Ritchie and Ritchie, 1993).

In light of the rough and tumble life of young Pacific Islands children, and media statements about undue physical disciplining, it is interesting to find that in the Auckland Area Health Board Region in 1991 the rate of hospitalisation of children for intentional injuries inflicted by others was not as high as it was among other children. The discharge rate for Pacific Islands children aged 0-14 years was eight per 10,000 population compared with rates of nine per 10,000 and 24 per 10,000 for Palagi and Maori children respectively (Children’s Health South Pacific, 1993). There is no information on whether Pacific Islands children are less, or more, likely to be presented for medical attention than the children of the other ethnic groups.

There have been changes in the nature of the relationship between children and parents. Time and again at the PHC’s meetings with the Pacific Islands communities, reference was made to the greater “freedom” of choice being exercised by Pacific Islands children in New Zealand, and to the breakdown of parental control. This was attributed, in one way or another, to the influence of Palagi culture and the adoption of a new life style

among the young. The more extreme manifestations include truancy, alcohol and drug use, petty crime, and departure from home to live in the streets. Some parents at the meetings spoke of how little impact they now have in making their children follow their instructions. Others mentioned that they had made a compromise with their children to allow them a degree of freedom to do what they want in exchange for following the wishes of the parents in certain matters. Sole female parents seem to have particular difficulties. Some Samoan sole mothers said they found it difficult to adopt an assertive, disciplining role because it is traditional for men to fulfil this.

Youth offending

According to Maxwell and Morris (1993), three percent of all juvenile offenders in 1978, and seven percent of the total in 1990, were of Pacific Islands ethnic origin. However, the Pacific Islands population has a higher fertility level and a younger age structure than the remainder of the population. The increase in offending over the 12 years, rather than exceeding, has in fact been in tandem with the rising share of Pacific Islands youth in the total juvenile population.

Unpublished police statistics show that in the year ended September 1989, dishonesty offences made up 76 percent of all detected offences committed by Pacific Islands male juveniles, with theft (42 percent of all offences), burglary (19 percent) and car conversion (12 percent) being the three most important components of this category. They were followed in importance by property offences (nine percent), drug offences (seven percent), violence (six percent) and traffic offences (one percent). The offending profile was quite different from that for Palagi juveniles for whom theft (27 percent), burglary (12 percent), and car conversion (seven percent) are less prominent in the detected offences, but property offences (16 percent), drug offences (15 percent) and traffic offences (ten percent) are relatively more common (Maxwell and Morris, 1993).

Prior to 1989, juvenile offenders and other youth at risk were usually taken into "care, custody or guardianship" by the Department of Social Welfare, but the numbers have dropped substantially since the implementation of the Children, Young Persons and their Families Act, 1989. The Act resulted in the introduction of the Youth Court, and family group conferences. Procedures include involving the family in decisions, strengthening child-family relationships, and placing children back in the care of their family where appropriate.

Maxwell and Morris (1993) have examined the working of the Act using a sample of 671 cases during a three month period. They found that while Pacific Islands youths comprised eight percent of the population in the sample areas, they made up 16 percent of the distinct Police cases, 15 percent of the family group conference referrals, and 11 percent of the Youth Court appearances. Palagi youth, who made up 74 percent of the population of the same group, accounted for only 39 percent of the Youth Court Appearances and about the same proportion of family group conference referrals and distinct Police cases.

Fergusson, Horwood and Lynsky (1993a, also commented on by Davey, 1993), found from information collected in their 14-year longitudinal study of the development of children in Christchurch that Pacific Islands children in terms of self-reported crime had significantly higher rates of offending than Palagi children. By the age of 14 years, 50 percent of Pacific Islands children said they had committed some type of offence (Palagi children, 39 percent), 40 percent had committed a property offence, and 25 percent had committed a violent offence (Palagi children, 17 percent). Relatively more Pacific Islands than Palagi children had also had contact with the Police by age 14 years (15 compared with six percent).

However, Fergusson, Horwood and Lynsky also found that the offending differences between Pacific Islands and Palagi children (as well as between Maori and Palagi) were largely removed when the data were controlled for family and environmental factors. In a subsequent report, they noted there was a discrepancy among children of different ethnic backgrounds in the differences between offending data and self-report data. From their own sample they found some support for the hypothesis that children of Pacific Islands descent who offend are more likely than Palagi offenders to come to official attention, thereby leading to a bias in official statistics which exaggerates ethnic differentials in offending rates. Their overall conclusion was that, at least in their own sample, ethnic differences in offending rates can be explained as being due largely to the combined effects of the socially disadvantaged status of Pacific Islands children and bias in police contact status, both of which create the misleading impression that ethnicity is an important factor in offending behaviour for children under 15 years of age (Fergusson et al, 1993b).

Substance abuse

There is a paucity of information on drug abuse among Pacific Islands people in New Zealand. For instance, information does not appear in the survey report on drug abuse in the Auckland area conducted by the University of Auckland in 1990 (Black and Caswell, 1993). Apparently, Pacific Islands people who attended a meeting during the development stage of that survey did not want an analysis of the replies of Pacific Island respondents to be presented separate from the analysis of the replies of all other respondents.

An indication of the prevalence of drug-taking among young Pacific Islands people was provided by the nationwide random survey of 24,000 secondary-school students (ten percent of all such students) conducted by the Foundation for Alcohol and Drug Education in 1987 (FADE, 1988). Nearly five percent of the pupils surveyed were "Polynesian" (a term used to distinguish Pacific Islands youth from Maori youth). While few Polynesian students at that time were using solvents or marijuana, a quarter were using painkillers, and one-sixth alcohol. Overall, however, the current use of drugs was much less common among Polynesian students than among Maori and Palagi students (Table 3.6).

TABLE 3.6: *Percentage of secondary school students using different substances in 1987*

Category	Percentage use among students		
	Polynesian	Palagi	Maori
Painkillers	24	41	30
Alcohol	16	54	48
Tobacco	10	18	29
Marijuana	6	14	28
Solvents	3	2	3

Source: FADE, 1988.

While solvent abuse is relatively minor in prevalence compared with the use of other substances, it does have its dangers. It is linked with respiratory damage, damage to the central nervous system, blood abnormalities, and hepatic and renal damage.

A 1985 study of solvent abuse in Hamilton found that a high proportion of the abusers were Pacific Islands and Maori children aged 9-16 years (Britt et al, 1985), and this appears to be the case elsewhere as well. The sniffing of solvents emptied into plastic bags is primarily a group activity. The Hamilton study noted that the children in such groups "tend to have most of the characteristics of gross social disadvantage, such as low socioeconomic status, unemployment, belonging to a large family, overcrowding, a family history of alcohol abuse and anti-social behaviour, disorganised homes and identification with an often discriminated against ethnic group". The abusers were also described as having low self-esteem, poor educational achievement, a high level of truancy, a sense of hopelessness and failure, being apathetic and having no future orientation. In this situation, habitual use of solvents is often socially determined (ie, the use of them is part of a distinctive subculture and provides the participants with a sense of belonging to a group) (Britt et al, 1985).

Seven years have passed since the FADE survey, and nine since the Hamilton survey. In the interim, Pacific Islands youth have experienced major changes, including the rise in the proportion of young people living in sole-parent families, and the rise in youth unemployment. In addition, drugs appear to have become more accessible to young people in recent years. The level of drug use might now be different to the level in 1987, and a survey similar to the first FADE survey is needed to determine the current prevalence. Certainly, the Pacific Islands people consulted by the PHC in 1993-1994 identified the use of drugs by young people to be of particular concern to them. Some attributed substance abuse to peer pressure and a breakdown in parental control.

Turning to adults, men rather than women are at the greatest risk either as users or dealers of drugs. Justice Department statistics indicate that 141 Pacific Islands men and 14 Pacific Islands women were convicted of drug offences in 1992 (Spier and Norris, 1993). First time admissions to mental institutions for diagnosed drug dependence or abuse are relative few, totalling only 36 between 1987 and 1991. Twice as many people were admitted for alcohol dependence or abuse. However, as discussed in the section on mental health in Chapter 5, it is believed the number of people affected by drug abuse is underestimated. Some people admitted for psychiatric care who in reality have a drug-induced psychosis are not being diagnosed correctly.

*Domestic violence
and the use of
women's refuges*

Pacific Islands people who attended the PHC's consultation meetings attributed domestic violence to lack of employment, insufficient money, overcrowding, alcohol abuse, family problems, and the lack of understanding between parents and children.

One of the indicators of family violence in New Zealand is the number of women and children admitted each year to a women's refuge. Statistical information is published annually by the National Collective of Independent Women's Refuges. The profile which follows is based on information contained in the annual reports for the years 1990-1993.

In 1990, Pacific Islands women and children made up 10.6 percent of all the women and children admitted to a Collective refuge in New Zealand, and 9.5 percent in 1992. These figures are relatively high compared with the Palagi population. Palagi women aged 15-50 years and children aged 0-14 years outnumbered Pacific Islands people in the same groups in 1991 by a ratio of 11.6 to one, but in 1992 the ratio of Palagi to Pacific Islands people admitted to refuges was a lower 3.7 to one (ie, 36.9 percent of the clientele that year were Palagi compared with a 9.5 percent contribution by the Pacific Islands population).

The area where the Pacific Islands population is significantly under-represented in the refuge statistics is in servicing. Despite contributing nearly ten percent of all the clients taken in by refuges, only 1.7 percent of the advocates (paid and unpaid refuge workers) belong to the Pacific Islands population. This under-representation in staff, and the dominance of Palagi workers in refuges, has persisted for many years. It led the Collective in their 1992 report to comment on the need for pro-active recruitment within the Refuge movement. The situation had not changed by 1993, suggesting that the movement may be struggling to deliver a culturally appropriate service to Pacific Islands women.

Information is also available in the Collective's annual reports concerning the sex and ethnicity of abusers who force women and children to take shelter in a refuge. In 1992, 96 percent of the abusers were male and four percent female, with most being in the 21-40 year age group. Most abusers are either the husband or partner (80 percent of the cases), followed (from the perspective of abused children) by fathers (nine percent) and brothers. Of all the male abusers in 1992, ten percent were Pacific Islands people, the level being nearly one-quarter that of Maori and Palagi males who collectively made up 86 percent of all male abusers. Although few abusers are female, Pacific Islands women made up a disproportionate share of female abusers of all ethnic groups in 1991 (ie, 16 percent compared with contributions of 35 percent by Maori and 39 percent by Palagi).

While the Collective helps women to obtain non-molestation orders and new housing, statistics on what happens to Pacific Islands women as distinct from Palagi and Maori women leaving refuges are not provided in the annual reports. Although the information as a whole indicates that 64 percent of women make a fresh start in life and do not return to their partners, the pattern may be very different for Pacific Islands women. Fewer are involved in the full-time workforce, suggesting there is less scope for becoming independent; yet a higher proportion do live in an extended family situation.

Adult criminal offending

According to the Department of Justice, 5.7 percent of all non-traffic offences resulting in a conviction in 1991 and in 1992 were committed by people of Pacific Islands ethnicity (Spier, Norris and Southey, 1992; Spier and Norris, 1993).

Most Pacific Islands people convicted of offences are male (ie, 87 percent in 1992). Expressed another way, men convicted of offences in 1992 outnumbered women convicted of offences by a ratio of 6.5 to one.

The PHC was not able to obtain access to criminal offending information by age group to allow age-standardised offending rates to be calculated before the publication of this report. Only the crude, unstandardised rates for the population aged 15 years and over were calculated. The crude conviction rate for Pacific Islands males in 1991 was 520 per 10,000 compared with 341 per 10,000 for the total male population aged 15 years and over. The crude rate for Pacific Islands women, on the other hand, was 64 per 10,000, being below that of 69 per 10,000 for the total female population.

Details on the convictions of Pacific Islands people in 1992 by type of offence are provided in Table 3.7.

TABLE 3.7: *Number of court cases resulting in a conviction during 1992, by type of offence (excludes traffic offences)*

Offence	Pacific Islands people		Total New Zealand		Pacific Islands people's percent share of the total		
	Male	Female	Male	Female	Male	Female	Total
Violent	799	61	6,739	547	11.9	11.2	11.8
Other against person	54	5	1,023	141	5.3	3.5	5.1
Property	978	264	16,773	4,388	5.8	6.0	5.9
Involving drugs	141	14	5,637	1,014	2.5	1.4	2.3
Against Justice	294	26	4,399	656	6.7	4.0	6.3
Against good order	230	9	3,472	339	6.6	2.7	6.3
Miscellaneous	72	14	4,924	2,120	1.5	0.7	1.2
Total	2,568	393	42,961	9,205	6.0	4.3	5.7

Source: Spier and Norris, 1993.

Violent offending is the main area where Pacific Islands people make up a disproportionate share of all persons convicted. In 1991 and 1992, about 12 percent of those convicted for such offences were Pacific Islands people. Most offenders are male – 93 percent in 1992 and 97 percent in 1991. However, the number of Pacific Islands women convicted of violent offences in 1992 (61) was double that in 1991(28).

Ritchie and Ritchie (1993) have commented on the cultural context of violence in general, and consider that Islands groups do differ in the way and the extent to which aggression is expressed. They believe this reflects the nature of the Islands environment, in particular the distinction between the cultures of the “high islands” and those of the atolls.

“Atolls generally have tiny populations and, since there is nowhere else to go, the people are forced to maintain good relationships with one another. Atoll dwellers...have never developed the cult of warfare, with its tales of heroism and the aggrandizement of aggression... Blood sacrifice, human sacrifice and cannibalism are not found in the atolls of the Pacific, whereas the high islands [Samoa, Tonga, Fiji] almost all had such traditions prior to the arrival of Christianity...”

“All that is in the past. How does it relate to New Zealand now? From this background one would expect to find low rates of violence in recent immigrant groups from atoll cultures, such as the northern Cooks, the Tokelaus and Niue. And this is the case.” (Ritchie and Ritchie, 1993.)

Ritchie and Ritchie did not provide statistical evidence to back up their assertion.

Other areas in the criminal conviction statistics where Pacific Islands people contribute a disproportionate share of offenders relative to their 4.9 percent share of the total population are convictions against good order (ie, disorderly behaviour, offensive language, carrying offensive weapons), against the administration of justice (eg, failure to comply with conditions imposed for bail, escaping from custody) and, to a lesser extent, those involving property (burglary, theft, fraud, arson, motor vehicle conversion, receiving stolen goods, wilful damage). These last three named offences are also the main ones where female offending occurs. The share of all male and female convictions for drug offences is, on the other hand, relatively small compared to the proportion of Pacific Islands people in the total population.

A profile of prison inmates in 1991 has been prepared by the Department of Justice (Baybrook and Southey, 1991). It shows Pacific Islands males made up nine percent of the total male prison population, and Pacific Islands females five percent of the total female prison population. About 76 percent of all male inmates were aged between 15 and 34 years.

Coping with stress

The account of the socioeconomic circumstances of Pacific Islands people that has been provided in this chapter suggests the community could be experiencing a relatively high level of stress in a number of areas (eg, unemployment, low income, economic hardship, family breakdown, overcrowding, poor housing, parenting, and adult criminal offending, especially violent offences). Each of these areas contributes to ill health in one way or another.

At the same time, however, there is evidence that Pacific Islands people, through their personality traits, are able to minimise the impact of stress. Theodore and Nancy Graves in the mid 1980s verified this in their study of the relationship between stress and the physical and mental health of people living in Auckland (Graves and Graves, 1985). They compared the responses of 228 Samoans, 212 Cook Islanders and 224 Palagi New Zealanders living in the same working class neighbourhoods to questions on their health in relation to their socioeconomic circumstances.

Their first finding was that the source of “situational stress” for Pacific Islands people was different to that for Palagi. Palagi reported more problems from poor relations with authority (ie, at work and with the law). Pacific Islands people seemed to have learned better strategies for coping with authority, but more reported stress in money matters (44 percent of Pacific Islands respondents) and kinship relations (eg, visitors or relatives staying at home, unexpected expenses). The analysis showed that Pacific Islands people:

“...are more likely to run out of money and receive a notice from a debt collector and are more likely to have had relatives living with them or experience the death of someone close to them or the birth of a child. These situation stressors all follow from their larger families and obligations to kinsmen, both financially and through hospitality, which put a strain on their resources even though their incomes are roughly comparable to those of their European neighbors.” (Graves and Graves, 1985).

Their second finding related to personality characteristics. In previous research on stereotypic perceptions, Graves and Graves had found that Palagi emerged as prototypic “Type A” personalities (self-reliant, arrogant, ambitious, loud and brash, adventurous, adaptable), whereas Polynesians were seen as exhibiting mostly “Type B” characteristics (light-hearted, easy-going, unambitious, gregarious, generous, with a lack of time urgency). In the Auckland survey, a larger proportion of Polynesians than Palagi reported themselves to be “Type B” than “Type A” in character on every item used by Graves and Graves to identify psychological characteristics. Graves and Graves concluded that:

“...this relaxed, easygoing approach to life could be an important factor in the ability of [Pacific Islands migrants] to sustain a heavy dose of stressful situations in their new urban environment without even as much physical breakdown as their European counterparts”.

This conclusion was based on the fact that Pacific Islands people reported fewer health problems than the Palagi sample. For example,

“...they [were] significantly less likely to display the psychological tensions and pressures which manifest themselves in the form of insomnia, nervousness, and a variety of little accidents. They also [reported] significantly fewer days absent from work for health reasons and fewer visits to doctors, hospitals and clinics than Europeans in [the] sample. It is probable that Pacific Islanders underuse formal medical facilities because of cultural and linguistic barriers. Nevertheless, the convergence of alternative data [was] noteworthy”.

With this evidence, Graves and Graves (1985) felt that:

“In general, despite substantial disadvantages of background experience and training and a larger number of dependent members to support, Pacific Island immigrants to New Zealand appear to be making a better adaptation to urban life than their non-Polynesian neighbours”.

Kearns, Smith and Abbott several years later reached a similar conclusion with respect to the link between housing and health among Pacific Islands and Palagi households experiencing serious housing need in Auckland and Christchurch. They found that while more Pacific Islands than Palagi households reported housing expense was a major problem, and that Pacific Islands households appear to fare worse with respect to respiratory ailments associated with their dwellings, Pacific Islands households in fact reported less stress and mental illness symptoms than Palagi households (Kearns, Smith and Abbott, 1991).

Quite surprisingly, Graves and Graves (1985) found that the area of Pacific Islands life which created rather than alleviated stress; and in itself contributed to ill health, was the social support area. Graves and Graves had assumed that:

“...the tendency of Polynesian immigrants to employ group-oriented strategies in adjusting to their new urban environment, particularly the use of a wide circle of relatives and coethnics as major resources in the city, would be an important factor in reducing symptoms of adaptive stress and promoting better mental and physical health than more individualistic and self-reliant people”.

However, the social information collected (including household size, number of relatives and workmates and friends in the city and close by, the frequency of visits and the amount of money spent on kin obligations) on the whole did not support the hypothesis that social supports do in fact provide a buffer against stress. In the case of the Cook Islander and Palagi samples, the overall correlation between social support and health symptoms was very low, with just a few statistically significant correlations occurring for certain of the support variables in the direction anticipated by the hypothesis. For Samoans, though, they found that where particular support variables were significantly correlated with health status, the relationship went in the opposite direction. They concluded from this that although the Samoan community may in itself be helpful to new migrants in buffering against stress, this role was offset by considerable pressure on migrants to reciprocate with monetary contributions that are both costly and stressful in the new environment. Information was provided showing that the relative cost of “maintaining a good name” by making contributions is far higher for Samoans than other groups. In their sample, Graves and Graves (1985) found that the average Samoan contributed \$1,500 during the previous year for community and kinship obligations compared with \$500 by Cook Islanders and \$250 by Palagi. In addition,

“Samoans appear to suffer stress from various forms of nonmonetary reciprocity: food, services, hospitality, etc. Consequently, among Samoans our index of “mutual aid” is strongly associated with higher levels of reported health symptoms...whereas among the other two groups this association is negligible”.

Graves and Graves carried out their study when unemployment among Pacific Islands people was less than half the current rate, and economic difficulties were not as extreme. This raises the question: have Pacific Island people still been able to absorb the additional stress better than Palagi in the same economic circumstances?

References

- Barnett NT. Migrants in Auckland. In: Stanhope JM (ed). *Migration and Health in New Zealand and the Pacific. Proceedings of a Seminar on Migration and Related Social and Health Problems in New Zealand*. Wellington: Wellington Hospital Epidemiology Unit, 1975.
- Bethwaite P, Baker M, Pearce N, et al. Unemployment and the public health. *NZ Med J* 1990; 103: 48-9.
- Black S, Caswell S. *Drugs in New Zealand. A Survey 1990. Revised 1993 incorporating updated and corrected data*. Auckland: Alcohol and Public Health Research Unit, University of Auckland, 1993.
- Brake K. Immigration of Pacific Islanders to New Zealand, 1986-1991: Policies, patterns and outcomes. *New Zealand Population Review* 1993; 19 (1 and 2), May/November: 173-203.
- Braybrook B, Southey P. *Census of Prison Inmates*. Wellington: Policy and Research Division, Department of Justice, 1991.
- Britt EF, Field GE, Thomas DR. *Solvent Abuse. The Hamilton Situation Report for the Department of Social Welfare*. Hamilton: Department of Psychology, University of Waikato, 1985.
- Children's Health South Pacific (Starship). *How Safe are our Children? Unintentional Childhood Injury. A Status Report for the Auckland Region*. Unpublished Report. Auckland: Children's Health South Pacific, 1993.
- Davey J. *From Birth to Death III*. Wellington: Institute of Policy Studies, Victoria University of Wellington, 1993.
- Department of Statistics. *Population Perspectives, 1981*. Wellington: Department of Statistics, 1985.
- Department of Statistics. *Pacific Island Polynesian Population and Dwellings. Series C, Report 10 of the New Zealand Census of Population and Dwellings*. Wellington: Department of Statistics, 1988.
- Department of Statistics. *Pacific Island Population and Dwellings. 1991 Census of Population and Dwellings*. Wellington: Department of Statistics, 1993a.
- Department of Statistics. *The New Zealand Labour Force, September 1992 Quarter, March 1993 Quarter, and December 1993 Quarter*. Wellington: Department of Statistics, 1993b.
- Department of Statistics. *Key Statistics April 1993*. Wellington: Department of Statistics, 1993c.
- Ezzy D. Unemployment and mental health: A critical review. *Soc Sci Med* 1993; 37(1): 41-52.
- FADE (Foundation for Alcohol and Drug Education). *The Gathering Storm. New Zealand Secondary School Students Alcohol and Drug Survey October 1987*. Auckland: FADE, 1988.
- Fergusson DM, Horwood LJ, Lynskey MT. Ethnicity, social background and youth offending: A 14-year longitudinal study. *Aust NZ J Crim* 1993a; 27: 155-70.
- Fergusson DM, Horwood LJ, Lynskey MT. Ethnicity and bias in Police contact statistics. *Aus NZ J Crim* 1993b; 26: 193-206.
- Graves TD, Graves NB. Stress and health among Polynesian migrants to New Zealand. *J Behav Med* 1985; 8 (1): 1-19.
- Jackman S. *Child Poverty in Aotearoa/New Zealand*. Wellington: New Zealand Council of Christian Social Services, 1993.
- Kawachi I, Marshall S, Pearce N. Social class inequalities in the decline of coronary heart disease among New Zealand men, 1975-77 to 1985-87. *Int J Epidemiol* 1991; 20: 393-8.
- Kearns RA, Smith CJ, Abbott MW. *Exploring the relationship between housing problems and mental health in two New Zealand cities. Final Report to the Foundation for Research Science and Technology*. Auckland: Foundation for Research and Technology, 1991.
- Kerr AA. Lower respiratory tract illnesses in Polynesian infants. *NZ Med J* 1981; 93: 333-5.
- Krishnan V, Schoeffel P, Warren J. *The Challenge of Change: Pacific Island Communities in New Zealand 1986-1993*. Wellington: New Zealand Institute for Social Research and Development Ltd, 1994.

- Manukau City. Manukau Quality of Life Survey. Technical Report 1. Ethnic Differences in Quality of Life. Auckland: Manukau City, 1993.
- Maxwell G, Morris A. Family, Victims and Culture: Youth Justice in New Zealand. Wellington: Social Policy Agency and Institute of Criminology, Victoria University of Wellington, 1993.
- Metge J, Kinloch P. Talking past each other: Problems of cross-cultural communication. In: Renwick WL (ed). Early Childhood Care and Education. Wellington: Department of Education, 1980.
- Milne A, Allwood GK, Moyes CD, et al. A seroepidemiological study of the prevalence of Hepatitis B infections in a hyperendemic New Zealand community. *Int J Epidemiol* 1987; 16 (1): 84-90.
- National Collective of Independent Women's Refuges Inc. Annual Reports for 1990, 1991, 1992, 1993. Blenheim: NCIWR Inc.
- NHC. Housing New Zealand: Provision and Policy at the Crossroads. Wellington: National Housing Commission, 1988.
- Papali'i P. A Study of Pacific Island Housing Needs (Preliminary Findings). Auckland: Housing Corporation New Zealand, Manukau Branch, 1991.
- Pomare EW. Groups with special health care needs. *NZ Med J* 1988; 101: 711-13.
- Public Health Association of New Zealand. The Impact of Economic and Social Factors on Health. Wellington: Report Prepared by the Public Health Association for the Department of Health, December 1992.
- Ritchie Jane, Ritchie James. Violence in New Zealand. Wellington: Huia Publishers, Daphne Brasell Associates Press, 1993.
- Rochford M. A Profile of Sole Parents from the 1991 Census. Research Report Series No 15. Wellington: Research Unit, Social Policy Agency, Department of Social Welfare, 1993.
- Smith, CJ, Kearns RA, Abbott, MW. A tale of two cities: The experience of housing problems in Auckland and Christchurch. *NZ Geographer* 1992; 48(1): 2-10.
- Social Advisory Council. Child Care Services. Impact and Opportunities. Wellington: Social Advisory Council, 1985.
- Spier P, Norris M, Southey P. Conviction and Sentencing of Offenders in New Zealand: 1982 to 1991. Wellington: Policy and Research Division, Department of Justice, 1992.
- Spier P, Norris M. Conviction and Sentencing of Offenders in New Zealand: 1983 to 1992. Wellington: Policy and Research Division, Department of Justice, 1993.
- Statistics New Zealand. New Zealand Official Yearbook, 1993. Wellington: Statistics New Zealand, 1993a.
- Statistics New Zealand and Ministry of Health. A Picture of Health. Wellington: Statistics New Zealand, 1993b.
- Statistics New Zealand. Key Statistics April 1994. Wellington: Statistics New Zealand, 1994.
- Thomson WM. Increased tooth decay in non-European children. *Social Welfare Review*, July 1993: 20-3.
- Tukuitonga C. The Health of Pacific Island People in New Zealand. Unpublished Report for New Zealand College of Community Medicine Membership Examination, 1990.
- Waldegrave C, Sawrey R. The Extent of Serious Housing Need in New Zealand 1992 and 1993. Lower Hutt: Social Policy Unit, The Family Centre, January 1994.

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Chapter 4

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Lifestyle,
Food and Nutrition-related
Health Status

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Introduction

This chapter reviews the literature currently available on diet, nutrition, and diet-related risk factors and conditions of Pacific Islands people living in New Zealand. Recent dietary changes in the Pacific Islands are also referred to, to illustrate the background of change from which many Pacific Islands immigrants are arriving in New Zealand. Infants, children and young people are discussed separately, as they have specific health and nutrition needs. The remainder of the chapter discusses the diet and health of Pacific Islands adults. Non-dietary risk factors including smoking, alcohol-use and the level of physical activity are also discussed.

Because of the limited nature of recent data available on the diet and health of Pacific Islands people living in New Zealand, the references used are often older than five years. The degree to which the findings of such studies are appropriate in characterising the diet and health of the present-day Pacific Islands population of New Zealand is unknown, but they provide a useful picture of the effects of migration.

Key points

- *There is a lack of detailed, recent dietary studies that focus on Pacific Islands groups within New Zealand.*
- *Dietary changes following migration from the Pacific Islands have been implicated as a principal component in raised morbidity amongst Samoans from obesity, hypertension, hyperlipidaemia and diabetes. The specific dietary changes most often implicated include increases in energy intake, saturated fat, dietary cholesterol, refined sugar and sodium, and decreases in dietary fibre intake.*
- *Preliminary data suggest Pacific Islands people are more severely disadvantaged than other ethnic groups with respect to food choice, ability to buy basic food items and choosing between buying food and paying other bills.*
- *In New Zealand, sources of dietary fat switch from those of largely coconut origin to milk, butter and meat origin. More sodium, cholesterol and calcium, and less fibre, are consumed in New Zealand than in the Islands.*
- *Food has certain social functions in Pacific Islands communities. It provides a link with tradition; and is also used to fulfill obligations. Any nutritional programmes directed at Pacific Islands people need to address food and health in the context of their society, rather than just emphasising scientific nutritional principles.*
- *Pacific Islands children in New Zealand appear to be significantly taller and heavier than children of Palagi and Maori descent, from birth through to two years of age. Tongan and Tokelauan 10-13 year olds living in Auckland and Wellington are heavier and slightly taller than non-Polynesian New Zealand children, indicating a greater potential for larger body mass or obesity.*
- *A significantly higher proportion of Pacific Islands infants are breastfed at the ages of nine months and one year than either Palagi or Maori.*
- *Pacific Islands mothers report “breast infection” as the main reason for terminating breastfeeding at six weeks; and “going back to work” as the prominent cause at three months through to nine months. These reasons differ from those of other ethnic groups, who list “insufficient milk” as the main reason.*
- *The estimated rate of iron deficiency anaemia in Pacific Islands infants aged between six and 36 months is 30 percent, in comparison with only seven percent in Palagi infants.*
- *Significant adult obesity appears to begin earlier in life in those Pacific Islands people most exposed to modernisation. The dietary, environmental, social and physical changes upon migration are already having a deleterious effect on the health of Tokelauan children, and possibly other children of Pacific Islands origin, living in New Zealand, with the early onset of obesity being a significant risk factor for many chronic degenerative diseases later in life. There are limited data available on the degree of childhood obesity in a representative sample of New Zealand children.*
- *New Zealand Pacific Islands children in general are adequately nourished to support normal growth and development. However, certain nutritional concerns exist, including high intakes of simple sugars and the low nutrient density of children’s diets.*

- *It is thought that the body mass index (BMI) measurement is an inappropriate measure of obesity in Pacific Islands people because they may have different body fat levels than Palagi people of the same BMI. Pacific Islands men and women have a higher BMI on average than Palagi of the same age and sex.*
- *It is estimated that 75 percent of Pacific Islands people in New Zealand are overweight.*
- *Pacific Islands (employed) people have lower total and HDL-cholesterol levels, but similar LDL-cholesterol and triglyceride levels compared with (employed) New Zealand Palagi.*
- *Although coconut oil has a predominance of myristic acid (C14:0), which is a saturated fatty acid, there is some evidence that the consumption of this particular fat is associated with more favourable blood lipid profiles than the consumption of other saturated fats.*
- *Compared with Palagi, Pacific Islands people have higher mean blood pressure levels (by four to six mm Hg), when controlled for age and blood pressure treatment. After controlling for BMI the difference is halved, but still remains statistically significant, suggesting that additional factors are involved.*
- *Pacific Islands men, especially, tend to have a genetic predisposition to hyperuricaemia which can become manifest as clinical gout at an increased rate with the environmental change associated with migration.*
- *The relative risk of diabetes mellitus and the occurrence of impaired glucose tolerance in Pacific Islands (employed) people living in New Zealand are significantly increased in comparison with Palagi (employed), after controlling for BMI, age and income.*
- *The age-adjusted prevalence of diagnosed diabetes in Pacific Islands people is 4.6 percent, compared with 2.8 percent in Palagi. It is estimated that half of those with diabetes are undiagnosed at any one time.*
- *The number of diagnosed diabetes patients in South Auckland is projected to increase four-fold during the period 1991-2001. This will be due primarily to the ageing of the Pacific Islands population, without any change in diabetes incidence.*
- *The 1981 census found that 32 percent of people aged 15 years and over in the Pacific Islands population were regular cigarette smokers, compared with 31 percent in the total population. Pacific Islands males had higher rates of smoking than all males but Pacific Islands females had lower smoking rates than all females. More recent data suggests that smoking rates have changed little since 1981.*
- *In 1992-1993, 53 percent of Pacific Islands people aged 15 and over never drank alcohol compared with 21 percent of Palagi.*
- *Pacific Islands people have substantially lower levels of physical activity than other ethnic groups.*

Diet

*Changes in food
and nutrition
intake after
migration*

Migration to New Zealand from the atolls and islands of the South-west Pacific must always affect diet, since food availability is “distinct” in the two environments. Change is generally abrupt (upon arrival) and not gradual. This dietary change has been implicated as a principal component in the raised morbidity amongst migrated Samoans from hypertension, hyperlipidaemia, obesity and diabetes. The specific dietary changes most often implicated include increases in energy intake, saturated fat and dietary cholesterol, refined sugar and sodium, and a decrease in dietary fibre intake (Hanna et al, 1986). Pacific Islands groups in New Zealand include both migrants and New Zealand-born Pacific Islands people. The length of residence in New Zealand will have some effect on food choice, but the place of residence has the greatest influence on food patterns (W Parnell, personal communication, May 1994).

In New Zealand, dietary change was studied in 39 Tongans living in Dunedin for an average of two to five years (Vainikolo et al, 1993). Traditional Tongan foods such as yams, taro, cassava, breadfruit, sweet potato, coconut flesh, sugar cane, tropical fruits and fresh fish were eaten very rarely, if at all, in New Zealand, and saved only for special occasions. The degree to which these foods were incorporated into the family meals was also influenced by whether one parent was of non-Pacific Islands origin or not (Fitzgerald, 1980). Vainikolo et al (1993) found that potatoes, and to a lesser extent breadfruit and rice, had replaced traditional starchy foods in New Zealand. The participants in the Dunedin survey claimed that Tongan starchy foods provided a greater degree of satiety than the New Zealand substitutes, due to their more fibrous nature, which appeared to slow the rate of digestion. Apples and pears were consumed most commonly in place of tropical fruits, which may have had the effect of lowering dietary vitamin C consumption. Silverbeet was used in place of taro leaves. Chicken, sausages, chops, meat pies, baked beans and yoghurt all replaced fish as the predominant source of dietary protein. Alcohol consumption was low in both the Tongan and New Zealand environments, but more tea and coffee was consumed in New Zealand. The younger Tongan subjects had adapted to the New Zealand eating pattern more readily than the older subjects, who were following a more traditional eating pattern *via* the “eating when you are hungry” philosophy.

It should be noted that, as staple “Pacific” food items such as coconut, taro, cassava and yams do not grow in New Zealand, the imported products in New Zealand shops are costly. Dairy products, meat and wheat-based products are readily available and comparatively cheaper in New Zealand than in the Islands. This cost difference seems to be the primary reason for these major dietary changes (Harding et al, 1986). It is realised that because of the geographic location of Vainikolo’s study, food availability, rather than food choice, was the major determinant of dietary patterns, and that Tongans living in Auckland may well be in a very different situation due to the increased availability of “traditional” foods there.

In the Tokelau Island Migrant Study, diets of migrants in New Zealand were assessed for differences with the diet of people living in the atolls. The higher meat intake in New Zealand was noted, with the inclusion of both meat and fish in one meal being common among migrants. Traditional foods were reserved only for special occasions in New Zealand. Substitutions were similar to those recorded in the survey of Tongans living in Dunedin, with butter and breakfast cereals also being eaten by New Zealand Tokelauans. Butter became the main dietary fat eaten here (Prior et al, 1978). Alcohol consumption was low in both environments. Only fat intakes were lower in New Zealand, mainly because a high proportion of the dietary fat in the atolls came from coconut products (Harding, 1975; Harding et al, 1986).

Recent studies in Auckland, where the majority of New Zealand Pacific Islands people live, have revealed that Pacific Islands people see themselves as being more severely disadvantaged than other ethnic groups with respect to food choice, inability to buy basic food items and choosing between buying food and paying other bills (Manukau City, 1993; Turner et al, 1992). Food banks were used by 27 percent of the Pacific Islands people surveyed in Otara and Manurewa, with 17 percent reporting they missed meals occasionally. No breakfast was consumed by 22 percent of respondents, and no lunch by 21 percent. Those with higher incomes were less likely not to have enough food, and more likely to be consuming "healthy" meals (Turner et al, 1992).

*Nutritional
adequacy*

Many studies undertaken in New Zealand which document dietary change after migration from the Pacific Islands have shown similar trends in dietary intake. These include an increase in the proportion of energy supplied by fats, animal proteins, and simple and refined carbohydrates, and a decrease in percentage energy provided by starchy, unrefined carbohydrates. In New Zealand, the sources of dietary fat switch from those largely derived from coconut to milk, butter and those derived from meat. It appears (from studies of net food available) that more sodium, cholesterol and calcium, and less fibre is consumed in New Zealand compared with in the Islands (Fitzgerald, 1980; Vainikolo et al, 1993; Harding, 1975; Harding et al, 1986). The findings are consistent with the dietary changes found to take place in Samoans migrating to Hawaii and continental United States (Hanna et al, 1986).

As already noted, there is a lack of detailed, recent dietary studies that focus on Pacific Islands groups within New Zealand. The most recent study of this type was undertaken on Tongan and Tokelauan school children (Bell, 1993), and is outlined later in the chapter. Specific issues including the nutritional adequacy of diets for infants, children and youth are all also discussed in other sections of the chapter.

Amongst Tokelauan people who have migrated to New Zealand, the large increase in carbohydrate intake is accounted for mainly by the increased intake of sucrose in New Zealand (Table 4.1), which provided 13 percent of dietary energy in comparison to two percent in Tokelau (Harding et al, 1975). The implications of these macronutrient changes on health are discussed presently. It is suggested that these adverse nutritional shifts are a result of poor selection and unsatisfactory use of food, rather than a consequence of poverty or lack of food (Fitzgerald, 1980), but more recent data discussed above may refute this (Manukau City, 1993; Turner et al, 1992).

TABLE 4.1: *Diet of Tokelauans before and after migration to New Zealand*

Nutrient	Tokelau (Fakaofu)		New Zealand Tokelauan	
	Amount (g)	% of energy	Amount (g)	% of energy
Protein	55	12	85	15
Fat	119	53	104	41
Carbohydrate	166	35	251	44
Energy (kcal)	1,930		2,280	
Energy (kJ)	8,075		9,540	
Cholesterol (mg)	85		340	

Source: Harding et al, 1986.

Because of the dietary changes, questions concerning the adequacy of the New Zealand Tokelauan diet with respect to nutritional health have been raised. Diets very high in energy, total fat, animal protein and sucrose, and low in complex carbohydrate and fibre, are thought to be conducive to obesity and other diet-related chronic degenerative diseases (Nutrition Taskforce, 1991). Anecdotal evidence suggests that Pacific Islands people eat more total dietary fat than Palagi, and this has been confirmed by data collected in the Workforce Survey (R Scragg, personal communication, June 1994). High total fat consumption is now regarded as the primary dietary factor causing obesity (Ravussin and Swinburn, 1992).

Because the diets of Pacific Islands people living in New Zealand are generally higher in calcium than their traditional diets, there could be an advantage with respect to better bone health, although genetic factors are also influential. Bone density was measured from the prominent distal radius and ulna in Polynesian Pacific Islands women and white women living in New Zealand. There were no significant differences between Maori and other Polynesian women in the values measured so their results were pooled, and it was found that bone density was 20 percent higher in all Polynesian women. The authors did not report on how long the Pacific Islands women had been living in New Zealand (Reid et al, 1986).

Decrease in fibre intake has numerous health consequences, including decreased bowel transit time and reduced satiety after eating (Prior and Tasman Jones, 1981). The decreased bowel transit time could influence bowel cancer rates amongst Pacific Islands people in the future, while the reduced satiety could lead to overeating and obesity.

Attitudes towards food

Pacific Islands people hold different attitudes than New Zealanders in general towards food. Samoans regard the collecting, producing and giving of food as an expression of love and respect for the person or group receiving the food (Kinloch, 1985). Therefore, visitors must be fed well and are expected to eat heartily (Fitzgerald, 1980). In New Zealand, feasts are an important part of the life of many Pacific Islands people. They convey the feelings associated with food, social obligation and links with tradition. They are also a venue for social interaction and family exchange (Finau, 1987; Pollock, 1989), emphasising the importance of food as a communication channel. Great embarrassment is felt if abundant food supplies are not on display at these occasions, so the provision of copious amounts is extremely important, regardless of cost in many cases (Pollock, 1989). Food of some form is given at almost all special occasions in Samoan culture (Kinloch, 1985).

Food is generally viewed by Pacific Islands people as something to enjoy rather than a source of nutrients necessary to maintain good health (Fitzgerald, 1980). Most foods are enjoyed, but traditional Islands foods may be seen as being the most desirable, especially amongst older people. However, the degree to which individual Samoans adhere to the traditional Samoan values on food does not seem to correlate directly with length of stay in New Zealand, or with age (Pollock, 1989).

In the Cook Islands, food may be classified as anything which is taken through the mouth, so there is little distinction between food, alcohol and cigarettes (Fitzgerald, 1980). On the other hand, in Tonga and Fiji, "food" specifically refers only to root crops. Meat and other vegetables are thought of only as accompaniments which are not regarded as a meal if eaten alone. Fruit is seen more as a snack food, while other items are broken down into the categories of "non-foods", "super foods", "tapu foods" and "medicinal foods" (Finau, 1987).

The information provided in this section highlights the need for any nutritional programmes directed at Pacific Islands people to address food and health in the context of their society, rather than just emphasising scientific nutritional principles (Finau, 1987). Attempting to change value systems outright, especially in the social context of eating, may have severe consequences that outweigh any nutritional benefits (Leach, 1989).

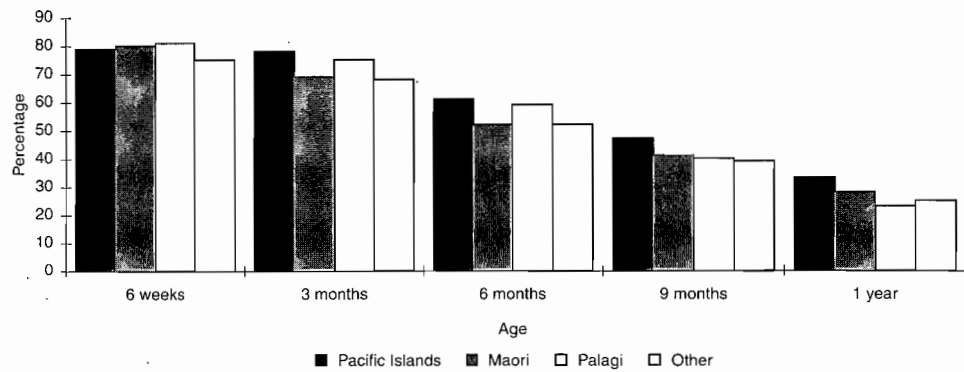
*Nutritional status
of infants, children
and youth*

Infants (0-2 years)

Pacific Islands children in New Zealand appear to be significantly taller and heavier than children of Palagi or Maori descent, from birth through to two years of age. This is thought to be due to a difference in either genetic and/or dietary factors (Anderson et al, 1977; Tonkin et al, 1979).

The most comprehensive recent survey concerning the nutrition of Pacific Islands infants in New Zealand is the Plunket National Child Health Study (Royal New Zealand Plunket Society, 1994). This is a five-year longitudinal study of a birth cohort of 4,285 children born in New Zealand during 1990-1991. Of the total sample, 242 (six percent) were of Pacific Islands origin, 514 (12 percent) were of Maori origin, and 2,694 (63 percent) were Palagi. This spread was shown to be comparable to national statistical data for 1990 (Alison et al, 1993), although Mitchell et al (1992) in the National Cot Death Study found that in 80 percent of total New Zealand births, ten percent were of Pacific Islands ethnicity. At six weeks, breastfeeding figures were similar across the ethnic groups. Pacific Islands infant breastfeeding rates were higher than those for Maori at three and six months. A significantly higher proportion of Pacific Islands infants were breastfed at the ages of nine months and one year than either Palagi or Maori (Figure 4.1).

FIGURE 4.1: Percentage of babies fully or partially breastfed, by age and ethnicity

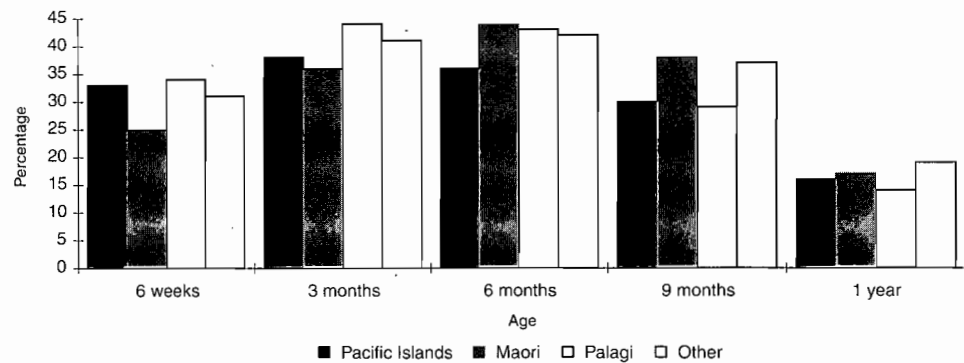


Source: Royal New Zealand Plunket Society, 1994.

Smoking rates have been shown to be inversely associated with breastfeeding rates (R Ford, personal communication, June 1994). However, data from the New Zealand Cot Death Study suggests that the opposite patterns are occurring. Recent research has shown that 32 percent (n=137) of mothers of Pacific Islands infants were smokers, compared with 23 percent of mothers of Palagi infants (R Scragg, personal communication, June 1994).

The rates of formula feeding increase with age until six months in all ethnic groups (Figure 4.2). When infants were changed from breastfeeding to bottle feeding, Pacific Islands mothers reported “breast infection” as the main reason for the change at six weeks, and “going back to work” as the prominent cause at three months through to nine months. These reasons differed from those of other groups, who tended to cite “insufficient milk” as the main reason.

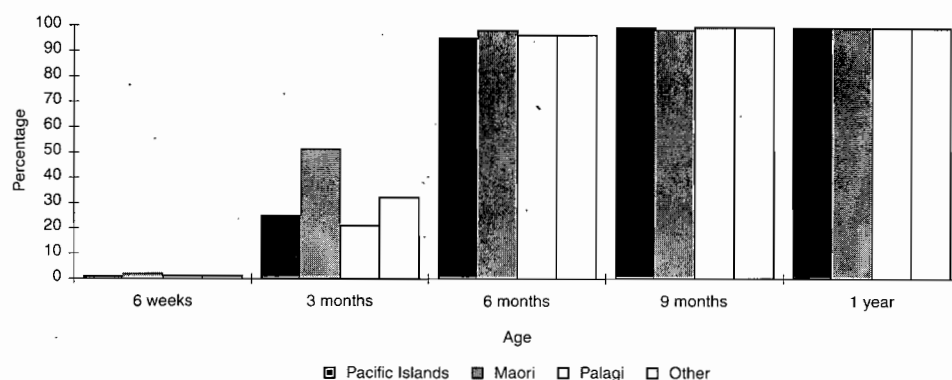
FIGURE 4.2: Percentage of babies fully or partially fed on infant formula, by age and ethnicity



Source: Royal New Zealand Plunket Society, 1994.

By the age of six months, nearly all Pacific Islands infants have been at least partially (if not fully) introduced to solid feeding (Figure 4.3). Pacific Islands infants are fed different solids than infants of other ethnic groups. More Pacific Islands infants were eating soup (a mixture of meat and vegetables cooked together) at three months and meats/fish/chicken at six months, and less were eating fruit and vegetables, than other ethnic groups. Pacific Islands and Maori infants were eating less cereals and grains at three months than Palagi infants.

FIGURE 4.3: *Proportion of babies fully or partially fed solids, by age and ethnicity*



Source: Royal New Zealand Plunket Society, 1994.

The Plunket National Child Health Study also found that Pacific Islands people were less likely than other ethnic groups to feed their infants cow's milk before the age of one year, but slightly more likely to feed them an alternative to cow's milk (eg, goat's milk, soy milk) earlier than the other groups.

There is growing evidence that Pacific Islands infants from certain lower socioeconomic backgrounds are at increased risk of developing iron deficiency anaemia. The estimated rate of this condition in Pacific Islands and Maori infants aged between six and 36 months is 30 percent, in comparison with only seven percent in Palagi infants (Crampton et al, 1994). In a recent small study of 43 infants from a general practice register in a socially deprived, ethnically mixed suburb (42 percent of whom were of Pacific Islands origin), it was found that 24 percent had iron deficiency anaemia. These findings suggest there is a significant problem, but the extent to which they can be generalised to the wider Pacific Islands community is unclear at present. Further research into the prevalence and possible cause of iron deficiency is required (Crampton et al, 1994).

Many studies have been undertaken in the Pacific Islands on the nutritional status of infants attributable to the effects of westernisation and migration to urbanised areas. This literature focuses mainly on the incidence of under-nutrition, such as insufficient protein, energy and iron, in infancy.

Breastfeeding rates are very high initially in the Pacific Islands, and it is common to begin supplemental bottle or solid feeding by the age of six months (Neave, 1968; Neave, 1969; Thaman, 1983; Coyne, 1984; WHO, 1993). A declining incidence of breastfeeding in favour of bottle feeding is occurring in urbanised areas of the Pacific, and this has a high correlation with increasing marasmus, kwashiorkor, anaemia and infantile obesity in this area (Thaman, 1983; Jansen, 1977). Infant obesity is seen as a severe public health problem in Rarotonga (Thaman, 1983; WHO, 1993) and urban Fiji (Thaman, 1983). Infant mortality rates are also considered to be a significant problem in Fiji (Thaman, 1983).

Malnutrition in some infants is associated with insufficient, inappropriate or contaminated weaning foods. While most Pacific Islands children in their home environment show greater birth weights and mean body size up until weaning at about six months of age, the period between the ages of six and 18 months is when the highest numbers of infants fall into less than the third percentile for height and weight (Elliot, 1974; Coyne et al, 1984; Pelletier and Bindon, 1986; Jansen, 1977). Babies weaned early are likely to be underfed in all respects, and may develop marasmus.

Dietary factors in infancy such as the choice between breast or bottle feeding tend to reflect environmental influences, rather than informed nutritional choice (Thaman, 1983). In some of the Islands, the cause of early or inappropriate weaning involves family circumstances such as twinning, early recurrence of pregnancy, death or illness of a parent, or separation of the child from both parents, plus a general lack of adequate food supplies in large families at times of environmental stress such as when hurricanes occur (Neave, 1968). It is thought that at under one year of life almost all infants are breastfed, and therefore obtain sufficient protein supplies. Once weaned from breastfeeding, children are mainly fed high carbohydrate staples, with the protein-rich foods retained mostly for adult consumption (Neave, 1968; Neave, 1969; Lines, 1980; Jansen, 1977). In New Zealand, protein foods are more readily available and it is likely the weaning diet contains more protein, less carbohydrate and less fibre, although there have been no comprehensive dietary studies that have looked at the nutritional intake of Pacific Islands infants in New Zealand. The closest information on this subject was provided by the Tokelau Island Migrant Study (1968-1981). This study showed that Tokelauans in New Zealand have higher mean birth weights and faster growth than those in the atoll environment. The difference has been attributed to differences in the food supply, including a higher dietary fibre intake and a lower energy intake (with more energy from fat) in the Islands compared with New Zealand (Tonkin et al, 1979).

Iron deficiency anaemia is the most widespread micronutrient deficiency in the Pacific, if not worldwide, affecting infants only slightly less than pregnant or menstruating women (WHO, 1993; Neave, 1968; Neave, 1969). Some studies have shown anaemia rates in infants to be over 75 percent of the total population in Island groups (Thaman, 1983). In the past, the combination of multiparity with low iron intakes by mothers and young children, and frequent infections, accounted for the prevalence of iron deficiency anaemia (Neave, 1969).

Many women may be unaware of the nutritional needs of children. A complicating factor is the presence of food *tapu* affecting small children and pregnant and lactating mothers, which are still practised in Western Samoa in particular (Jansen, 1977). The extent to which these traditions are followed by Samoans living in New Zealand is not known.

Children (2-14 years)

Growth

The Tokelau Island Migrant Study showed a significant increase in the birth weights of Tokelauan infants born in New Zealand compared with those born in Tokelau. In New Zealand, the mean Tokelauan birth weight was shown to approximate the New Zealand total population mean birth weight of 3,400 g (Tonkin et al, 1979). This probably reflects the effects of better maternal nutritional status on the fetus. From birth on, the weights of Pacific Islands children in New Zealand are above the Islands means (and the New Zealand non-Pacific Islands mean), but there is no height difference until 30 months of age, when the New Zealand Tokelauans become slightly taller. Head circumference also becomes larger in New Zealand in the second year of life. The weight difference is thought to be a result of a different energy balance in the two environments.

In a recently completed study, Bell (1993) found that the anthropometric status of 10-13 year old Tongans and Tokelauans living in Auckland and Wellington was different to that of Palagi children. These groups were heavier and slightly taller, indicating a greater potential for larger body mass or obesity. Skinfold measurements were not taken, however, so it is possible that Tongan and Tokelauan children reach puberty earlier than Palagi children and have increased bone density and lean body mass, explaining some of the height and weight measurements.

Other information on children's growth in New Zealand show no significant overall racial differences between the ages of two and 13 years, although children of all racial groups were shown to be overnourished to a degree (Anderson et al, 1977). More children of the lower socioeconomic classes had body weights about the 97th percentile. This was especially so amongst Samoan, Cook Islands and Niuean groups, suggesting that these groups may have been particularly vulnerable to childhood obesity (Anderson et al, 1977). Significant adult obesity appears to begin earlier in life in those Pacific Islands people most exposed to modernisation. Samoan children living in the United States are fatter than those in a traditional Samoan environment and have greater rates of obesity compared with their Palagi peers, when using weight for height and BMI standards (McGarvey, 1991). The Tokelau Island Migrant Study (Tonkin et al, 1979), showed that New Zealand Tokelauan children were substantially bigger in terms of height and weight than children living in the Islands. Weight differences in the early years of life may reflect the better nutritional status of children in New Zealand, but it appears that the older children are exhibiting the same tendency towards obesity shown by adults in New Zealand. Skinfold tests show there is greater body fat in the children resident in New Zealand, the greatest difference being in the 6-10 year age group. Migration, therefore, is already having a deleterious effect on the health of Tokelauan children, and possibly other children of Pacific Islands origin living in New Zealand, with the early onset of obesity being a significant risk factor for many chronic degenerative diseases later in life (Tonkin et al, 1979; Bindon and Zansky, 1986; Bindon, 1976).

Overweight in older children may be contributed to by lack of physical activity rather than excess energy consumption, or, perhaps more correctly, an imbalance between energy intake and output due to a variety of reasons. Italian immigrant children in Australia were found to be watching 35 percent more television than Australian children in 1979, and this characteristic may be typical of other immigrant groups (Miller and Binns, 1979).

Western Samoan children living under traditional conditions are significantly shorter and lighter in comparison with Samoan children living at differing stages of modernisation in American Samoa and Hawaii. Both American Samoan and Hawaiian children are substantially overweight by US reference standards (Bindon and Zansky, 1986). Therefore, modernisation (which involves a wide range of changes including diet, daily activities and health) tends to have a more dramatic effect on growth rates than migration *per se* (Bindon and Zansky, 1986; Hunter, 1962).

Childhood obesity is also now emerging as a public health problem in some Pacific Islands nations, while others still have significant problems with undernutrition in children (WHO, 1993; Thaman, 1983; Coyne et al, 1984). This seems to be directly related to the degree of environmental modernisation and urbanisation (Lines et al, 1980). Limited data are available on the degree of childhood obesity in New Zealand children.

Dietary patterns

Some Pacific Islands people in New Zealand follow a traditional one to two meal a day dietary pattern, consisting of little or no breakfast, snacks throughout the day and a large afternoon or evening meal (Fitzgerald, 1980). Children usually do eat food of some sort before going to school in the morning, which often consists of "leftovers" and tea (Fitzgerald, 1980).

The Tongan and Tokelauan children living in New Zealand, who were studied in 1993, also seem to follow a more traditional eating pattern, which differs from their Palagi peers. While these children showed no preference for eating traditional foods throughout the week, they generally had a high intake of meat, bakery products (including bread), fast foods and some dairy products, with a virtual absence of vegetables and fruit (Bell, 1993).

Traditionally, in some Pacific Islands there is a "pecking order" for the consumption of certain foods, especially those high in protein, so that the visitors and adult men get to choose their foods before the women and children. This may well be the cause of the late introduction of significant amounts of solids and foods of animal origin to infants. Under these conditions the traditional one to two meal a day pattern may not be optimal to support adequate growth in young children (Jansen, 1977).

Nutritional adequacy

Childhood anaemias and obesity appear to be relatively common in some Pacific Islands children living in New Zealand. This raises questions as to the nutritional adequacy of their diet (Fitzgerald, 1980). The dietary changes described previously in this chapter are thought to play a significant role, particularly in the prevalence of obesity.

Bell (1993) found that the nutritional status of Tongan and Tokelauan children living in New Zealand was adequate to support growth and development, even though their eating patterns, food choices and nutrient intakes were very different in comparison with Palagi children. They had higher intakes of energy and fat (especially saturated fat), similar protein intakes and lower carbohydrate, fibre, calcium, zinc, riboflavin and niacin intakes than non-Polynesian children in existing New Zealand studies. The pattern of increasing energy intake with decreasing nutrient density seems to be typical of children and adolescents in general, regardless of their racial background. Pacific Islands children were found to have a high intake of simple sugars, but it was not as high as the level for non-Polynesian children in New Zealand.

The Tokelau Island Migrant Study (Tonkin et al, 1979) showed that 15 years ago microcytic anaemia was common among Tokelauan children in New Zealand under five years of age, but it appeared to be related to infection rather than to diet, the circumstances of migration at that time differing from those of today. Zinc status appeared to be adequate. The study also showed that Tokelauan children living in New Zealand consistently had higher serum uric acid levels than those in the Islands.

In some Pacific Islands, similar trends are shown in the diets of children, especially in relation to increasing simple sugar consumption, leading to an increasing incidence of dental caries (Coyne et al, 1984; Thaman, 1983). Iron deficiency anaemia rates of over 75 percent have been reported in infants and school-aged children in the Cook Islands (Thaman, 1983). This has also been seen to be a significant problem in other Pacific Island countries in the past (Neave, 1969).

Patterns for the future

Adjusting to new social and environmental resources upon migration can cause difficulties in acquiring appropriate and adequate food (Pelto, 1991). Bell (1993) concludes it appears that New Zealand Pacific Islands children, in general, are adequately nourished to support normal growth and development, but certain nutritional concerns exist, including high intakes of simple sugars and the low nutrient density of children's diets. Up-to-date and comprehensive anthropometric and dietary measurements need to be collected from a representative sample of Pacific Islands children in New Zealand in order for comparisons to be made with historical data. This will allow conclusions on the actual state and direction of nutritional health to be drawn. If the nutritional health of this population group is to be improved it is imperative that surveys of nutritional status be undertaken. It is also important that the focus of educational campaigns should be directed to the appropriate social and family environment of the specific Pacific Islands groups living in New Zealand.

Youth (15-24 years)

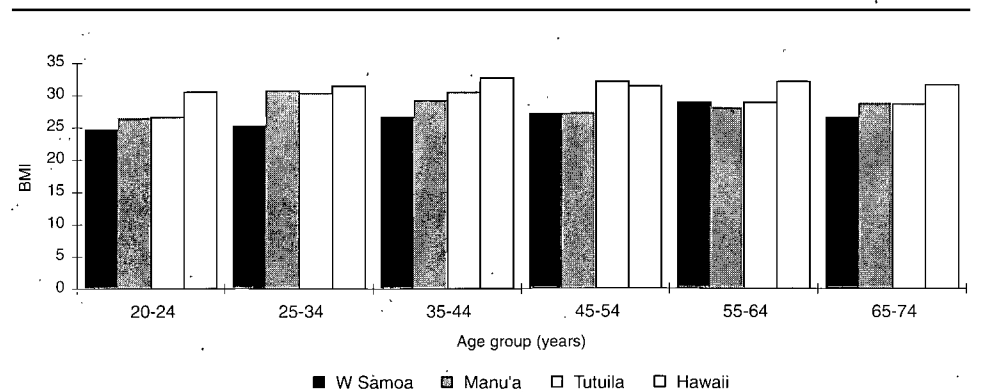
There are few dietary data available specifically on Pacific Islands youths in New Zealand. In the recent study of the food consumption and belief patterns of Tongans in Dunedin (Vainikolo et al, 1993), it was apparent that the younger adults had adapted more readily to a New Zealand diet than the older adults. They seemed to have a more comprehensive understanding of what constituted a “healthy diet” and claimed to feel healthier in New Zealand, whereas some older adults claimed to have felt healthier when they were living in Tonga.

Specific micronutrient intakes in Samoan adolescents (particularly young women) living in the United States tend to be low in comparison with recommended levels. This applies mostly to intakes of calcium, vitamin A and iron, where the potential for deficiencies exists (Hanna et al, 1986). The degree to which these findings can be extrapolated to New Zealand is unknown owing to the lack of up-to-date dietary data for this population group.

In terms of growth, the Tokelau Island Migrant Study (Tonkin et al, 1979) showed that in adolescence the trend for Pacific Islands people to be substantially heavier than non-Pacific Islanders, with a greater tendency towards obesity, is strikingly apparent. Bindon and Zansky (1986) have measured tricep skinfolds of Samoans living in differing degrees of modernisation, finding many of the subjects aged 20 years and older to be near or above clinical obesity levels. This illustrates that high levels of overweight are achieved while still within the “youth” age group. Other researchers have noted this trend, with most Samoans showing a continued ability to deposit adipose tissue, gain weight and become severely overweight, especially as young adults (below the age of 30 years) This occurs despite pre-existing large body weight and significant adiposity (McGarvey, 1991; Collins et al, 1990; Hunter, 1962).

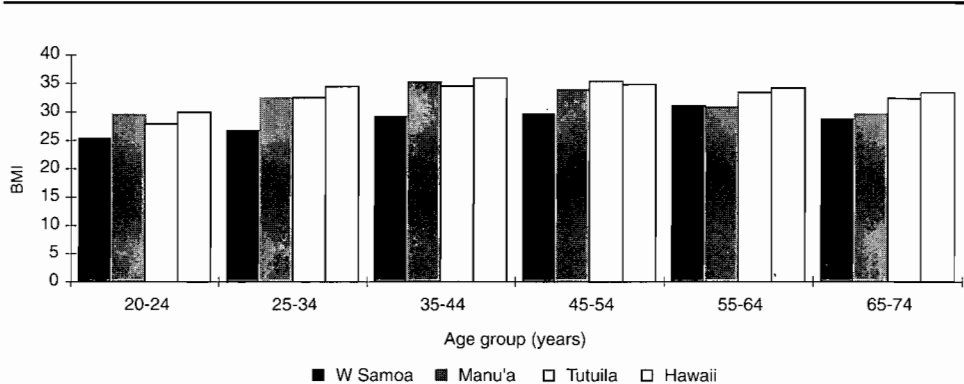
Body mass index (BMI) increases at an earlier age in Samoans living in more modernised environments. Even though BMI values do gradually increase with age, they are shown to be at high levels in the 20-24 year age group in more developed environments. Information for several groups is provided in Figures 4.4 and 4.5. The first group is from villages in American Samoa (Manu’a and Tutuila) and the fourth group is from Hawaii, the degree of modernisation increasing from one group to the next (McGarvey, 1991).

FIGURE 4.4: *Body Mass Index (BMI) in four groups of Samoan males living in different environments, by age*



Source: McGarvey, 1991.

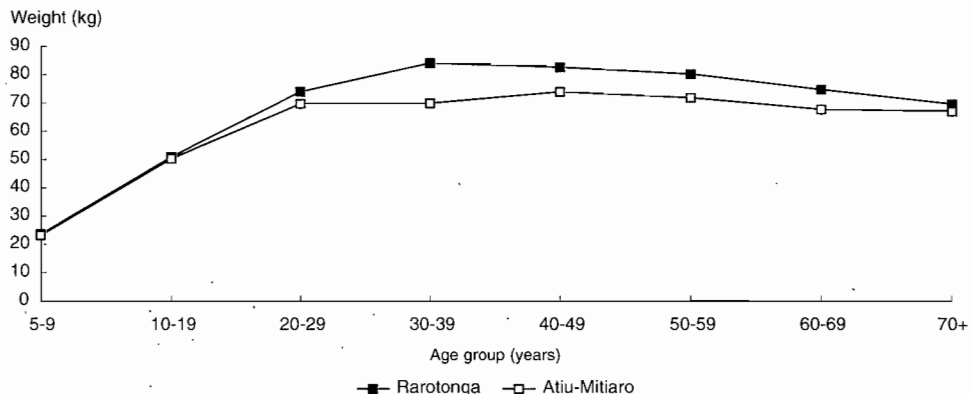
FIGURE 4.5: *Body Mass Index (BMI) in four groups of Samoan females living in different environments, by age*



Source: McGarvey, 1991.

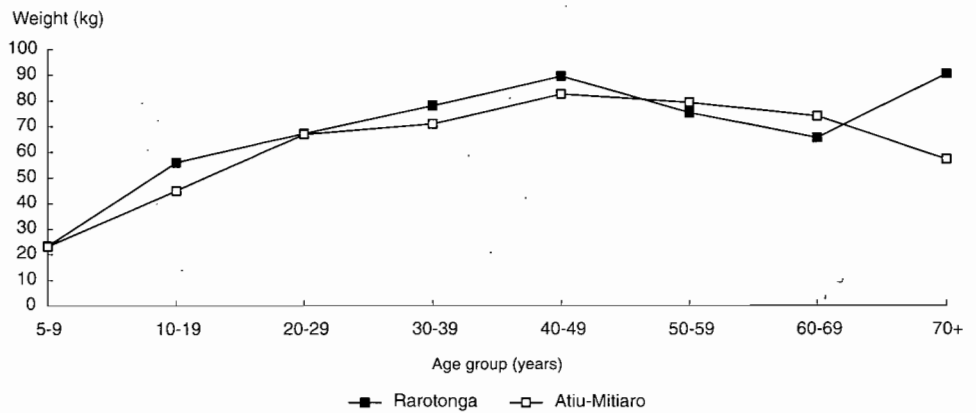
The increasing weight trend with an increasing level of urbanisation has also been shown within individual countries (Collins et al, 1990). For example, there is a more rapid weight gain between the age groups of 10-19 years and 20-29 years, in both males and females, in urbanised Rarotonga compared with rural Atiu-Mitiaro in the Cook Islands (Figures 4.6 and 4.7).

FIGURE 4.6: *Comparison of mean body weights of males of two Polynesian groups*



Source: Collins et al, 1990.

FIGURE 4.7: Comparison of mean body weights of females of two Polynesian groups



Source: Collins et al, 1990.

Although obesity is regarded as a thing of beauty in many Pacific Islands cultures, most young Pacific Islands people prefer not to be very fat and are moving towards preference for the “ideal” Palagi body shape (Dumbrell et al, 1984; B Swinburn, personal communication, February 1994). It is debatable whether it is realistic or healthy for young people to aspire to such a shape, but there generally exists a community awareness that obesity itself is associated with health problems (Dumbrell et al, 1984).

Diet-related risk factors and conditions

The prevalence of obesity, hypertension, non-insulin dependent diabetes and coronary heart disease are higher amongst Pacific Islands people than Palagi in New Zealand, and in some cases higher than in Maori (Tukuitonga et al, 1990; Scragg et al, 1991; Scragg et al, 1993a). Morbidity and mortality rates from these conditions are presented in Chapters 5 and 6 of this report.

Obesity and body weight

Obesity plays a pivotal role in the development of non-insulin dependent diabetes mellitus (NIDDM), hypertension and coronary heart disease (CHD, also known as ischaemic heart disease) in “modernising” Pacific Islands populations, but the mechanisms for this action are not yet clearly defined (Collins et al, 1990).

To outline briefly the health risks involved with increasing body weight in terms of mortality data alone, Lew and Garfinkel (1979) found that men and women who are 30-40 percent heavier than average, in a mixed population, had nearly 50 percent higher total mortality rates for age than those of average weight. Deaths from coronary heart disease are associated with weight; people 30 to 40 percent heavier than the average weight showed a 55 percent increase in CHD mortality, and those more than 40 percent heavier than average showed a 100 percent increase in CHD mortality. Those more than 40 percent heavier than average weight also showed higher mortality rates from colo-rectal cancer in men and cancer of the gall bladder, breast, cervix, endometrium, uterus and ovary in women. Mortality rates from diabetes were also

high, especially in overweight women (Lew and Garfinkel, 1979). It is not known, however, whether these trends apply directly to Pacific Islands populations.

The relevance of the desirable New Zealand body mass index range to Pacific Islands people has not yet been firmly established (Nutrition Taskforce, 1991). It is considered that this index is an inappropriate measure of obesity in Pacific Islands people because they may have different body fat levels than Palagi people of the same BMI. When the BMI value is interpreted in light of the waist-to-hip ratio in this ethnic group (ie, whether the obesity is abdominal or around the hips and thighs), it is thought it better determines the risk of ill health associated with obesity (abdominal obesity is considered to relate more to increased health risk) (Nutrition Taskforce, 1991). The body mass index alone may be a satisfactory index only for comparison within genetically homogeneous groups (Grimley Evans and Prior, 1969).

Despite these difficulties in the assessment of obesity, it is estimated that many Pacific Islands people in New Zealand are overweight (Ashton, 1992). This is attributed to a decrease in physical activity in combination with an increased diversity in diet upon migration (Ashton, 1992; McGarvey, 1991; Hanna et al, 1986).

In New Zealand, few studies have examined the anthropometric data of adult Pacific Islands people in comparison with those of other ethnic groups. There is general agreement that Pacific Islands people in New Zealand tend to develop obesity in the middle to latter years more readily than other New Zealanders. Dryson et al (1992) measured the BMI of 5,673 adult New Zealanders, 12 percent of whom were Pacific Islands people. Pacific Islands men and women had a higher BMI on average than Palagi of the same age and sex, with Pacific Islands men and women combined showing average BMI values closer to 30 and above, while Palagi men and women combined were closer to 26. Pacific Islands people did not show the inverse relationship of increasing BMI with decreasing socioeconomic status, which is typical of developed societies worldwide. There was, however, a weak association between BMI and the occupation of Pacific Islands people, independent of their education level, with the highest BMI levels occurring in blue collar workers.

The self-reported weight and height of small numbers of Pacific Islands people in the Household Health Survey showed that 21 percent were overweight (ie, the BMI was 25 to 30) and 22 percent were obese (the BMI being greater than 30). These figures were higher than those reported by Palagi in the survey (ie, 19 and 7 percent respectively) (Statistics New Zealand and Ministry of Health, 1993).

The Tokelau Island Migrant Study showed that non-migrants in Tokelau tended to gain weight until the age of 55 years, after which they begin to lose weight. However, migrants to New Zealand tended to gain weight more rapidly than non-migrants while under 55 years, and to continue gaining weight for many more years (Stanhope and Prior, 1980). Studies undertaken elsewhere on the weight changes of migrating Pacific Islands populations also show a definite trend for weight to increase with increasing urbanisation of the living environment (Pawson and Janes, 1981; McGarvey, 1991; Bindon and Zansky, 1986) (see Figures 4.4 to 4.7).

Mean tricep skinfold measurements from Pacific Islands people living in the United States have revealed near or above clinical obesity rates in those aged 20 years and over (Bindon, 1976). McGarvey (1991) showed that 46 percent of Samoan female adults living traditionally in Western Samoa were overweight, in comparison with 80 percent of female Samoan migrants in Hawaii. Younger adults and females seem to exhibit a larger weight gain on migration. This sex difference is possibly because men tend to continue participating in manual labour activities in their new environment, more so than women.

*Blood lipid
levels and coronary
heart disease*

Pacific Islands (employed) people have lower total and HDL-cholesterol levels, but similar LDL-cholesterol and triglyceride levels compared with (employed) New Zealand Palagi. When controlled for BMI, smoking and other variables, Pacific Islands people have lower serum triglycerides, lower total and LDL-cholesterol levels and higher HDL-cholesterol levels. Body mass index and smoking are positively correlated with serum LDL-cholesterol and triglyceride levels, and negatively correlated with HDL-cholesterol levels, after controlling for alcohol intake and physical activity levels (Scragg et al, 1993b; Baker et al, 1986). Therefore, Pacific Islands people seem to have a more beneficial blood lipid profile than Palagi New Zealanders in terms of coronary heart disease risk. However, the mean total serum cholesterol levels in New Zealand are still above the WHO recommended population mean of 5.2 mmol/l (WHO, 1982). Tukuitonga et al (1990) studied age-standardised mortality and morbidity data from CHD in a wide variety of New Zealand Pacific Islands groups. They found that CHD is an important cause of morbidity and mortality in males, and an important cause of morbidity in females.

The Tokelau Island Migrant Study showed that, upon migration, levels of LDL-cholesterol and triglycerides tended to rise in Tokelauans, while levels of HDL-cholesterol tended to fall, especially in males. This suggests males may be more prone to the influence of dietary and lifestyle change (in particular a higher intake of animal fats and sucrose and lower levels of physical activity) on blood lipid composition in New Zealand (Stanhope et al, 1981).

In the atolls, the pattern may partially be explained by the fact that the largest source of fat (about 80 percent) in the diet is from coconut oil (Stanhope et al, 1981). Although coconut oil has a predominance of myristic acid (C14:0), which is a saturated fatty acid, there is some evidence that the consumption of this particular fat is associated with more favourable blood lipid profiles than the consumption of other saturated fats (Shorland et al, 1969; J Mann, personal communication, April 1994). Upon migrating to New Zealand, one characteristic dietary change made by Tokelauans is to switch from consuming fat of predominantly coconut origin to fat mainly from animal sources, especially meat (Stanhope et al, 1981). Over time, this trend may be expected to cause changes in morbidity and mortality rates from CHD of Pacific Islands people in New Zealand.

*Blood pressure and
hypertension*

Hypertension is a risk factor for many chronic degenerative diseases. It is largely modifiable through the control of diet-related factors such as body weight, dietary fat intake and urinary sodium concentration (Tuomilehto et al, 1989; Stanhope and Prior, 1976). Increases in dietary protein, overall energy and salt intakes, plus a decrease in dietary potassium intake, are characteristic of the changes Pacific Islands people make to their traditional diet in New Zealand. These changes are likely to contribute to the increasing blood pressure levels of New Zealand Pacific Islands people, which are particularly noticeable in the middle to latter years of life (Prior and Stanhope, 1980; Scragg et al, 1993a).

Scragg et al (1993a) have shown that, compared with Palagi, Pacific Islands people have higher mean blood pressure levels (by 4 to 6 mm Hg, when controlled for age and blood pressure treatment (Table 4.2). After controlling for BMI, the difference was halved, but still remained statistically significant, suggesting that additional factors are involved. Of the hypertensive subjects, Pacific Islands people were least likely to be receiving treatment for hypertension and were therefore considered to be at the highest risk. These data were collected from employed people, which may underestimate the true ethnic differences in blood pressure within a more socioeconomically diverse general population.

TABLE 4.2: Mean blood pressure (mm Hg) by sex and ethnic group (age standardised) in the Workforce Diabetes Survey

Sex	Blood pressure	Pacific Islands	Maori	Other
Male	Systolic	128.8	130.7	124.9
	Diastolic	81.8	83.7	77.0
	Hypertension prevalence* (%)	16.6	23.2	9.9
Female	Systolic	125.1	124.4	118.5
	Diastolic	75.5	78.9	72.4
	Hypertension prevalence* (%)	15.7	14.6	11.2

Source: Scragg et al, 1991.

* Includes those currently receiving medication for hypertension, plus those found to have blood pressure levels greater than 160 mm Hg systolic and/or 95 mm Hg diastolic.

In some Islands environments, there are marked differences in blood pressure levels between the rural populations living in a traditional lifestyle and the urban, "modernised" populations. Blood pressure levels tend to rise with age more readily in the latter environment (Prior et al, 1968; Joseph et al, 1983; McGarvey and Baker, 1979; Beaglehole, 1992; Baker et al, 1986). This is attributed to a number of factors, including the increases in sodium intake (Prior et al, 1968; Beaglehole, 1992), body weight (Joseph et al, 1983), body fat (McGarvey and Baker, 1979), blood lipid levels (Tuomilehto et al, 1989) and stress levels (Beaglehole, 1992; Graves and Graves, 1985), plus decreased glucose tolerance (Tuomilehto et al, 1989) and physical activity levels (Prior and Stanhope, 1980) associated with moving from a traditional to a "modernised" lifestyle. The rise in blood pressure appears to express itself earliest and most noticeably in women (Beaglehole, 1992).

The Tokelau Island Children's Study showed that higher systolic and diastolic blood pressure levels were found in migrant boys and younger migrant girls, independent of body weight increase. Older girls showed no difference in blood pressure between migrants and non-migrants (Beaglehole et al, 1978). The adults studied in the Tokelau Island Migrant Study showed a more complex response to migration than the children. Systolic and diastolic levels rose in men upon migration, but not in women once the data were controlled for increases in body weight. In fact, they tended to decrease in this group (Salmond et al, 1989; Salmond et al, 1985). This may reflect the different roles of the sexes in Pacific Islands society, but there may also be an adaptation by individuals most involved in a modern lifestyle. Some studies show that Pacific Islands people in the most modern environments have similar or lower levels of blood pressure in comparison with those who are living in intermediate environments (McGarvey and Baker, 1979; Beaglehole, 1992).

Gout and hyperuricaemia

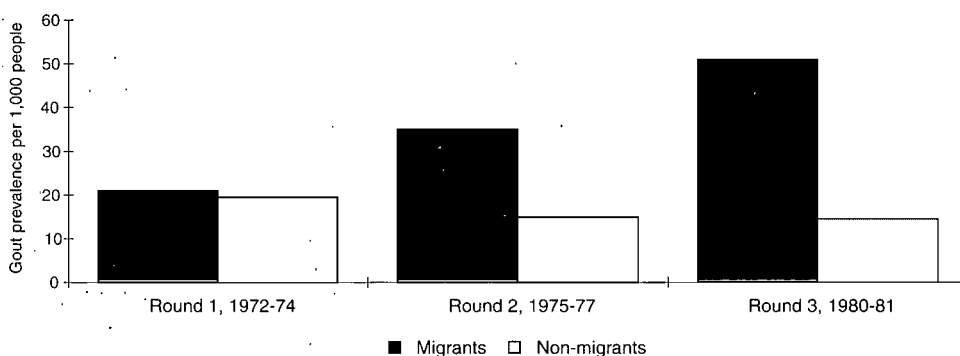
Clinical gout and hyperuricaemia are both associated with increased risk of diabetes, in addition to other factors such as parity and increasing adiposity (Stanhope and Prior, 1980). Studies have shown that the best predictors of the incidence of gout in men are age, serum uric acid and total cholesterol levels, self-reported alcohol intake, body mass and upper arm muscle circumference (Prior et al, 1987).

Pacific Islands people, especially men, tend to have a genetic predisposition to hyperuricaemia which can become manifested as clinical gout at an increased rate with environmental change (Zimmet and Whitehouse, 1981; Prior and Rose, 1966). Higher average levels of serum uric acid have been shown to occur as early as the onset of adolescence in Pacific Islands people (Stanhope and Prior, 1980). Hyperuricaemia is present in Pacific Islands populations both affected and unaffected

by westernisation (Zimmet and Whitehouse, 1981). The prevalence of hyperuricaemia in a sample of New Zealand Maori and Cook Islanders from both urban and rural areas was found to be 40 percent in both males and females (Prior et al, 1966). Clinical gout is more common upon modernisation, but the effect of modernisation on gout is not as strong as it is on obesity, diabetes and hypertension (Zimmet and Whitehouse, 1981). This was illustrated by the finding that Maori people have a higher prevalence of gout, at 10.2 percent, than the 2.5 percent and 5.3 percent in urban and rural Cook Islanders respectively (Prior et al, 1966).

The Tokelau Island Migrant Study did show an increase in the prevalence of clinical gout in migrant men, in comparison with non-migrant men (Figure 4.8).

FIGURE 4.8: Age-standardised prevalence of gout over time observed in migrant and non-migrant Tokelauan men



Source: Prior et al, 1987.

Gout was also shown to occur at an earlier age in Tokelauan migrants to New Zealand than in the non-migrants. The age-standardised relative risk of developing gout between 1968 and 1982 was nine times higher in migrant men, emphasising the importance of environmental and lifestyle influence. It is suggested that lifestyle changes after migration to New Zealand, such as increasing meat and alcohol consumption and the effect of increasing body weight, were likely to cause the increase in serum uric acid concentration, leading to the higher rates of gout (Prior et al, 1987).

In women, the prevalence of gout was low in both environments (Prior et al, 1987). However, during pregnancy, Pacific Islands women develop higher serum uric acid concentrations, and at an earlier stage of pregnancy than pregnant women from other ethnic groups (Barry et al, 1992).

Diabetes mellitus and impaired glucose tolerance

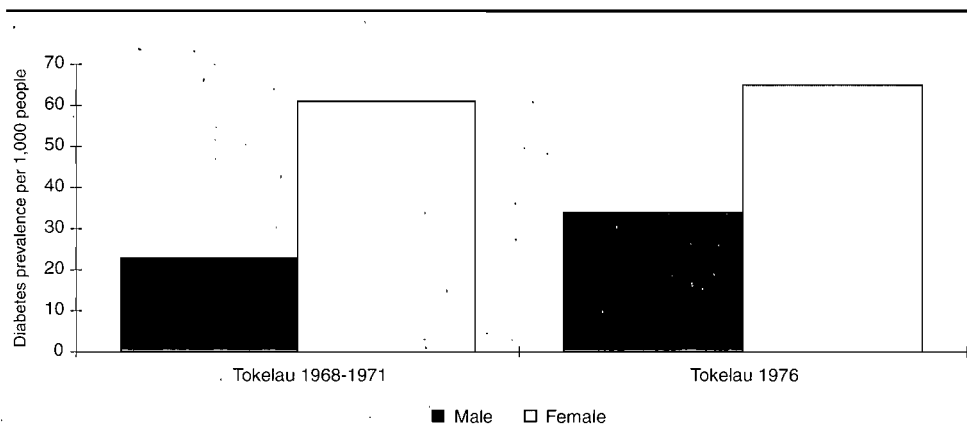
For many years, it has been recognised that diabetes is a major chronic health problem amongst Pacific Islands people in New Zealand (Prior and Davidson, 1966; Scragg et al, 1991).

The New Zealand Workforce Study showed that, after controlling for BMI, age and income, the relative risk of diabetes mellitus and the occurrence of impaired glucose tolerance in Pacific Islands (employed) people living in New Zealand increase significantly in comparison with Palagi (employed), indicating the involvement of physical activity, diet and other factors (Scragg et al, 1991).

The majority of Pacific Islands people with diabetes are not in paid work, which indicates that workforce studies underestimate the prevalence of diabetes in this population. A door-to-door survey conducted in South Auckland, where the majority of Pacific Islands people reside in New Zealand, showed that of the 22,651 residents surveyed, the age-adjusted prevalence of known diabetes was 2.8 percent in Palagi, 6.9 percent in Maori and 4.6 percent in Pacific Islands people (Simmons et al, 1994). It is estimated that half of those with diabetes are undiagnosed at any one time (Scragg et al, 1991), so the actual prevalence of diabetes in Pacific Islands people is probably closer to 9.2 percent.

The Tokelau Island Migrant Study (Stanhope and Prior, 1980) revealed an increased prevalence of diabetes mellitus after migration to New Zealand. Before migration, the prevalence of known diabetes was 6.1 percent in women and 2.3 percent in men, the figures increasing to 10.8 percent and 4.4 percent in females and males respectively after migration (Figures 4.9 and 4.10).

FIGURE 4.9: Age-standardised prevalence rates per thousand of definite and known diabetes in Tokelau over time



Source: Stanhope and Prior, 1980.

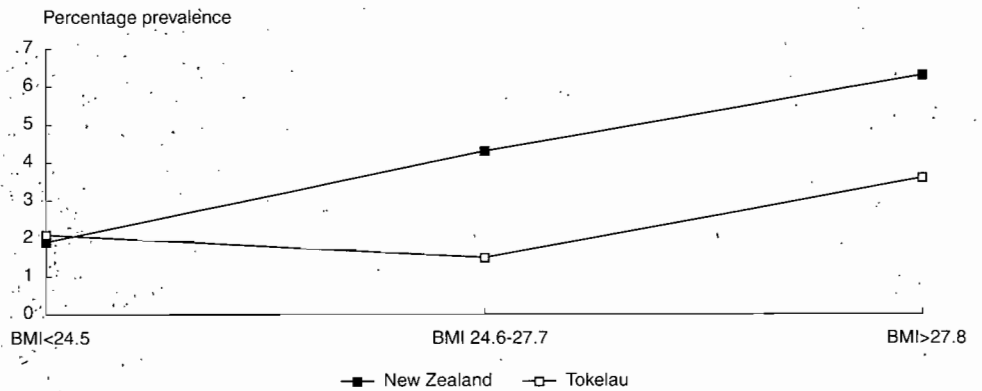
FIGURE 4.10: Age-standardised prevalence rates per thousand of definite and known diabetes in Tokelauan migrants to New Zealand over time



Source: Stanhope and Prior, 1980.

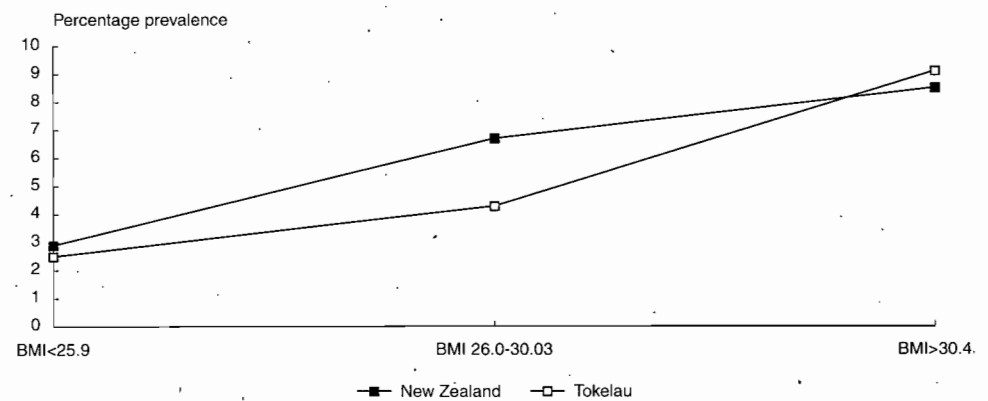
There was an increase in the prevalence of diabetes with increasing BMI, both in Tokelau and New Zealand (Figures 4.11 and 4.12), although only the change in females living in Tokelau was found to be statistically significant. The study also found that degree of adiposity was positively correlated with the risk of diabetes, while non-specific weight increase (ie, not necessarily only adipose tissue) was not.

FIGURE 4.11: *Age-standardised prevalence of definite diabetes in Tokelauan men aged 35-75 years by tertiles of BMI values*



Source: Prior et al, 1978.

FIGURE 4.12: *Age-standardised prevalence of definite diabetes in Tokelauan women aged 35-75 years by tertiles of BMI values*



Source: Prior et al, 1978.

Ostbye et al (1989) list the factors most likely to contribute to the increasing rate of diabetes upon migration to be a higher energy, protein and alcohol diet, causing a greater weight gain, plus a decreased level of physical activity. It is likely that a genetic predisposition for diabetes occurs in Pacific Islands populations, responding to factors existing in an urbanised environment and lifestyle. The increasing rate of diabetes in Pacific Islands migrants and Pacific Islands people born in New Zealand following urbanisation supports this theory, as does the higher rate of elevated cord fructosamine concentrations at birth in Pacific Islands babies compared with Palagi babies (Simmons et al, 1992).

The following conclusions concerning the prevalence of diabetes in New Zealand Pacific Islands people are taken from the South Auckland Community Diabetes Planning Group's (1992) summary report on diabetes in that area:

- Diabetes is four times more common in Pacific Islands and Maori people in New Zealand than in Palagi. Gestational diabetes rates are also higher in Pacific Islands women.
- Diabetes commences on average ten years earlier in Pacific Islands and Maori people in New Zealand, compared with Palagi.
- Diabetes increases at least ten-fold with increasing age (from 20-39 years to 60-74 years).
- Diabetes increases four to ten times with increasing obesity.
- Of the patients with diabetes who were measured for the South Auckland Diabetes Study, 69 percent of Pacific Islands people, 28 percent of Palagi and 59 percent of Maori had BMI values above 30.
- Lack of regular exercise is associated with a doubling in the rate of diabetes.
- Overall, Pacific Islands people with diabetes were found to:
 - have higher rates of obesity
 - have poor blood glucose control
 - have inadequate knowledge of their condition
 - not be carrying out adequate blood glucose monitoring
 - have poor blood lipid control.

Harris et al (1993) have estimated that the number of diagnosed diabetes patients in South Auckland could increase four-fold during the ten-year period 1991-2001 due primarily to the ageing of the Pacific Islands population, without any change in the prevalence of diabetes.

Medical complications as a result of diabetes are also an important health concern in Pacific Islands people. At Middlemore Hospital, Pacific Islands patients with diabetes are admitted on average at the age of 56 years for foot complications as a result of diabetes, in comparison with the average age of 69 years for Palagi (Thompson et al, 1993). Microalbuminuria is predictive of diabetic nephropathy in patients with diabetes (Metcalf, 1992; Viberti, 1988). Non-insulin dependent diabetes mellitus in Polynesians specifically (unlike Palagi) is associated with an increased degree of proteinuria and end-stage renal failure unexplained by conventional risk factors such as hyperglycaemia alone (Lunt et al, 1990; Metcalf et al, 1993). Factors such as diet, the presence of other renal diseases, and genetics are thought to contribute to the higher prevalence of microalbuminuria in Pacific Islands people (Metcalf et al, 1993). In future, Pacific Islands Polynesian people are expected to have more admissions for chronic renal failure associated with diabetes than Palagi New Zealanders (Isaacs and Scott, 1987).

Other risk factors

Cigarette smoking

Bell et al (1994) identify smoking as a major issue for Pacific Islands people. Their report states that smoking is a major risk factor for coronary heart disease, lung cancer, oesophageal cancer, laryngeal cancer, bladder cancer, bronchitis, emphysema, and other respiratory disorders.

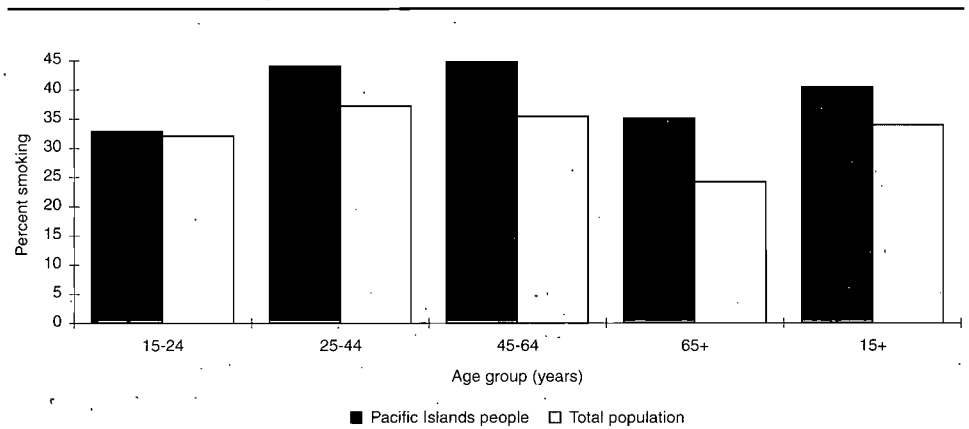
Over the last decade, the smoking rate among Pacific Islands people in New Zealand appears to have declined to a lesser extent than the rate among Palagi.

The latest reliable smoking information for people aged 15 years and over was collected in the 1976 and 1981 population censuses. The small sample sizes of Pacific Islands people in later surveys (Statistics New Zealand and Ministry of Health, 1993; OTR Spectrum Research Surveys, 1990-1993), prevent reliable analyses by age and sex.

The 1981 census found that 32 percent of people aged 15 years and over in the Pacific Islands population (sole ethnic group) were regular cigarette smokers compared with 31 percent in the total population. In both groups, a higher percentage of males than females smoked.

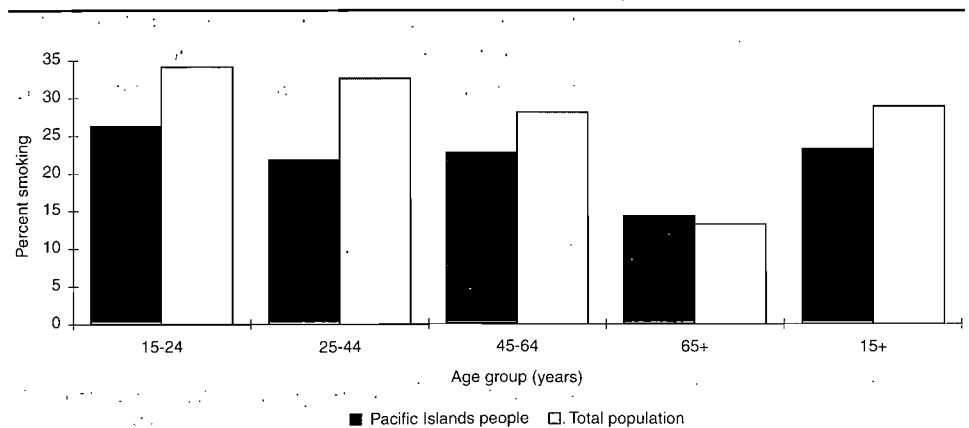
Pacific Islands males in 1981 had higher rates of smoking than all males (Figure 4.13) but, among females, Pacific Islands people had lower smoking rates (Figure 4.14). Among Pacific Islands men, cigarette smoking was most common in the 45-64 years age group (45 percent). Among Pacific Islands women, the highest smoking rates were among those aged 15-24 years (26 percent).

FIGURE 4.13: Cigarette smoking prevalence in New Zealand among males, by age and ethnicity, 1981



Source: Department of Statistics, 1982.

FIGURE 4.14: Cigarette smoking prevalence in New Zealand among females, by age and ethnicity, 1981



Source: Department of Statistics, 1982.

Between the 1976 and 1981 censuses, smoking rates amongst Pacific Islands males decreased, but increased slightly among Pacific Islands females. Smoking rates for the total population declined for both males and females during this same period (Table 4.3).

TABLE 4.3: *Prevalence of cigarette smoking by sex and ethnicity, 1976 and 1981*

Year	Pacific Islands people		Total population	
	Males (%)	Females (%)	Males (%)	Females (%)
1976	43.5	22.4	38.3	30.7
1981	40.4	23.3	34.0	28.9

Source: Department of Statistics, 1977 and 1982.

Recent survey information (OTR Spectrum Research Surveys, 1993) found that 34 percent of Pacific Islands people aged 16 years and over were current cigarette smokers, compared with 27 percent of the total sample. Although the definitions of ethnicity and smoking differ between this survey and the 1981 census, the figures suggest that the prevalence of smoking in Pacific Islands people has changed little.

The Tokelau Island Migrant Study showed that the longitudinal smoking rates of Tokelauan migrants in New Zealand increased significantly over time between surveys in 1972-1974 (Round 1) and 1982 (Round 3). In young people aged 15-19 years, the rates increased from 30 to 56 percent in males, and from 17 to 46 percent in females. In males aged 20-24 years, the rate increased from 39 to 63 percent; and in females aged 35-44 years, from 23 to 36 percent (Wessen, 1992).

The survey of the multicultural workforce at worksites in Auckland and Tokoroa between 1988 and 1990 (Scragg et al, 1991) provided some comparative information on the prevalence of smoking among workers aged 40 to 65 years. The survey included responses from 665 Pacific Islands people (409 men and 256 women) and 4,472 Palagi (3,312 men and 1,160 women) concerning whether they had smoked cigarettes in the last three months. Unpublished analysis of the data carried out by Scragg indicates that in the case of Pacific Islands men 36 percent had never smoked (Palagi men, 37 percent); that 23 percent were ex-smokers (Palagi men, 40 percent), and that 41 percent were current smokers (Palagi men, 23 percent). Among Pacific Islands women, 73 percent had never smoked (Palagi women, 53 percent), 6 percent were ex-smokers (Palagi women, 27 percent), and 21 percent were current smokers (Palagi women, 21 percent) (personal communication, R Scragg, August 1994).

In another recent small-scale study, Alison et al (1993) found that 24 percent of Pacific Islands mothers interviewed (n=242) had smoked during pregnancy. The rate among the total population sampled was 33 percent.

Alcohol consumption

While mild to moderate consumption of alcohol may have a protective effect on coronary heart disease rates, excessive drinking poses a risk to health. Beaglehole and Jackson (1991) have summarised some of these risks, which include hypertension, stroke, coronary heart disease and liver diseases. Consumption of alcohol can also result in motor vehicle accidents and subsequent death and disability. In addition, family and social cohesion can be disrupted, especially where excessive use paves the way for abuse, violence and mental illness. Not least of all, because of the high price of alcohol, excessive use can reduce disposable income and be associated with a poorer diet and nutritional status of the family as a whole.

The Tokelau Island Migrant Study (Stanhope and Prior, 1979) noted an increase in net alcohol consumption in New Zealand and on the atolls between 1968 and 1976, as well as an increase in the number of days each month men and women were using alcohol. In 1968, Tokelauan drinkers in New Zealand consumed alcohol on average 4.3 days per month, rising to 6.7 days per month in 1976. However, Stanhope and Prior (1979) concluded that by the late 1970s the prevalence of drinking and the intake (0.18 litres a month) was modest in comparison with figures for the general New Zealand population (0.90 litres a month), and that clinical disease attributed to alcohol had not by then emerged as a problem among Tokelauans. In the period between 1972-1974 (Round 1) and 1982 (Round 3), the numbers of alcohol drinkers increased from 63 to 73 percent and from three to 29 percent in women (Wessen, 1992). More recent data are not available to assess whether this increase has been sustained, and/or whether alcohol is currently related to health problems among this population group in New Zealand.

In 1978, the Alcohol Research Unit interviewed 10,000 New Zealanders aged 14-65 years regarding their drinking behaviour (Caswell, 1980; Bailey, 1991). Differences in alcohol consumption were found between Pacific Islands, Maori and Palagi respondents: On average, Pacific Islands men stated that much greater amounts were consumed on their last drinking occasion in comparison with the Palagi/others group. Pacific Islands women also consumed larger quantities of alcohol on any one occasion compared with Palagi/other women but tended to drink less frequently. Overall, more Pacific Islands women respondents (57 percent) abstained from drinking alcohol altogether, compared with Palagi/other respondents (12 percent). According to Caswell, the 69 Pacific Islands people in the survey reported that on their last drinking occasion they consumed on average 102 ml of absolute alcohol. The average amount for Palagi/others in the survey was 51 ml.

Information on the prevalence of alcohol consumption was also collected in the sample survey of the health of the multicultural workforce in Auckland and Tokoroa between 1988 and 1990 (Scragg et al, 1991). Of the 395 Pacific Islands men aged 40 to 65 years who provided information, 75 percent said they had consumed alcohol within the last three months compared with 93 percent of the 3,297 Palagi men interviewed. Among women aged 40 to 65 years, 42 percent of the 248 Pacific Islands women indicated they had consumed alcohol during the same period, the proportion of drinkers being only half the level among Palagi women (n=1,154), 89 percent of whom drank (R Scragg, personal communication, August 1994).

The 1992-1993 Household Health Survey conducted by Statistics New Zealand revealed that 53 percent of Pacific Islands people aged 15 and over never used alcohol, compared with 27 percent of Maori and 21 percent of Palagi respondents. For those who did drink alcohol, 50 percent of Pacific Islands people fitted into the "moderate drinking" category (ie, 61 to 199 g per week) (Statistics New Zealand and Ministry of Health, 1993).

Information is also available now on the extent of alcohol use (but not the amount consumed) by pregnant Pacific Islands women. This is an important area of interest because alcohol consumption during pregnancy can cause harm to the fetus, including growth deficiencies, minor physical malformations, dysfunction of the nervous system and mental retardation. In the Plunket National Child Health Survey, 1990-1991, it was found that 12 percent of the 242 Pacific Islands mothers interviewed consumed alcohol during pregnancy. This compared with figures of 44 and 45 percent of Maori and Palagi mothers, who numbered 512 and 2,686 respectively. The relatively high level of abstinence among Pacific Islands mothers was attributed to religious and cultural factors, it being noted that it was culturally inappropriate in Pacific Islands society for women to drink alcohol (Counsell et al, 1994).

There have been two detailed studies on drinking practices in the Cook Island and Samoan communities in New Zealand and the impact alcohol has on the lives of the women of these communities (Banwell, 1986; Neich and Park, 1988). The studies, when compared, suggest that to some extent the two cultures use alcohol differently.

In the study on the place of alcohol in the lives of some Cook Islands women living in Auckland, Banwell found that over the nine-month period they used alcohol on 26 percent of the days, and on each occasion consumed on average 1.2 standard glasses (14.5 ml of pure alcohol). Banwell reported: "The women participating in this study associated their own and other women's alcohol use with socialising, having fun and being or getting happy but some women were also concerned about the possible connection between the drinking practices of some people, particularly the younger members of the community, and car accidents, drink-driving convictions, domestic disputes and unplanned pregnancies".

In their study of Samoan women aged from the late teens to over 60 years living in the western suburbs of Auckland in 1986-1987, Neich and Park (1988) found that alcohol did not have an important place in their lives, that those who used it were usually occasional drinkers who consumed only a glass or two on each occasion, and that many Samoan women did not drink at all. What did have an effect on them, however, was the drinking pattern of their men folk. The Samoan women interviewed in Auckland said the style of Samoan men's drinking was "all or nothing" (ie, men tend to abstain completely or drink to the point of drunkenness), with moderation being "foreign" to Samoan drinking practice. Furthermore, alcohol was an important item for major social occasions such as weddings and 21st birthdays, and much money was spent ensuring there was a copious supply. The women also saw alcohol as the root cause of particular problems which beset some people, including lack of money, poor housing, domestic violence and rape. Some referred to a distinction between young people born in Samoa and those born in New Zealand. The former were considered to be less likely to abuse alcohol or get into trouble because of it. Among New Zealand-born Samoans in particular, social controls had been relaxed; and alcohol abuse often led to social friction.

Level of physical activity

Regular physical activity is known to be associated with multiple health benefits, independent of the presence of other risk factors for the development of chronic degenerative disease (Public Health Commission, 1993). Scragg et al (1992) in their survey found that 28 percent of Pacific Islands men and 18 percent of Pacific Islands women (in comparison with 33 and 30 percent of Palagi men and women respectively) were likely to participate in vigorous (aerobic) leisure time physical activity. Those who participated in this activity had lower BMI and fasting plasma triglyceride values and higher HDL-cholesterol values compared with non-active participants. Leisure time physical activity was also shown to be protective against diabetes and impaired glucose tolerance, independent of age, sex, ethnicity, BMI, triglycerides and HDL-cholesterol levels.

The 1993 Household Health Survey (Statistics New Zealand and Ministry of Health, 1993) indicated that 60 percent of Pacific Islands respondents had not taken exercise within the last seven days, in comparison with 56 percent of Maori and 55 percent of Palagi respondents.

A study by the National Research Bureau found that Pacific Islands people exercise on fewer days per week than either Maori or Palagi (Table 4.4), and that between 1989 and 1991 the amount of exercise taken declined. It is not known whether these differences are statistically significant. They may be due only to sampling variation (Bell, Swinburn et al, 1994).

TABLE 4.4: Mean number of day's exercise taken per week, by ethnic group, 1989 and 1991

Year	Pacific Islands	Maori	Other
Strenuous exercise ⁽¹⁾			
1989	2.3	2.6	2.5
1991	2.0	3.0	2.6
Exercise ⁽²⁾			
1989	2.5	1.9	2.5
1991	1.7	2.0	2.6

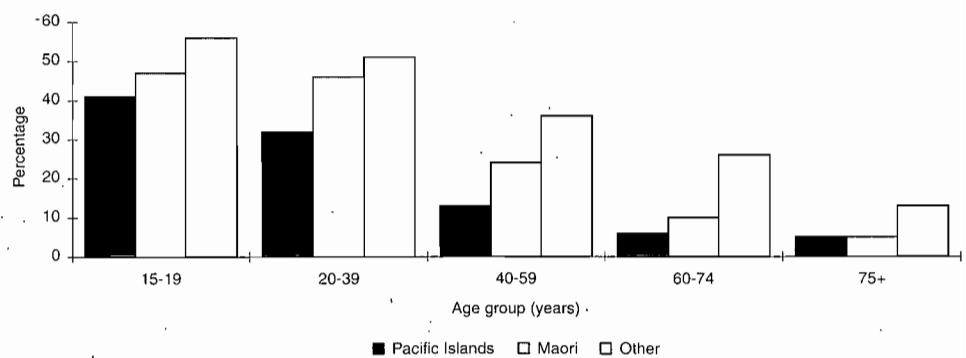
Source: National Research Bureau, 1989 and 1991.

(1) More than 20 minutes duration.

(2) Less than 20 minutes duration.

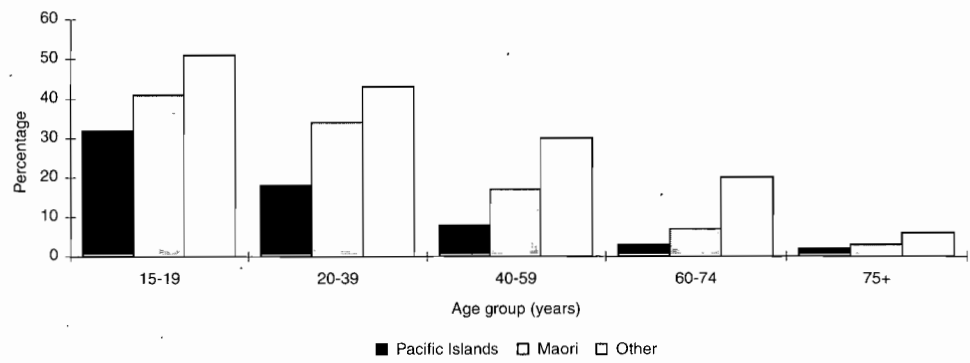
According to Davey (1993), 1991 census data indicated that, in all age groups for both males and females, Pacific Islands people reported lower levels of physical activity than non-Maori New Zealanders (Figures 4.15 and 4.16). The level of physical activity was estimated from positive responses to the census question asking whether respondents had participated in any physical recreation or sport within the last week. Data were collected from only 93 percent of the total Pacific Islands census population but, nevertheless, there was a consistent trend for Pacific Islands people in different age groups to have substantially lower levels of physical activity than other people.

FIGURE 4.15: Percentage of males who participated in physical recreation and sport within the last week (from the 1991 Census)



Source: Davey, 1993.

FIGURE 4.16: Percentage of males who participated in physical recreation and sport within the last week (from the 1991 Census)



Source: Davey, 1993.

References

- Alison LH, Counsell AM, Geddis DC et al. First report from the Plunket National Child Health Study: Smoking during pregnancy of a New Zealand cohort. *Paediatr Perinat Epidemiol* 1993; 7: 318-33.
- Anderson NE, Gorman DF, Lines DR. The nutritional status of Auckland children. *NZ Med J* 1977; 85: 49-52.
- Ashton J. A deadly diet of coconut cream? *Health* 1992; 41(2): 6-9.
- Bailey JPM. Ethnicity and drinking and driving in New Zealand, Report CD 2415. Petone: Institute of Environmental Health and Forensic Sciences, DSIR Chemistry, 1991.
- Banwell C. The place of alcohol in the lives of Cook Islands women living in Auckland. "The Place of Alcohol in the Lives of New Zealand Women" project. Report No. 2. Auckland: Department of Anthropology, University of Auckland, 1986.
- Baker PT, Hanna JM, Baker TS. *The Changing Samoans: Behaviour and Health in Transition*. Oxford University Press. Research Monographs on Human Population Biology. Monograph No. 5. Oxford: Oxford University Press, 1986.
- Barry CL, Royle GA, Lake Y. Racial variation in serum uric acid concentration in pregnancy: A comparison between European, New Zealand Maori and Polynesian women. *Aust NZ J Obstet Gynaecol* 1992; 32(1): 17-9.
- Beaglehole R, Eyles E, Salmond CE, et al. 1978. Blood pressure in Tokelauan children in two contrasting environments. *Am J Epidemiol* 1978; 108(4): 283-8.
- Beaglehole R, Jackson R. Alcohol, cardiovascular disease and total mortality: The epidemiological evidence. *NZ Med J* 1991; 104: 249-51.
- Beaglehole R. Blood pressure in the South Pacific: the impact of social change. *Ethnicity and Disease* 1992; 2(1): 55-62.
- Bell C. The nutritional status of Tongan and Tokelauan children living in New Zealand. Unpublished thesis submitted for the degree of Master in Science. Dunedin: Department of Human Nutrition, University of Otago, 1993.
- Bell C, Swinburn B, Stewart A. Coronary heart disease incidence and risk factor prevalence among Pacific Islanders living in New Zealand. Report to the National Heart Foundation. Auckland: Department of Community Health, University of Auckland, 1994.
- Bindon JR. Growth patterns of height and weight in a Samoan migrant population. *Am J Phys Anthro* 1976; 44: 166.
- Bindon JR, Zansky SM. Growth patterns of height and weight among three groups of Samoan preadolescents. *Ann Hum Biol* 1986; 13: 171-8.
- Caswell S. *Drinking by New Zealanders*. Wellington: Alcoholic Liquor Advisory Council and the Alcohol Research Unit, 1980.
- Collins V, Dowse G, Zimmet P. Prevalence of obesity in Pacific and Indian Ocean populations. *Diabetes Research and Clinical Practice* 1990; 10: S29-S32.
- Counsell AM, Smale PN, Geddis DC. Alcohol consumption by New Zealand women during pregnancy. *NZ Med J* 1994; 107: 278-81.
- Coyne T, Badcock J, Taylor R. *The Effects of Urbanisation and Western Diet on the Health of Pacific Island Populations*. South Pacific Commission Technical Paper No. 186. Noumea: South Pacific Commission, 1984.
- Crampton P, Farell A, Tuohy P. Iron deficiency anaemia in infants. *NZ Med J* 1994; 107: 60-1.
- Davey J. *From Birth to Death III*. Wellington: Institute of Policy Studies, Victoria University of Wellington, 1993.
- Department of Statistics. 1976 Census of Population and Dwellings, Bulletin on Cigarette Smoking. Wellington: Department of Statistics, 1977.
- Department of Statistics. 1981 Census of Population and Dwellings, Bulletin on Cigarette Smoking. Wellington: Department of Statistics, 1982.
- Dryson E, Metcalf P, Baker J, et al. The relationship between body mass index and socioeconomic status in New Zealand: ethnic and occupational factors. *NZ Med J* 1992; 105: 233-5.

- Dumbrell S, Taylor R, Koteka G, et al. Prevention and Control of Non-Communicable Disease: Present Activities in the Cook Islands. Report No. 2. South Pacific Commission. Noumea: South Pacific Commission, 1984.
- Elliot RB. The anthropometry of Rarotongan pre-school children. *NZ Med J* 1974; 80: 387-91.
- Finau SA. Major nutritional threats and problems in the South Pacific. Proceedings of the Menzies Symposium: Nutrition and Health in the Tropics. Townsville: August, 1987.
- Fitzgerald TK. Dietary change among Cook Islanders in New Zealand. *Soc Sci Info* 1980; 19(4/5): 805-32.
- Graves TD, Graves NB. Stress and health among Polynesian migrants to New Zealand. *J Behav Med* 1985; 8(1): 1-19.
- Grimley Evans J, Prior IAM. Indices of obesity derived from height and weight in two Polynesian populations. *Brit J Prev Soc Med* 1969; 23: 56-9.
- Hanna JM, Pelletier DL, Brown VJ. The diet and nutrition of contemporary Samoans. In: Baker PT, Hanna JM, Baker TS (eds). *The Changing Samoans. Behaviour and Health in Transition*. New York: Oxford University Press, 1986.
- Harding W, Davidson F, van Rij A. Changes in food consumption of Polynesian school children. *J NZ Diet Assoc* 1974; 28(1): 10-12.
- Harding, W. The diet of Tokelau Island migrants in New Zealand. In: Stanhope JM (ed). *Migration and Health in New Zealand and the Pacific*. Proceedings of a Seminar on Migration and Related Social and Health Problems in New Zealand. Wellington: Wellington Hospital Epidemiology Unit, 1975.
- Harding WR, Russell CE, Davidson F, et al. Dietary surveys from the Tokelau Island Migrant Study. *Ecology of Food and Nutrition* 1986; 19: 83-97.
- Harris JJ, Ebert CS, Peev M. An Economic Evaluation of the South Auckland Diabetes Plan: Prepared for Middlemore Hospital. Auckland: Department of Economics, University of Auckland, 1993.
- Hunter JD. Diet, body build, blood pressure, and serum cholesterol levels in coconut-eating Polynesians. *Federation Proc* 1962; 21(4), part 2 :36-43.
- Isaacs RD, Scott DJ. Diabetic patient discharges from Middlemore Hospital in 1983. *NZ Med J* 1987; 100: 629-31.
- Jansen AA. Malnutrition and child feeding practices in Western Samoa. *J Trop Pediatrics* 1977; 23: 293-306.
- Joseph JG, Prior IAM, Salmond CE, et al. Elevation of systolic and diastolic blood pressure associated with migration: The Tokelau Island Migrant Study. *J Chron Dis* 1983; 36(7): 507-16.
- Kinloch P. *Talking Health but Doing Sickness. Studies in Samoan Health*. Wellington: Victoria University Press, 1985.
- Leach HM. The traditional background of Polynesian foods. *Proc Nutr Soc NZ* 1989; 14: 131-6.
- Lew EA, Garfinkel L. Variations in mortality by weight among 750,000 men and women. *J Chron Dis* 1979; 32: 563-6.
- Lines DR, Anderson NE, Gorman DF. The nutritional status of children in Western Samoa. *J Trop Pediatrics* 1980; 26: 88-95.
- Lunt H, Lim CW, Crooke MJ, et al. Clinical and ethnic characteristics associated with urinary albumin excretion in noninsulin dependent diabetic subjects attending the Wellington Hospital Diabetes Clinic. *NZ Med J* 1990; 103: 143-5.
- Manukau City. *Manukau City Quality of Life Survey. Technical Report 1. Ethnic Differences in Quality of Life*. Auckland: Manukau City, 1993.
- McGarvey ST, Baker PT. The effects of modernisation and migration on Samoan blood pressures. *Human Biology* 1979; 51(4): 461-79.
- McGarvey ST. Obesity in Samoans and a perspective on its aetiology in Polynesians. *Am J Clin Nutr* 1991; 53: 1586S-94S.

- Metcalf PA. Associations of Albuminuria in a Multiracial Workforce. The Auckland and Tokoroa Workforce Diabetes Study. Unpublished thesis submitted for the degree of Doctor of Philosophy in Mathematics, Statistics and Community Health. Auckland: University of Auckland, 1992.
- Metcalf P, Baker J, Scott A, et al. Albuminuria in people at least 40 years old: Effect of obesity, hypertension and hyperlipidaemia. *Clin Chem* 1992; 38(9): 1802-8.
- Metcalf PA, Baker JR, Scragg RKR, et al. Microalbuminuria in a middle-aged workforce. Effect of hyperglycaemia and ethnicity. *Diabetes Care* 1993; 16(11): 1485-93.
- Miller MR, Binns CW. Cultural differences in children's television viewing habits and implication for nutritional status. *Proc Nutr Soc Aust* 1979; 4: 120.
- Mitchell EA, Taylor BJ, Ford RPK. Four modifiable and other major risk factors for cot death: The New Zealand study. *J Paediatr Child Health* 1992; 28(S1): S3-8.
- Neave M. Protein and calorie malnutrition of early childhood in Western Samoa. *Trop Geog Med* 1968; 20: 191-201.
- Neave M. The nutrition of Polynesian children. *Trop Geog Med* 1969; 21: 311-22.
- Neich S, Park J. The place of alcohol in the lives of some Samoan women in Auckland. "The Place of Alcohol in the Lives of New Zealand Women" project, Report No. 12. Auckland: Department of Anthropology, University of Auckland, 1988.
- Nutrition Taskforce. Food for Health. Department of Health: Wellington, 1991.
- Ostbye T, Welby TJ, Prior IA, et al. Type 2 (non-insulin-dependent) diabetes mellitus, migration and westernisation: The Tokelau Island Migrant Study. *Diabetologia* 1989; 2(8): 585-90.
- OTR Spectrum Research Surveys. Wellington: 1990-1993.
- Pawson IG, Janes C. Massive obesity in a migrant Samoan population. *Am J Public Health* 1981; 71(5): 508-13.
- Pelletier DL, Bindon JR. Patterns of growth in weight and length among American Samoan infants. *Ecology Food Nutr* 1986; 18: 145-57.
- Pelto GH. Ethnic minorities, migration and risk of undernutrition in children. *Acta Paediatr Scand* 1991; 374: 51-7.
- Pollock NJ. Food and identity: Food preferences and diet of Samoans in Wellington, New Zealand. *Publications de l'Universite Francaise du Pacifique* 1989; 1(2): 45-9.
- Prior IAM, Davidson F. The epidemiology of diabetes in Polynesians and Europeans in New Zealand and the Pacific. *NZ Med J* 1966; 65: 375-83.
- Prior IAM, Rose BS, Harvey HPB, et al. Hyperuricaemia, gout and diabetic abnormality in Polynesian people. *The Lancet* 1966; 1: 333-8.
- Prior IAM, Rose BS. Uric acid, gout and public health in the South Pacific. *NZ Med J* 1966; 65: 295-9.
- Prior IAM, Grimley Evans J, Harvey HPB, et al. Sodium intake and blood pressure in two Polynesian populations. *New Engl J Med* 1968; 279: 515-20.
- Prior IAM, Beaglehole R, Davidson F, et al. The relationships of diabetes, blood lipids, and uric acid levels in Polynesians. In: Bennett PH, Miller M (eds). *Advances in Metabolic Disorders*. New York: Academic Press, 1978.
- Prior IAM, Stanhope JM. Blood pressure patterns, salt use and migration in the Pacific. In: Kesteloot H, Joossens JV (eds). *Epidemiology of Arterial Blood Pressure*. The Hague: Martinus Nijhoff, 1980.
- Prior IAM, Tasman-Jones C. New Zealand Maori and Pacific Polynesians. In: Trowell H, Burkitt D (eds). *Western Diseases: Their Emergence and Prevention*. Cambridge, Mass: Harvard University Press, 1981.
- Prior IAM, Welby TJ, Ostbye T, et al. Migration and gout: the Tokelau Island Migrant Study. *Brit Med J* 1987; 295: 457-61.
- Public Health Commission. *Our Health Our Future: The state of the public health in New Zealand 1993*. Wellington: Public Health Commission, 1993.
- Ravussin E, Swinburn BA. Pathophysiology of obesity. *Lancet* 1992; 340: 404-8.
- Reid R, Mackie M, Ibbertson HK. Bone mineral content in Polynesian and white New Zealand women. *Brit Med J* 1986; 292: 1547-8.

Royal New Zealand Plunket Society. Plunket National Child Health Study. Feeding Information 6 weeks to 1 year. Dunedin: Research Unit, Royal New Zealand Plunket Society, unpublished, 1994.

Salmond CE, Joseph JG, Prior IAM, et al. Longitudinal analysis of the relationship between blood pressure and migration: The Tokelau Island Migrant Study. *Am J Epidemiol* 1985; 122(2): 291-301.

Salmond CE, Prior IAM, Wessen AF. Blood pressure patterns and migration: A 14-year cohort study of adult Tokelauans. *Am J Epidemiol* 1989; 130(1): 37-52.

1989 Scragg R. Diabetes mellitus: secular trends in mortality in New Zealand 1966-85. *Contemporary Health Issues*. Wellington: National Health Statistics Centre, Department of Health, 1989.

1991 Scragg R, Baker J, Metcalf P, et al. Prevalence of diabetes and impaired glucose tolerance in a New Zealand multi-racial workforce. *NZ Med J* 1991; 104: 395-7.

1992 Scragg R, Baker J, Metcalf P, et al. Diabetes and leisure time physical activity in a multi-cultural workforce. Paper presented at the New Zealand Society for the Study of Diabetes annual conference. Hamilton: New Zealand Society for the Study of Diabetes, 1992.

1993 Scragg R, Baker J, Metcalf P, et al. Hypertension and its treatment in a New Zealand multicultural workforce. *NZ Med J* 1993a; 106: 147-50.

1993 Scragg R, Baker J, Metcalf P, et al. Serum lipid levels in a New Zealand multicultural workforce. *NZ Med J* 1993b; 106: 96-9.

Shorland FB, Czochanska Z, Prior IAM. Studies on fatty acid composition of adipose tissue and blood lipids of Polynesians. *Am J Clin Nutr* 1969; 22(5): 594-605.

Simmons D, Baker J, James A, et al. Has the process causing noninsulin dependent diabetes started at birth? Evidence in neonates from a population with a high prevalence of diabetes. *NZ Med J* 1992; 105(940): 326-8.

Simmons D, Gatland B, Flemming C et al. Prevalence of known diabetes in a multiethnic community. *NZ Med J* 1994; 107: 219-22.

South Auckland Community Diabetes Planning Group. Report on Diabetes in South Auckland. Auckland: South Auckland Community Diabetes Planning Group, 1992.

Stanhope JM, Prior IA. The Tokelau Island Migrant Study: Prevalence of various conditions before migration. *Int J Epidemiol* 1976; 5(3): 259-66.

Stanhope JM, Prior IAM. The Tokelau Island Migrant Study: Alcohol consumption in two environments. *NZ Med J* 1979; 90(648): 419-21.

Stanhope JM, Prior IA. The Tokelau Island Migrant Study: Prevalence and incidence of diabetes mellitus. *NZ Med J* 1980; 92: 417-21.

Stanhope JM, Sampson VM, Prior IAM. The Tokelau Island Migrant Study: Serum lipid concentrations in the two environments. *J Chron Dis* 1981; 34: 45-55.

Statistics New Zealand and Ministry of Health. A Picture of Health. Wellington: Statistics New Zealand and Ministry of Health, 1993.

Thaman RR. Food for urbanising Polynesian peoples. *Proc Nutr Soc* 1983; 8: 26-37.

Thompson C, McWilliams T, Scott D, et al. Importance of diabetic foot admissions at Middlemore Hospital. *NZ J Med* 1993; 106(955): 178-80.

Tonkin S, Eyles E, Salmond C, et al. The Tokelau Islands children's study: Atoll and New Zealand comparisons: Physical growth. *NZ Med J* 1979; 89(637): 429-39.

Tukuitonga CF, Stewart A, Beaglehole R. Coronary heart disease among Pacific Island people in New Zealand. *NZ Med J* 1990; 103: 448-9.

Tuomilehto J, Zimmet P, Taylor R, et al. A cross-sectional ecological analysis of blood pressure and its determinants in eleven Pacific populations. *J Am Coll Nutr* 1989; 8(2): 151-65.

Turner A, Connolly G, Devlin M. Food related needs in a sample of Otago and Manurewa families. Health Promotion Unit. South Auckland Community Services. Auckland: Auckland Area Health Board, 1992.

Vainikolo F, Vivili P, Guthrie BE. Food consumption patterns and beliefs of Tongans living in New Zealand. *J NZ Diet Assoc* 1993; 47(1): 6-9.

Viberti G. Etiology and prognostic significance of albuminuria in diabetes. *Diabetes Care* 1988; 11: 840-5.

- Wessen AF (ed): Migration and Health in a Small Society: The Case of Tokelau. Research Monograph of Human Population Biology, No. 8. Oxford: Clarendon Press, 1992.
- WHO. Prevention of Coronary Heart Disease. Tech Rep Ser No. 678. Geneva: World Health Organization, 1982.
- WHO. Nutrition in the Western Pacific Region. Vol. 7. Western Pacific Region. Manila: World Health Organization, 1993.
- Zimmet P, Whitehouse S. Pacific Islands of Nauru, Tuvalu and Western Samoa. In: Trowell H, Burkitt D (eds). Western Diseases: Their Emergence and Prevention. Cambridge: Harvard University Press, 1981.

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Chapter 5

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Health Status of Pacific
Islands People

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Introduction

This chapter attempts to provide an overview of the health status of Pacific Islands people in New Zealand. It begins with an analysis of recent national statistics on major causes of mortality and hospitalisation, followed by a discussion on mental health and physical disability.

The main conclusion is that between 1987 and 1991 the overall mortality rates for both Pacific Islands males and females were lower than those for the total population, but the hospitalisation rates (inpatient/outpatient discharges from public hospitals) were higher.

However, the conclusions based on death registrations and hospitalisation data must be treated with caution. This is because Pacific Islands people are under-reported/misclassified in the death registration and hospitalisation statistics, or are under-represented for some other reason (eg, a lower level of use of hospitals for cultural reasons rather than because of a lower level of "real" illness). It also needs to be remembered that the hospitalisation statistics do not include inpatient/outpatient discharges from private hospitals, a feature which, along with the deficiencies in the recording of ethnicity in the public hospital data, weakens the value of hospitalisation data as an indicator of the incidence of morbidity within the total population and its constituent parts, such as the Pacific Islands population. One other point is that whereas in some instances the national mortality data reveal rates for Pacific Islands people that are considerably lower than the rates for the total New Zealand population (eg, for coronary heart disease), some regional or community-based surveys have revealed a contrary pattern.

Key points

Reliability of data

- *The recording of Pacific Islands ethnicity in mortality, hospitalisation and cancer registration statistics has not been accurate.*
- *Patients living in Pacific Islands countries are sometimes referred to New Zealand for medical treatment, and are included in New Zealand medical statistics (eg, those on hospitalisations, and the National Cancer Register). The ratio of Islands-based to New Zealand-based patients of Pacific Islands ethnicity is not known.*

Mortality

- *The standardised total mortality rates for the Pacific Islands male and female populations between 1987 and 1991 were well below those for the New Zealand population as a whole.*
- *Cancer, coronary heart disease, unintentional injuries and cerebrovascular disease in that order are the leading causes of death among Pacific Islands males of all ages, accounting for 51 percent of all recorded deaths between 1987 and 1991. However, the standardised death rates for these diseases are below those for all New Zealand males.*
- *Cancer, coronary heart disease and cerebrovascular disease are also the leading causes of death for Pacific Islands females, accounting for 44 percent of deaths. Again, the death rates are well below those for the national female population. Diabetes, asthma and bronchiectasis are the main conditions where the death rate exceeds the national female death rate.*

Hospitalisations

- *The hospitalisation rates for Pacific Islands males and females are above the national hospitalisation rates for males and females.*

Cancer Registrations

- *The Pacific Islands male cancer registration rate exceeds the national male rate. Cancer of the trachea, bronchus and lung, prostate cancer, stomach cancer, cancer of the liver and intrahepatic bile ducts, and leukaemia are the leading cancers, accounting for half the registrations. In each case, the registration rate exceeds the national male rate.*
- *Nearly one-quarter of Pacific Islands female cancer registrations are for breast cancer, and one-quarter for cancer of the cervix uteri, ovary and other uterine adnexa, and uterus. The rates for the last three sites exceed the national female rates, but that for breast cancer is below the national rate.*

Mental Health

- *The Pacific Islands male and female first admission rates to psychiatric hospitals, public hospital psychiatric units and institutions licensed under the Alcohol and Drug Addiction Act are lower than those for the remainder of the population.*
- *Pacific Islands people attempt to address mental illness by using traditional healers and church ministers, and often present late for formal psychiatric treatment.*
- *Pacific Islands people have a higher chance than Palagi of being readmitted to a psychiatric institution.*
- *Schizophrenic and psychotic disorders and alcohol dependence or abuse are the leading diagnoses for first admissions to psychiatric institutions.*

Physical Disability

- *Little is known about the extent of physical disability in the Pacific Islands population.*
- *For a variety of reasons, the level of use of formal disability services by Pacific Islands people is relatively low.*

Analysis and reliability of national health statistics

Most of the analysis in this chapter is based on data on mortality, inpatient/outpatient discharges from public hospitals, cancer registrations and admissions for psychiatric care collated by the New Zealand Health Information Service (NZHIS), Ministry of Health. Because of the small size of the population (ie, 4.9 percent of the national population in 1991), the number of Pacific Islands people who are hospitalised or die each year is relatively small. This means that annual incidence rates per 10,000 people for particular causes of hospitalisation and death fluctuate widely, and can be misleading, especially where the numerator is quite small (eg, between five and ten cases per annum).

To overcome the problem of the small size of the numerator, annual mortality, hospitalisation and mental health data for Pacific Islands people were aggregated for the years 1987-1991 inclusive. Five-year (not annual) rates were then calculated using data from the 1991 census. The denominator is the population who at the time of the census specified their ethnic group to be a particular Pacific Islands ethnic group or a combination of two Pacific Islands ethnic groups. Persons who specified they belonged to a Pacific Islands ethnic group as well as a non-Pacific Islands ethnic group (eg, European, Asian, Maori), are not included in the denominator.

At this point, some comments are in order concerning the recording of ethnicity in mortality and hospital statistics, and the reason why the population of sole Pacific Islands ethnicity has been used as the denominator to calculate the rates that appear in this chapter and Chapter 6.

The death registration form currently in use requires that the “degree of Pacific Island blood” or “degree of Maori blood”, if any, of both the mother and father of the deceased person be recorded, as well as their “Island” or *iwi* (ie, the system is based on ancestry, not self-defined ethnicity). The form is filled in by funeral directors who may or may not ask the family for details – or may even leave this part of the form blank. Subsequently, Statistics New Zealand code the information on ethnicity, and then pass the death registration tape to the New Zealand Health Information Service, Ministry of Health, which codes the cause of death. The coding system used by Statistics New Zealand is that an individual is classified as being of Pacific Islands ancestry if they have half or more Pacific Islands ancestry. Where a person is of half Pacific Islands and half Maori ancestry, they are classified as Maori; and where a person is less than half Pacific Islands ancestry but not of Maori descent, they are classified as “other”, along with people of Palagi, Chinese and Indian ancestry, etc.

Because the mortality data (the numerator) provided by the Ministry of Health to the PHC were for single ethnic origin, the denominator used in this chapter and Chapter 6 to calculate rates of death by cause is the population of sole Pacific Islands ethnicity recorded in the 1991 census. Had the Ministry included persons with mixed Pacific Islands-Maori ancestry in their Pacific Islands mortality statistics, the number of people of such ancestry recorded in the 1991 census would have been added to the denominator population used by the PHC. It is important to note this difference, and the possibility that some Pacific Islands deceased people may have had their ethnicity misclassified at the time of death, because the number of deaths recorded for this narrowly defined Pacific Islands population would be much smaller than the number in an expanded definition of the Pacific Islands population which some people might prefer.

In the case of the recording of information on inpatient and outpatient discharges from public hospitals, the ethnic categories on the hospital admission forms are "Maori", "Pacific Island" and "other". Because the system accepts only one ethnic category for a person, it provides scope for clerks to tick "Maori" or "other" for Pacific Islands people who may report they are of mixed ancestry. Sometimes, people are admitted without details of ethnicity being collected, in which case clerks may tick "other" simply because they did not ask the patient their ethnicity. Indeed, clerks are just as likely to tick "other" for a Pacific Islands person even at admission time itself (V Ormsby, Wellington School of Medicine, personal communication, 1994).

Brown (1983) has drawn attention to the extent of misclassification and under-reporting of ethnicity in hospital admission data. In 1980, a study at Wellington Hospital showed that on a single day, clerks understated Maori admissions by 30 percent compared with medical students who interviewed all the patients. In addition, the clerks omitted to record ethnicity on ten percent of the forms. A similar situation probably occurred for Pacific Islands people.

An Ethnic Health Statistics Technical Working Group, convened by Statistics New Zealand, is currently identifying some of the recording problems, the aim being to improve the coverage and accuracy of ethnicity in the hospital statistics first, before concentrating on data on deaths. Until such change takes place, all hospitalisation rates for Pacific Islands people must, like the death rates, be recognised as being based on numerator data that are subject to under-reporting, misclassification and a narrow definition of ethnicity focusing on "sole" ethnicity.

The denominator used to calculate rates (ie, the 1991 population of sole Pacific Islands ethnicity) is also subject to under-reporting. As pointed out in Chapter 2, many Pacific Islands people living in New Zealand were not enumerated in the 1991 census. The trade-off between this under-reported denominator and the under-reporting or inaccurate recording of ethnicity in the mortality and hospitalisation numerators is not clear.

Mortality

Between 1987 and 1991, there were 825 deaths of males and 574 deaths of females classified as being of Pacific Islands ethnic origin. The mortality rates for the five-year period were 213 and 138 per 10,000 respectively, considerably below the rates of 351 and 245 per 10,000 reported for the New Zealand population (Tables 5.1 and 5.2).

For males, cancer accounted for 20 percent of deaths, and coronary heart disease a further 15 percent, but the incidence rates were much lower than those for all New Zealand males. The incidence rates for cerebrovascular disease and unintentional injuries including motor vehicle traffic crashes (six and ten percent of all deaths respectively) were also lower. On the other hand, the death rates for infectious and parasitic diseases, diabetes and asthma were above the national rates.

The prominence of cancer, coronary heart disease, cerebrovascular disease and unintentional injury as leading causes of death among men is repeated in the case of Pacific Islands women, as are the higher rates for diabetes and asthma. Together, these six causes accounted for 56 percent of all female deaths between 1987 and 1991.

Recently, Tukuitonga et al (1990) have raised questions about the reliability of national mortality registration data in the case of coronary heart disease. In their study of mortality registrations for the period 1983-1986, they found that annual age-standardised

death rates for Pacific Islands men and women aged 35-74 years were lower than those for Palagi; but where information from the Auckland Coronary or Stroke Study (ARCOS) was used, the rates for Pacific Islands people and Palagi for the same period were quite similar. Specifically, the age-standardised rates for Pacific Islands men and women aged 25-64 years derived from ARCOS data were 17.5 and 5.2 per 10,000 respectively, compared with rates of 15.4 per 10,000 for Palagi males and 3.6 per 10,000 for Palagi females in the same age group. Tukuitonga et al (1990) considered the ARCOS rates provided a better indication of the occurrence of coronary heart disease because the registration procedure was based on self-identification of ethnicity (and interviews with relatives and friends of the deceased concerning ethnicity), as well as stricter identification of coronary events compared with death registration records. Consequently, they considered that coronary heart disease is a far more important cause of mortality among Pacific Islands men in particular than the death registration data suggest.

The findings of Tukuitonga et al (1990) have been confirmed by Bell et al (1994) for an older age group. Using information from ARCOS for the period 1989-1991, they found that the mortality rate for Pacific Islands males aged 35-64 years was 22.8 per 10,000 compared with one of 12.4 per 10,000 for Palagi males, both rates being age-standardised to Segi's World Population. For Pacific Islands and Palagi females aged 35-64 years, the rates were 8.3 and 4.0 per 10,000 respectively. Current research on cerebrovascular events recorded in ARCOS suggests that both mortality rates for Pacific Islands people from this particular condition are also higher than those for Palagi. The results of the study have not yet been published (J Broad, personal communication, August 1994).

TABLE 5.1: *Mortality by cause for Pacific Islands and all New Zealand males, for the period 1987-1991*

Cause	Pacific Islands males		Total New Zealand males	
	Number	Standardised rate/10,000 ⁽¹⁾	Number	Standardised rate/10,000 ⁽¹⁾
All cancers	164	48	17,398	85
lung cancer	45	14	4,510	22
Coronary heart disease	127	39	20,292	97
Unintentional injury	80	13	4,580	26
motor vehicle traffic crashes	46	7	2,661	15
Cerebrovascular disease	53	19	5,283	24
Intentional self injury	32	5	1,859	10
Infectious and parasitic diseases	25	5	552	3
Diabetes	18	7	999	5
Pneumonia	17	6	2,446	11
Asthma	15	5	463	2
Diseases of arteries, etc	15	5	1,755	8
Sub-total	546	-	55,627	-
All other causes	279	-	15,519	-
Total deaths	825	213	71,146	351

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates, standardised to the age structure of Segi's World Population.

TABLE 5.2: Mortality by cause for Pacific Islands and all New Zealand females, for the period 1987-1991

Cause	Pacific Islands females		Total New Zealand females	
	Number	Standardised rate/10,000 ⁽¹⁾	Number	Standardised rate/10,000 ⁽¹⁾
All cancers	123	28	15,657	65
breast cancer	28	5	3,028	14
lung cancer	10	3	2,060	9
cancer of cervix	8	2	508	2
Coronary heart disease	76	23	15,154	53
Cerebrovascular disease	53	16	8,092	28
Unintentional injury	32	5	2,250	11
motor vehicle traffic crashes	17	3	1,115	6
Diabetes	25	8	991	4
Pneumonia	23	7	3,432	11
Asthma	14	3	489	2
Bronchiectasis	12	4	137	0.6
Chronic rheumatic heart disease	11	2	376	2
Infectious and parasitic diseases	9	2	406	2
Subtotal	378	-	46,984	-
All other causes	196	-	16,761	-
Total deaths	574	138	63,745	245

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates, standardised to the age structure of Segi's World Population.

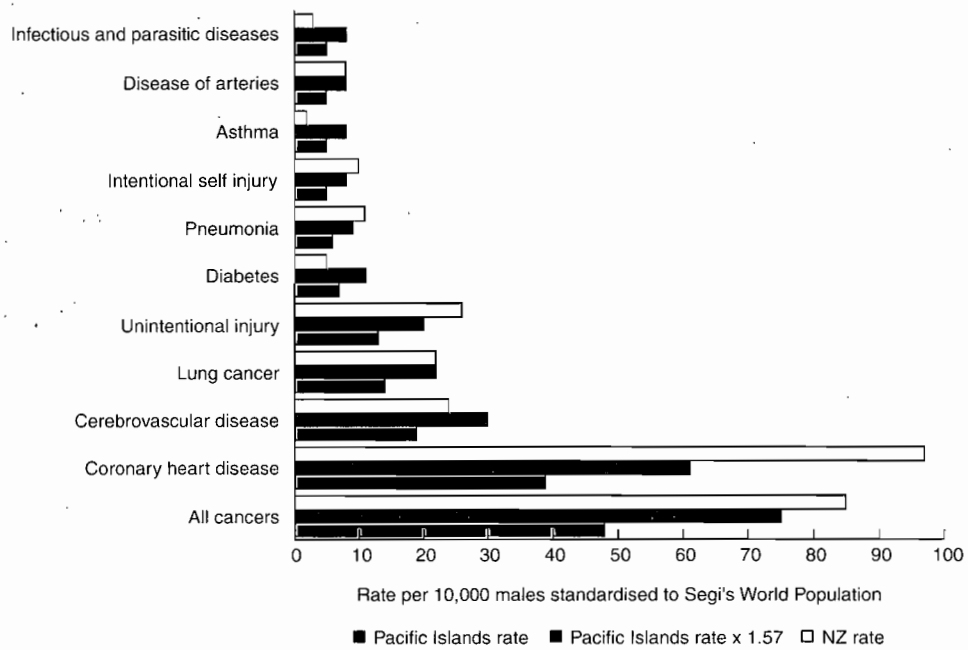
Under-reporting of deaths of Pacific Islands people

Because the annual number of deaths of Pacific Islands people in New Zealand is under-reported it is pertinent to recalculate the mortality rates provided in Tables 5.1 and 5.2 to see if they are still lower, or become higher, than the national rates after under-reporting has been taken into account.

Brown (1983), by matching the 1981 census schedule with death forms, calculated that under-reporting of the true number of deaths of Pacific Islands people of all ages in the second quarter of 1981 was about 57 percent. This value has been used as the yardstick to derive adjusted rates for Pacific Islands males and females, and these are shown along with the unadjusted rates and the rates for New Zealand in Figures 5.1 and 5.2. The adjusted rates were derived by multiplying the standardised values for each age group for each cause by a factor of 1.57 and then summing the values for all the age groups to find a total value for the Pacific Islands population. It is important to remember that the adjusted rates have no meaning other than to see whether Pacific Islands people's mortality pattern compared with total mortality in New Zealand would be different when generous allowance for under-reporting of deaths is made.

Even when a possible under-reporting level of 57 percent is allowed for, the overall Pacific Island male mortality rate (334 per 10,000) is still lower than the national rate (351). The same applies for the Pacific Islands female mortality rate (217 compared with 245 per 10,000). The rates for the leading causes of death for Pacific Islands males and females, although higher, are still below those for the national male and female populations (Figures 5.1 and 5.2). By the same token, the rates for diabetes and asthma in particular are much higher than the national rates.

FIGURE 5.1: *Standardised mortality rates for Pacific Islands and all New Zealand males, 1987-1991*



Source: Calculated from data supplied by the New Zealand Health Information Service.

FIGURE 5.2: Standardised mortality rates for Pacific Islands and all New Zealand females, 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

Hospitalisations

The five-year hospitalisation rates for Pacific Islands males and females between 1987 and 1991 were 6,323 and 9,667 per 10,000, both figures being higher than the national rates. The higher fertility of Pacific Islands women and their greater use of obstetric services would contribute to their higher rate of hospitalisation.

As mentioned earlier, under-reporting of the number of Pacific Islands people hospitalised does occur. Clerks are required to collect personal information at pre-admission time, but sometimes people are admitted without details of ethnicity being collected, with clerks sometimes ticking the category “other” where they are unable to determine a person’s ethnic background.

Another major difficulty with hospitalisation data, as far as its usefulness in providing an insight into morbidity is concerned, is the relative difference in the extent to which Pacific Islands people have access to and will use public hospitals compared with other sections of the population. According to Tukuitonga et al (1990), Pacific Islands people generally present late for medical treatment; and Pacific Islands men often delay treatment because of “perceived loss of dignity and intimidation by attending health care facilities”. The result of this behaviour is two-fold. First, Pacific Islands people may be under-represented in public hospital statistics, which, therefore, do not provide a reliable profile of their morbidity in a comparative sense. Secondly, Pacific Islands people are often admitted to hospital in a more severe state than other groups

with such diseases as diabetes and asthma (Tukuitonga et al, 1990). The Pacific Islands people consulted by the PHC confirmed they are reluctant or unable to make full use of health care services, and do tend to seek help at a late stage (Chapter 1).

One other feature concerning the reliability of hospital statistics as an indicator of morbidity within the Pacific Islands population is that people living in the Pacific Islands are sometimes referred to New Zealand for treatment (eg, for cancer or for heart disease), and are included in the New Zealand hospitalisation statistics undistinguished from Pacific Islands people living in New Zealand if they provide a local address (eg, that of relatives). According to Tukuitonga, in the late 1980s the New Zealand Government sponsored less than 100 cases a year for medical treatment here, with most being for cardiac surgery. The number of cases arriving for treatment that are arranged by family members resident in New Zealand is not known (Gray et al, 1989; Tukuitonga et al, 1992).

Information on the cause of admission of Pacific Islands people to hospitals between 1987-1991 is provided in Tables 5.3 and 5.4, and Figures 5.3 and 5.4.

TABLE 5.3: *Some major causes of hospitalisation (discharges from public hospitals, inpatients and outpatients combined) for males of all ages, for the period 1987-1991*

Cause	Pacific Islands males		Total New Zealand males	
	Number	Standardised rate/10,000 ⁽¹⁾	Number	Standardised rate/10,000 ⁽¹⁾
Unintentional injury	7,221	1,073	173,186	1,033
motor vehicle traffic crashes	1,128	160	31,611	185
accidental falls	1,443	209	37,148	229
Asthma	2,646	393	29,287	208
Acute respiratory infections	1,863	254	21,004	158
Pneumonia, all types	1,650	279	15,273	93
All malignant cancers	1,336	341	68,898	351
Infectious and parasitic diseases	1,246	202	19,814	130
all tuberculosis	169	40	993	6
Coronary heart disease	480	130	50,878	266
Cerebrovascular disease	439	132	18,834	92
Diabetes	400	116	7,922	43
Burns	290	42	4,286	28
Intentional self injury	173	24	5,616	32
Bronchiectasis	157	37	832	5
Alcohol related diseases	117	24	6,420	36
Acute rheumatic fever	109	15	541	4
Inflammatory diseases of the nervous system	86	13	1,053	7
Hypertension	68	15	1,967	11
Chronic liver disease	59	15	1,290	7
Bronchitis and emphysema	44	12	3,254	18
Hip fractures	36	10	3,893	19
Total hospitalisations	37,007	6,323	961,451	5,628

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates, standardised to the age structure of Segi's World Population.

TABLE 5.4: *Some major causes of hospitalisation (discharges from public hospitals, inpatients and outpatients combined) for females of all ages, for the period 1987-1991 (excludes discharges relating to childbirth)*

Cause	Pacific Islands females		Total New Zealand females	
	Number	Standardised rate/10,000 ⁽¹⁾	Number	Standardised rate/10,000 ⁽¹⁾
Unintentional injury	3,147	492	114,822	614
motor vehicle traffic crashes	456	64	14,823	85
accidental falls	656	109	38,801	189
Asthma	2,134	330	28,406	187
All malignant cancers	1,297	269	64,038	298
Pneumonia, all types	1,308	223	12,195	70
Acute respiratory infections	1,168	169	14,641	111
Infectious & parasitic diseases	1,022	160	18,807	120
all tuberculosis	138	24	729	4
Diabetes	555	131	8,606	43
Cerebrovascular disease	328	93	19,300	74
Coronary heart disease	270	75	28,552	118
Bronchiectasis	177	40	1,106	6
Intentional self injury	160	20	8,452	48
Burns	154	25	2,128	14
Acute rheumatic fever	106	14	409	3
Hypertension	99	21	2,638	12
Inflammatory diseases of the nervous system	57	8	878	6
Hip fractures	54	17	11,774	40
Bronchitis and emphysema	45	10	2,584	12
Chronic liver disease	26	5	926	5
Alcohol related diseases	19	3	2,315	12
Total hospitalisations	69,259	9,667	1,436,837	7,720

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates, standardised to the age structure of Segi's World Population.

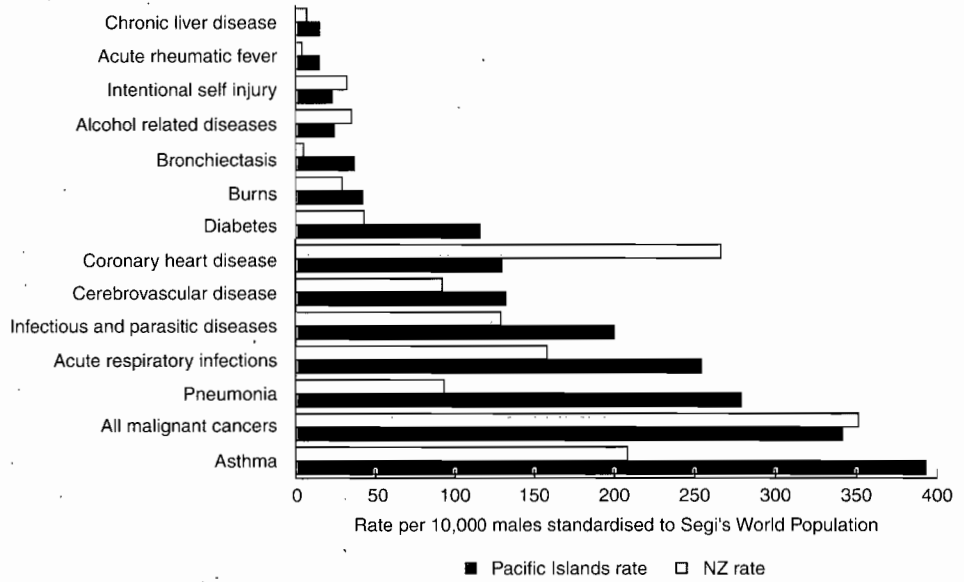
The major causes of hospitalisation for Pacific Islands males are unintentional injuries (including motor vehicle crashes), asthma, acute respiratory infections, pneumonia, cancer, and infectious and parasitic diseases. With the exception of cancer, the hospitalisation rates for these causes exceed the rates in the total male population. Rates higher than the national rate also occur for cerebrovascular disease and diabetes.

Unintentional injuries, asthma, cancer, pneumonia, acute respiratory infections, infectious and parasitic diseases, diabetes and cerebrovascular disease also head the list for hospitalisations of females, with only the rates for unintentional injuries and cancer being below the national rates.

Information on the hospitalisation rates is summarised in Figures 5.3 and 5.4. In comparing the information for Pacific Islands people with that for the New Zealand population as a whole, it must be remembered that the data do not include inpatient/outpatient discharges from private hospitals. Palagi patients in particular, who form the bulk of the New Zealand population, are more likely than Pacific Islands patients to make use of private hospitals. This implies that had data been available for both public and private inpatient/outpatient discharges, the extent of the differences in the

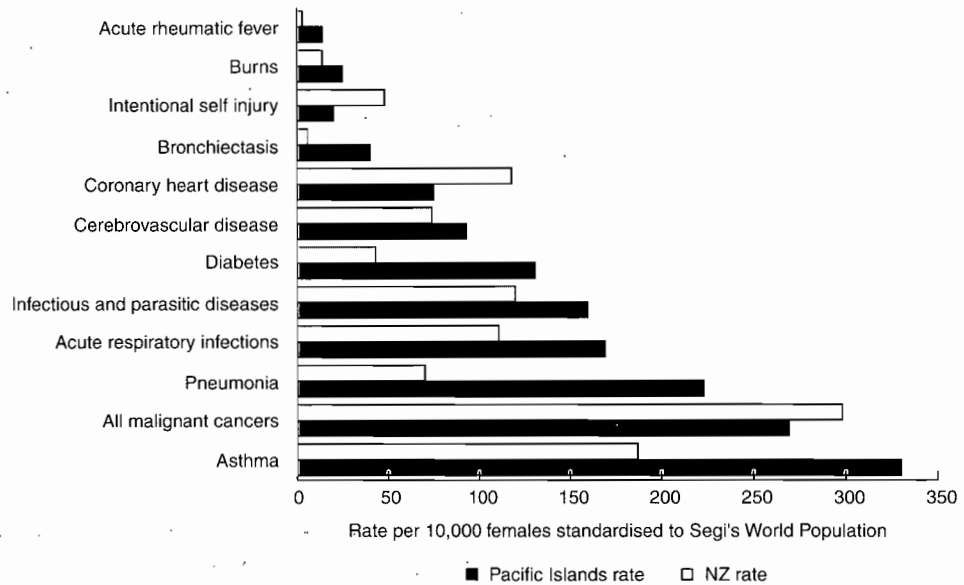
rates for the Pacific Islands and New Zealand populations would probably be narrower in some instances than suggested by the information in Figures 5.3 and 5.4.

FIGURE 5.3: *Standardised hospitalisation rates for Pacific Islands and all New Zealand males, 1987-1991*



Source: Calculated from data supplied by the New Zealand Health Information Service.

FIGURE 5.4: *Standardised hospitalisation rates for Pacific Islands and all New Zealand females, 1987-1991*



Source: Calculated from data supplied by the New Zealand Health Information Service.

Recently, major studies have been conducted concerning the prevalence of diabetes mellitus in two areas: in Tokoroa, in a multicultural workforce (Scragg et al, 1991), and in Otara, South Auckland, where 4,707 households were surveyed (Simmons et al, 1994a; Simmons et al, 1994b). These studies have not only confirmed the high incidence of diabetes among Pacific Islands people compared with Palagi, but indicated that Pacific Islands people have far less knowledge of its cause. This lack of knowledge about diabetes is seen as contributing to excess morbidity and admission to hospitals. Simmons et al (1994b) emphasise that diabetes is now a major public health problem for Pacific Islands people.

Scragg et al (1993) have presented evidence from their workforce survey showing that Pacific Islands workers in Tokoroa and Auckland not only had much higher blood pressure levels than Palagi workers, but also that Pacific Islands workers were four times *less* likely than their Palagi colleagues to be receiving treatment for high blood pressure. This difference in access to and use of medical assistance suggests that the Pacific Islands hospitalisation rates for hypertension provided in Tables 5.3 and 5.4, though greater than those for all New Zealand males and females, mask a comparatively much higher level of morbidity from hypertension among Pacific Islands peoples. Indeed, Scragg (personal communication, July 1994) suggests that the tendency for Pacific Islands people not to seek medical assistance for hypertension may be repeated for a range of non-urgent or non-life threatening conditions, thereby lowering the hospitalisation rates recorded for them in Tables 5.3 and 5.4.

An important area in this regard is coronary heart disease. The hospitalisation rates of 130 per 10,000 for Pacific Islands males and 75 per 10,000 for Pacific Islands females (ie, an average of 26 and 15 hospitalisations per 10,000 per annum between 1987-1991) are considerably *below* those for the total population. However, Tukuitonga et al (1990) and Bell et al (1994) have calculated "non-fatal" rates from the database of the Auckland Region Coronary or Stroke Study (ARCOS) for Pacific Islands people that are as high as those for Palagi, and, therefore, mirror the pattern for mortality from coronary heart disease in that region described earlier in this chapter. Tukuitonga et al (1990) found that in the Auckland data for 1983-1986, for Pacific Islands males and females aged 25-64 years, the standardised rates based on Segi's World Population were 14.6 and 10.3 per 10,000 compared with rates of 34.7 and 10.0 for Palagi males and females. According to Bell et al (1994), in the period 1989-1991, the non-fatal rates for Pacific Islands males and females aged 35-64 years were 15.9 and 6.1 per 10,000 respectively, being similar to the rates of 17.0 and 4.1 for Palagi males and females.

Cancer registrations

Cancer is the leading reported cause of death for Pacific Islands males and females, and it is a major cause of hospitalisation (Tables 5.1, 5.2, 5.3 and 5.4).

The National Cancer Registry provides the most comprehensive information on the incidence of cancer and, as would be expected, the rates are different from those for hospitalisations.

Data compiled from the NCR for the period 1987-1991 indicate that the registration rate for Pacific Islands males exceeded the national male registration rate, while that for Pacific Islands females was nearly the same as the national female rate (Tables 5.5 and 5.6).

There is the difficulty, however, that the rates for Pacific Islands males and females have been inflated by the inclusion of non-residents in the registrations. Paksoy et al (1991) note in the case of Western Samoa, for instance, that cases of cancer detected in that country which require complex treatment are commonly referred to Auckland General Hospital. It has not been possible to identify Pacific Islands residents and exclude them from the totals for Pacific Islands people in Tables 5.5 and 5.6.

TABLE 5.5: *Cancer registrations of males of all ages, National Cancer Registry, 1987-1991*

Cause	Pacific Islands males		Total New Zealand males	
	Number	Standardised rate/10,000 ⁽¹⁾	Number	Standardised rate/10,000 ⁽¹⁾
Trachea, bronchus and lung	109	35	5,087	25
Prostate	59	24	4,095	19
Stomach	43	13	1,199	6
Liver and intrahepatic bile ducts	41	10	336	2
All leukaemia	40	7	1,039	5
Colon/rectum	35	12	5,093	25
Lymphoid and histiocytic tissue	20	5	717	4
Brain	17	3	589	3
Pancreas	15	5	760	4
Bladder	14	5	1,474	7
Oesophagus	12	3	591	3
Lymphosarcoma and reticulosarcoma	12	2	271	4
Testicular	11	2	523	3
Multiple myeloma	10	3	423	2
Bone	10	2	144	1
Sub-total	448	-	22,341	-
All other	153	-	7,171	-
Total registrations	601	177	29,512	147

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates, standardised to the age structure of Segi's World Population.

TABLE 5.6: *Cancer registrations of females of all ages, National Cancer Registry, 1987-1991*

Cause	Pacific Islands females		Total New Zealand females	
	Number	Standardised rate/10,000 ⁽¹⁾	Number	Standardised rate/10,000 ⁽¹⁾
Female breast	141	29	7,748	37
Cervix uteri	63	13	1,303	7
Ovary and other uterine adnexa	47	9	1,151	5
Uterus	41	9	1,079	5
Trachea, bronchus and lung	34	9	2,366	10
All leukaemia	32	6	798	4
Stomach	28	6	723	3
Colon/rectum	24	14	5,191	22
Liver and intrahepatic bile ducts	12	3	177	0.7
Lymphoid and histiocytic tissue	11	2	633	3
Sub-total	433	-	21,169	-
All other	160	-	9,647	-
Total registrations	593	133	30,816	138

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates, standardised to the age structure of Segi's World Population.

For males, cancer of the trachea, bronchus and lung, cancer of the stomach, prostate cancer, liver cancer and leukaemia are the leading sites reported in the registrations, with all the rates exceeding the national male rates – the incidence of liver cancer in particular being five times higher. Tukuitonga et al (1992) have also identified a high rate of liver cancer for Pacific Islands males from NCR data, in this case for the period 1979-1988. They believed the high rate in that period suggested the disease was more common among Pacific Islands men than could be explained by temporary migration from the Pacific Islands for treatment. From a broad-based survey of information for Pacific Islands countries, Henderson and others (1985) found that cancer of the liver accounted for about ten percent of all cancers in Pacific Islands peoples, with relatively high rates being reported in those populations which have a high prevalence of hepatitis B virus antigenemia. According to Bandaranayake and Carlson (1990), notification rates of cases of hepatitis B among Pacific Islands people in New Zealand in 1987 were twice as high as those for people of Palagi ancestry (ie, 23.0 per 100,000 compared with 11 per 100,000).

Cancer of the colon and rectum is not as common among Pacific Islands males as it is in the total male population (Table 5.5). Sutton et al (1993) have investigated the incidence of colo-rectal cancer among "Polynesians" (ie, Pacific Islands people), Maori and Palagi in New Zealand, using data from the National Cancer Registry for the period 1970-1984, as well as analysing histological specimens. They found the incidence of large intestinal cancer is lowest among "Polynesians", and noted that the incidence of colo-rectal cancer among people living in the Pacific Islands is generally low as well – a feature confirmed by Henderson et al (1985), who link the low rates of colon cancer among many Islands populations with relatively higher fibre intake compared with western, white populations. However, they also found that over time the incidence of rectal cancer among "Polynesians" in New Zealand had increased by about 20 percent among both sexes; although no such trend was apparent for colonic cancer. Obesity, high energy, and fat intake have been identified as risk factors for

colo-rectal cancer, and some studies have also implicated high alcohol intake (Sutton et al, 1993).

Among females, 24 percent of registrations between 1987 and 1991 were for breast cancer, the proportion being more than double that for registrations of cancer of the cervix, the next most important site (Table 5.6). While the registration rate for breast cancer is lower than the national rate, those for cancer of the cervix, the ovary and the uterus are higher than the rates for all women in New Zealand. The higher than national rate for stomach cancer, but the lower rate for colo-rectal cancer, follows the same pattern as that for Pacific Islands males.

Cox and Skegg (1989) and Tukuitonga et al (1992) have previously commented on the high rate of invasive cervical cancer in Pacific Islands women compared to other women in New Zealand, with reference to data for the periods 1978-1982 and 1979-1988 respectively. Paul (1992), in a review of Tukuitonga's report, considers that the rate for Pacific Islands women between 1979 and 1988 may have been inflated by Pacific Islands women coming to New Zealand for treatment. Paul bases this assessment on the fact that a survey in the Wellington region in 1980-1984 (Gray et al, 1989), a region with a long established Pacific Islands population, did not find any excess of cases amongst Pacific Islands women compared with other women, suggesting that the high national rates for Pacific Islands women resulted from migration from the Islands for treatment, mainly in Auckland. Nevertheless, Pacific Islands women living in New Zealand do have a comparatively low rate of screening for cervical cancer. In a national survey of 1,200 women in 1990, it was found that 25 percent of the Pacific Islands women interviewed who were aged 20-64 years had never been screened at any stage, compared with only seven percent of women of Palagi ancestry (Bonita, 1991).

In a study of breast cancer among women in the Auckland region, Newman et al (1992) concluded that one in 21 Pacific Islands women would be expected to develop breast cancer in their lifetime, compared with one in 16 Palagi women. They also noted that a relatively high proportion of Pacific Islands women presented with advanced disease. They found this could be related in part to the greater body mass index of Pacific Islands women, there being a significant relationship between tumour size and body weight (Newman et al, 1992). Lethaby et al (1992) provided additional information from an analysis of Auckland data indicating that Pacific Islands women with breast cancer had significantly worse survival rates than other women. They attributed this to the higher level of obesity among them, and the fact that they presented with more advanced disease. Delay in seeking treatment for initial symptoms did not differ significantly between ethnic groups in the study (Lethaby et al, 1992).

Many leading cancers are preventable. Earlier and more widespread screening, together with education about risk factors, are necessary if the incidence of cervical cancer is to be reduced. Reduction in obesity is considered to be one appropriate way of addressing cancer of the breast and uterus inasmuch as obesity is an important risk factor for both cancers. Lung cancer is linked with smoking and this risk factor can be reduced. Finally, wider hepatitis B immunisation is necessary if mortality arising from liver cancer is to be reduced (Tukuitonga et al, 1992).

There is, however, also a need to reassess the cancer registration data to determine the extent of the influence of referrals from the Pacific Islands on the incidence rates. As used here, the denominator covers the Pacific Islands population resident in New Zealand, while the numerator includes an unknown number of people from overseas, but both the numerator and the denominator need to refer to the same population pool. One way of assessing the impact of overseas referrals on the national incidence rate for Pacific Islands people would be to compare the incidence rates for Auckland registrations of Pacific Islands people with the rate for Pacific Islands people in the remainder of the country, on the assumption that the truer rate for the resident Pacific

Islands population occurs in the latter rate because people referred from the Pacific Islands are treated primarily in Auckland. It was not possible to re-examine the data along these lines for this report, but such an analysis is needed.

Mental health

In the five-year period 1987-1991, 526 Pacific Islands people entered psychiatric hospitals, public hospital psychiatric units and institutions licensed under the Alcohol and Drug Addiction Act on a "first admission" basis. Of these, 316 were males and 210 were females (Department of Health, 1987-1991).

The first admission rates standardised to Segi's World Population for the five-year period 1987-1991 were 46 per 10,000 for males and 30 per 10,000 for females. These compare with standardised rates of 66 and 56 per 10,000 for males and females respectively in the total New Zealand population aged 15 years and over.

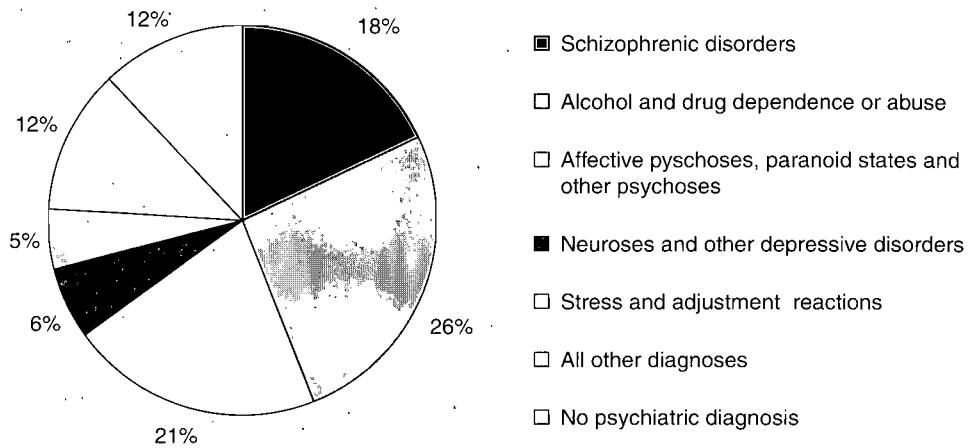
Very few Pacific Islands people under 14 or over the age of 45 years were admitted between 1987 and 1991, the bulk being from the population aged 15-44 years. The age group 15-24 years, which in 1991 contained 20 percent of both the male and female populations in the population of sole Pacific Islands ethnicity, provided 42 percent of all male and 37 percent of all female first admissions during the five-year period. The population aged 25-44 years, which contained 32 percent of the male and 33 percent of the female population, contributed 41 and 38 percent of the first admissions respectively.

The diagnoses at first admission for Pacific Islands males and females are shown by broad category in Figures 5.5 and 5.6.

Alcohol and drug dependence or abuse accounted for just over a quarter of all male admissions (ie, 26 percent), followed by affective psychoses/paranoid states/other psychoses (21 percent), and schizophrenic disorders (12 percent). The illnesses of about 12 percent of all males admitted were not diagnosed.

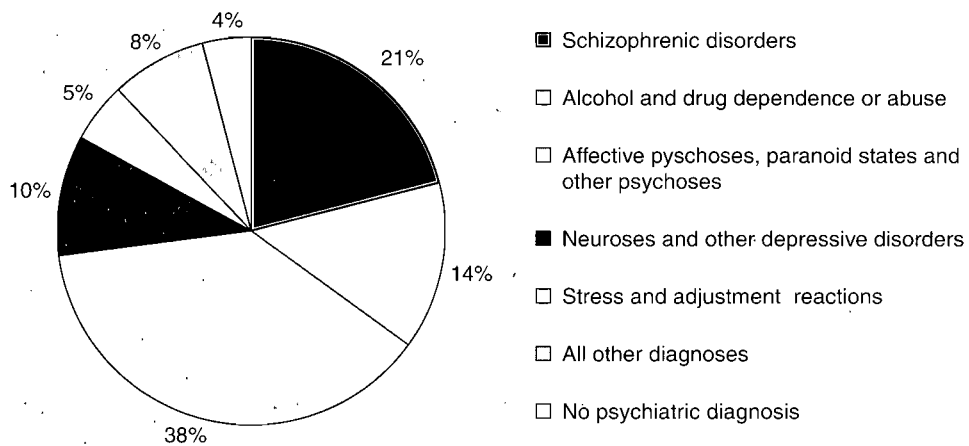
In the case of females, 38 percent were diagnosed to have affective psychoses/paranoid states/other psychoses, 21 percent to have schizophrenic disorders, and 14 percent to have alcohol and drug dependence or abuse problems.

FIGURE 5.5: Major diagnoses at first admission to psychiatric institutions for Pacific Islands males for the period 1987-1991



Source: Department of Health, 1987-1991.

FIGURE 5.6: Major diagnoses at first admission to psychiatric institutions for Pacific Islands females for the period 1987-1991



Source: Department of Health, 1987-1991.

Several analyses of Pacific Islands people’s mental health statistics have been published during the last decade.

Dawson (1987 and 1988) examined total admissions to psychiatric care in New Zealand in 1984 and found that relative to their share of the national adult population aged 15 years and over (2.3 percent), Pacific Islands adults were under-represented in total psychiatric admissions (2.0 percent) but over-represented among committed patients (3.4 percent). In other words, Pacific Islands patients who were admitted to a psychiatric hospital at that time were more likely than others to be committed. Unfortunately, Dawson did not standardise the Pacific Islands and New Zealand data to eliminate distortions in the comparison resulting from the different age structures of the two populations.

Dawson went on to note that about 37 percent of Pacific Islands people admitted to psychiatric care were detained under the Mental Health Act 1969 compared with 28 percent of Maori admissions and 20 percent of all other people admitted. Dawson also found that Pacific Islands patients were more likely than other patients to be diagnosed as having psychotic mental disorders or being mentally retarded.

Bridgeman (1993) has provided the most recent analysis of Pacific Islands people's mental health statistics. Important features identified by Bridgeman include the following:

- Few Pacific Islands people are admitted to psychiatric wards in public hospitals.
- Services for Pacific Islands people are overwhelmingly based in psychiatric hospitals where care is most likely to be custodial. This may be because (as in 1991) a quarter of Pacific Islands first admissions are through a law enforcement agency compared with nine percent of Palagi admissions.
- Pacific Islands first admissions to psychiatric hospitals and wards have been increasing, but readmissions have been rising faster still. This contrasts with an ongoing fall in Palagi first admissions and readmissions.
- Pacific Islands people have a greater chance than Palagi of being readmitted to a psychiatric hospital or ward.
- The proportion of Pacific Islands people admitted on the basis of having psychotic disorders (45 percent of admissions in 1991) is higher than the proportion among Palagi first admissions (34 percent). Psychotic disorders feature even more prominently among readmissions (77 percent compared with 56 percent for Palagi).
- About 14 percent of Pacific Islands first admissions have no psychiatric diagnosis (Palagi, six percent), which is as high as the figures for schizophrenia (14 percent), affective psychosis (14 percent) and alcohol abuse (15 percent). The proportion of cases not diagnosed has been rising, suggesting that "hospital services are increasingly confused as to what diagnosis to apply to a Pacific Islands person being admitted for the first time".

Bridgeman noted that favourable areas in the Pacific Islands mental health statistics included the low proportion of Pacific Islands people admitted for neurotic disorders, stress and adjustment disorders, and drug and alcohol abuse, compared with the situation among Palagi first admissions. It is possible that cases of neurotic and other disorders among Pacific Islands people remain undetected, and are not as rare as the data on admissions for psychiatric care suggest.

Bridgeman concluded that:

"...while Pacific Island people appear to have low rates of psychiatric illness, the way they come into hospital services and the pattern of utilization of services suggests... services are not well adapted to Pacific Island people's needs ..."

Bridgeman also considered that while the low rates for drug and alcohol abuse possibly reflect the strength of Pacific Islands families and the power of Pacific Islands churches in limiting substance abuse,

"...it is doubtful that such limits can hold in the face of the highest level of unemployment for any ethnic group in New Zealand and the quick-fix temptations of urban living".

Bridgeman observed that Maori psychiatric admissions in the last ten years had increased dramatically, with readmissions for drug abuse and psychosis rising by a factor of nine. He warns that "the same is possible for Pacific Island people" (Bridgeman, 1993).

The Mental Health Section of the Ministry of Health recognises that the real number of Pacific Islands people receiving mental health assistance is greater than that indicated in the statistics for psychiatric hospitals and wards. Some people make use of church and community cultural services, and, obviously, these outpatients are not tracked in the Ministry's data recording system. The Ministry also acknowledges that Pacific Islands people often present for admission to a psychiatric hospital or ward when their condition is in an advanced form (D Smith, Ministry of Health, personal communication, 1994).

This latter feature – lateness of presentation – may be culturally determined. Kinloch (1985) has given a detailed account of the cultural aspects of Samoan physical and mental health, the linkage with spiritual concepts, and the measures taken to address illness. According to Kinloch, Samoan people accept sickness – it is not something that can be prevented or avoided but is inevitable, with physical and mental symptoms of a sick body reflecting not a “mechanical breakdown” but a sickness of the spirit instead. This is often attributed to a supernatural force, which needs to be placated through witchcraft. In this situation, Samoan people “do sickness” (ie, they bear it) in order to re-establish spiritual wholeness “not just of the sick person but also of the whole social group through the process of caring for and curing the sick person” (Kinloch 1985). A case in point is sickness attributed to possession by spirits, where the symptoms may be those of schizophrenia and alleviation requires a spirit healer.

Published information on the cultural context of Pacific Islands people's behaviour has been provided mainly by anthropologists. Metge and Kinloch (1980), for example, have discussed behaviour associated with *fa'anoanoa* in Samoan culture. *Fa'anoanoa*, or unhappiness, is caused by death, severe illness in the family, shame, or a feeling of injustice. When a person is *fa'anoanoa*, he or she is moved by the belief that no one loves them, and they feel compelled to isolate themselves, seldom talking and perhaps becoming unkempt. In its extreme form, *fa'anoanoa* evokes bad thoughts that are manifested in undirected violence, murder or suicide. Kinloch (1985) emphasises that social considerations play an important part in some extreme forms of behaviour. For instance, suicide may be resorted to in an effort to atone for seriously failing the family or kinship group.

In Tongan society, the term *fakasesele* refers to where a person is totally insane and capable of doing anything. *Angaangaua* (“two characters”) refers to people who show two different personalities. In the case of *te'ia*, a victim is “hit by” and falls under the command of, a dead person's spirit. This can occur quite suddenly. A person may mention a dead person's name in a conversation, and suddenly act as though they were talking to them and shifting in their direction.

The views of Pacific Islands health professionals on Pacific Islands people's mental health were expressed at a *fono* in Wellington in November 1993 arranged by the Ministry of Health. Some of the important points made at that meeting were:

- Because many people with a mental problem are handled by traditional healers once family members recognise a change in behaviour, statistics on admissions to psychiatric hospitals and wards do not provide a reliable indicator of the extent of mental illness. It is only when people become uncontrollable and violent that they are taken to an institution.
- There is a need to document Pacific Islands people's views and approaches to mental illness in order to develop a comprehensive definition of “mental health” from a Pacific Islands perspective. This requires clarifying various concepts from the different Island cultures. For instance, there is no concept of “mental health” in the Samoan language, and while people do understand the concept of *ma'i-Samoa*, or Samoan sickness, it is difficult for them to understand the term “schizophrenia”.

- There is a need to recognise that Pacific Islands people's view of health is a comprehensive one (having both spiritual and physical aspects), and illness may be attributed to supernatural forces. There is also a need for "culturally safe" psychiatric services for Pacific Islands people, and "cultural assessment" of patients admitted to psychiatric hospitals.
- The Pacific Islands churches are becoming involved in mental health. Some ministers practice spiritual healing based on bible readings to exorcise possession. Traditional and semi-traditional methods employed to treat people who believe they are possessed should be recognised, according to the health professionals, but traditional healers and ministers do need to be educated about mental illness to ensure they do not cause irreparable damage to patients and that those in need of formal psychiatric attention receive it.
- The Pacific Islands population, in general, needs to be better informed of the various psychiatric services available. This includes provision of information to young people at school, especially about the dangers of substance abuse.
- A high proportion of young Pacific Islands people admitted to psychiatric hospitals are being classified as schizophrenic when in fact they are in a drug induced state. "Drug induced psychosis has become a major problem particularly in areas where unemployment is great", the meeting reported. Some young people are experiencing an identity crisis leading them to use drugs. Young people have to grapple with working in two cultures, at school and at home, and some become confused, especially those born in New Zealand who are unable to speak their mother tongue and do not identify with being either Pacific Islands people or Palagi.
- Psychiatric nurses in hospitals are more likely to "lock up" a Pacific Islands person than a Palagi patient because of a common held view that Pacific Islands people are violent.
- There is a need for more Pacific Islands people to work as educators, nurses and clinicians catering specifically for Pacific Islands people with mental illness.

Physical disability

Pacific Islands people with physical disabilities include those with congenital defects (eg, cleft palate; limb deformities such as club foot; and more severe defects such as chromosome defects and neural tube defects, such as spina bifida); and those with acquired disabilities resulting from injuries or diseases later in life (eg, loss of limbs, broken back). Loss of hearing and loss of sight at birth or later in life are also important impairments; as is loss of particular functions with increasing age (eg, general mobility).

Far less is known about the extent of disability within the Pacific Islands population than in the Palagi population of New Zealand.

On one level, information for Pacific Islands people has not featured in published surveys on disability.

While questions on functional disability (ability to walk or bend, read, hear and bite or chew hard foods) were asked in the nationwide social indicators survey conducted by the Department of Statistics in 1980-1981, there was no breakdown of the responses by ethnic group (Department of Statistics, 1984).

In the report on the 1992-1993 national Household Health Survey, information for several different measures (self-identified *vis-à-vis* diagnosed measures) of physical disability (including hearing and sight loss) was presented, but separate information for Pacific Islands people in the sample was not published. However, some information was provided concerning self-assessed mobility. After adjusting the data for age and sex to take into account the relative youth of the Pacific Islands population, only 64 percent of the Pacific Islands people aged 15 and over who were interviewed said they were able to run 50 metres without any difficulty, compared with 76 percent of Palagi respondents and 75 percent of all respondents (Statistics New Zealand and Ministry of Health, 1993).

There are also cultural reasons for the lack of information on the extent of physical disability within the Pacific Islands population.

Pacific Islands parents who bear children with a congenital defect, for instance, feel ashamed. They invariably feel it is their fault, and would not be easily persuaded to seek medical help unless referral was imposed on them by medical authorities. Congenital defects may also be looked upon as retribution for the sin(s) of the mother or father, or both, imposed by God, the devil, or by a witchdoctor. The feeling of guilt and shame on the part of the parents affects the entire family and efforts to minimise public exposure of the child become part of the family routine. In such situations, traditional healers are the first people the family will seek help from. Contemporary medicine is a last resort. It is possible to conceal a member of the family with a defect more easily in New Zealand than it is in the Islands, because the Pacific Islands communities here are much larger than village ones and there is a lower level of interaction between households.

Language and organisational barriers have contributed to the lack of information about the extent of disability among Pacific Islands people, as well as the spread of information to them. The national disability information networks are driven primarily by, and serve the needs of, Palagi. These networks use English as the language in which to disseminate written and oral information on the availability of services, etc, and they concentrate primarily on the individual with the disability. Pacific Islands people have failed to make full use of the services available (eg, New Zealand CCS) not just because they are unwilling to disclose their handicapped child in a public arena but also because they are not aware of such services.

References

- Bandaranayake D, Carlson R. Trends in hepatitis B notifications 1976-87. *NZ Med J* 1990; 103: 298-301.
- Bell C, Swinburn B, Stewart A. Coronary Heart Disease Incidence and Risk Factor Prevalence among Pacific Islanders Living in New Zealand. Auckland: Department of Community Health, University of Auckland, 1994.
- Bonita R. The extent of cervical screening in New Zealand women. *NZ Med J* 1991; 104: 349-52.
- Bridgeman G. The Pakeha ambulance at the bottom of the cliff. *Mental Health News*, Spring 1993: 7-10.
- Brown PG. An Investigation of Official Ethnic Statistics. Department of Statistics, Occasional Paper No. 5. Wellington: Department of Statistics, 1983.
- Cox B, Skegg DCG. Cervical cancer in Pacific Island Polynesians. *NZ Med J* 1989; 102: 114.
- Dawson JB. The Process of Committal. Auckland: Mental Health Foundation of New Zealand, 1987.
- Dawson JB. Who gets committed: Demographic and diagnostic data. *NZ Med J* 1987; 100: 142-45.
- Dawson JB. Maori Admissions Under the Mental Health Act. In: *Maori Mental Health: A Resource Kit*. Auckland: Mental Health Foundation of New Zealand, March 1988.
- Department of Health. Mental Health Data.. Annual Reports for 1987-1991. Wellington: Department of Health; 1987-1991.
- Department of Statistics. Report on the Social Indicators Survey 1980-81. Wellington: Department of Statistics, 1984.
- Gray A, Pearce N, Symons L, Lamb D. Cervical cancer in Pacific Island Polynesians. *NZ Med J* 1989; 102: 420-1.
- Henderson BE, Kolonel LN, Dworsky R, et al. Cancer Incidence in the Islands of the Pacific. In: *National Cancer Institute Monograph 69*. Washington: National Cancer Institute, 1985.
- Kinloch P. Talking Health but Doing Sickness. *Studies in Samoan Health*. Wellington: Victoria University Press, 1985.
- Lethaby AE, Mason B, Holdaway IM, et al. Age and ethnicity as prognostic factors influencing overall survival in breast cancer patients in the Auckland region. *NZ Med J* 1992; 105: 485-8.
- Metge J, Kinloch P. Talking past each other: Problems of cross-cultural communication. In: Renwick WL (ed), *Early Childhood Care and Education*. Wellington: Department of Education, 1980.
- Newman PD, Mason BH, Holdaway IM, et al. Incidence and clinical features of breast cancer in the Auckland region. *NZ Med J* 1992; 105: 117-20.
- Paksoy N, Bouchardy C, Parkin DM. Cancer Incidence in Western Samoa. *Int J Epidemiol* 1991; 20(3): 634-41.
- Paul C. Incidence of cancer among Pacific Island people in New Zealand. *NZ Med J* 1992; 105: 43.
- Scragg R, Baker J, Metcalf P, et al. Prevalence of diabetes mellitus and impaired glucose tolerance in a New Zealand multiracial workforce. *NZ Med J* 1991; 104: 395-7.
- Scragg R, Baker J, Metcalf P, et al. Hypertension and its treatment in a New Zealand multicultural workforce. *NZ Med J* 1993; 106: 147-50.
- Simmons D, Shaw L, Kenealy T, et al. Ethnic differences in diabetes knowledge and education: The South Auckland Diabetes Survey. *NZ Med J* 1994a; 107: 197-200.

- Simmons D, Gatland B, Fleming C, et al. Prevalence of known diabetes in a multiethnic community. *NZ Med J* 1994b; 107: 219-22.
- Statistics New Zealand and Ministry of Health. *A Picture of Health*. Wellington: Statistics New Zealand, Ministry of Health, 1993.
- Sutton TD, Eide TJ, Jass JR. Trends in colorectal cancer incidence and histologic findings in Maori and Polynesian residents in New Zealand. *Cancer* 1993; 71 (12): 3839-45.
- Tukuitonga C, Stewart A, Beaglehole R. Coronary heart disease among Pacific Island people in New Zealand. *NZ Med J* 1990; 103: 448-49.
- Tukuitonga C, Solomon N, Stewart A. Incidence of cancer among Pacific Island people in New Zealand. *NZ Med J* 1992; 105: 463-6.

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Chapter 6

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Health Status of Different
Life Cycle Groups

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Introduction

This chapter focuses on the major causes of morbidity and mortality in four life cycle groups within the Pacific Islands population in New Zealand, namely:

- *children aged 0-14 years*
- *young people aged 15-24 years*
- *men and women aged 25-44 and 45-64 years*
- *older people over the age of 65 years.*

In calculating the incidence of major causes of mortality and hospitalisation, the same method as that used to obtain rates for the Pacific Islands population as a whole (Chapter 5) was employed. Mortality and hospitalisation data for the period 1987-1991 were aggregated for each life cycle group, and divided by the population for that group who at the time of the 1991 census specified their ethnic origin to be a particular Pacific Islands ethnic group or a combination of two Pacific Islands ethnic groups. All rates mentioned are, therefore, age-specific incidence rates. Finally, the cautionary comments about the completeness of the numerator and denominator data made in the introduction to Chapter 5 apply here as well.

Key points

Infants and children

- *The perinatal mortality rate for Pacific Islands births is about 34 percent higher than the national rate. There is little difference in the post-neonatal and infant mortality rates.*
- *The hospitalisation rate for infants under one year of age is nine percent higher than the national rate, while that for children aged 1-4 years is three times higher. Acute respiratory infections are the leading cause of hospitalisation for infants, with pneumonia, asthma, infectious and parasitic diseases, burns and unintentional injuries being the dominant causes of admissions among toddlers.*
- *Among 10-14 year olds, the hospitalisation rates of Pacific Islands children for acute rheumatic fever, pneumonia, otitis media, asthma, and infectious and parasitic diseases are all well above the national rates.*

Young people aged 15-24 years

- *Unintentional injury (especially motor vehicle crashes) and suicide account for 60 percent of the deaths of Pacific Islands people aged 15-24 years. The death rates for unintentional injury for both males and females are lower than the national rates.*
- *Accidental falls and motor vehicle crashes are the leading causes of hospitalisation for Pacific Islands males aged 15-24 years; with three-quarters of female hospitalisations being for pregnancy, childbirth, and health services related to reproduction.*

The first admission rates for psychiatric care for both Pacific Islands males and Pacific Islands females aged 15-24 years are lower than the national rates.

Men aged 25-64 years

- *Unintentional injury is the leading cause of death among Pacific Islands men aged 25-44 years, but the rate is only half the national rate. Cancer, coronary heart disease and intentional self injury are next in importance, with none of the rates exceeding the national rates. Cancer is the leading cause of death among men aged 45-64 years, followed by coronary heart disease and cerebrovascular disease. With the exception of cerebrovascular disease, the rates are below the national rate. The rate for lung cancer, the most common cancer among Pacific Islands men aged 45-64, is also below the national rate, but that for liver cancer is three times higher.*
- *Unintentional injuries are also the main cause of hospitalisation. Other leading causes of hospitalisation for Pacific Islands men aged 25-44 and 45-64 years (all with rates higher than the national rates) include asthma, infectious and parasitic diseases, pneumonia, cerebrovascular disease, hypertension, and, in the case of those aged 45-64 years, diabetes and chronic liver disease.*
- *For men aged 25-44 years admitted for psychiatric treatment for the first time, the admission rate is two-thirds the national rate. Nearly 28 percent are diagnosed for alcohol dependence or abuse, and 16 percent for schizophrenic disorders, the rate for the former being only half the national rate, but the rate for the latter being 12 percent higher.*

Women aged 25-64 years

- *The mortality rates for Pacific Islands women aged 25-44 years and 45-64 years are below the national mortality rates for these age groups. Cancer, coronary heart disease, asthma and chronic rheumatic heart disease are the leading causes of death in both groups, together with unintentional injury for women aged 25-44 years, and diabetes and cerebrovascular disease among those aged 45-64 years.*
- *Asthma is an important cause of hospitalisation for Pacific Islands women aged 25-64 years, as is diabetes, coronary heart disease, cerebrovascular disease and pneumonia for those aged 45-64 years. In many cases, the rates exceed the national rates; that for Pacific Islands women aged 45-64 years for asthma being 3.4 times higher, and that for diabetes 4.3 times higher.*
- *The registration rates for breast cancer and cancer of the colon/rectum are lower than the rates for all New Zealand women, but those for cancer of the stomach, cervix, ovary and uterus are considerably higher.*
- *First admission rates for psychiatric care for Pacific Islands women are well below those for New Zealand as a whole.*

Older people aged 65 years and over

- *The mortality rates for Pacific Islands men and women aged 65 years and over are only half the rates for the equivalent group in the national population. Cancer, followed by coronary disease and cerebrovascular disease, is the leading cause of death among men, and coronary heart disease, cancer and cerebrovascular disease the leading causes among women. All the rates for these causes are below the national rates for this group; but those for diabetes and asthma are higher.*
- *The hospitalisation rate for Pacific Islands men aged 65 years and over is higher than the national rate, but that for Pacific Islands women is similar to the national rate. For both groups, however, the hospitalisation rates for cerebrovascular disease, pneumonia, diabetes, infectious and parasitic diseases, asthma, bronchiectasis, bronchitis and emphysema are above the national rates.*
- *The cancer registration rate for Pacific Islands men aged 65 and over is above the national rate, with prostate cancer and lung cancer being the main sites reported. The rates for both exceed the national rate, as do those for cancer of the stomach, bladder, pancreas and liver.*
- *Among Pacific Islands women, breast cancer is the main site reported in the National Cancer Register, but the rate is half the national rate. The registration rate for all cancers is 78 percent of the national registration rate for older women.*

Children aged 0-14 years

Infants aged under one year

Late fetal death rates (stillbirths)

In 1988-1991, the late fetal death rate among births to Pacific Islands mothers (6.9 per 1,000 total births) was 47 percent higher than the rate in the total population (4.7 per 1,000 total births) (Table 6.1). A small study at St Helens Hospital, Auckland, during 1967-1978, found a similar high late fetal death rate among Pacific Islands births (Gunn and Hayden, 1981). Important factors in this difference were the heavier weight, the lower socioeconomic status, and the lack of antenatal care of the Pacific Islands mothers. Intra-uterine anoxia was especially common in Pacific Islands late fetal deaths. In a subsequent study of perinatal deaths at St Helens and National Women's Hospitals, Becroft and Gunn (1989) identified a high level of prenatal intracranial haemorrhages among stillborn fetuses of Pacific Islands parentage which they attributed to traditional abdominal massage during pregnancy.

TABLE 6.1: Infant mortality rates for the period 1987-1991

	Pacific Islands	Total population	Relative risk for Pacific Islands infants (95% confidence interval)
Late fetal deaths	6.9*	4.7*	1.5 (1.3-1.8)
Early neonatal mortality ⁽¹⁾	4.0**	3.5**	1.2 (0.9-1.4)
Perinatal mortality ⁽²⁾	10.9**	8.1**	1.3 (1.2-1.5)
Post-neonatal mortality ⁽³⁾	4.5**	5.2**	0.9 (0.7-1.1)
Infant mortality ⁽⁴⁾	9.5**	9.6**	1.0 (0.9-1.1)

Source: Department of Health, 1987-1991.

* Rate per 1,000 total births

** Rate per 1,000 livebirths. These are five-year, not annual rates.

(1) Liveborn infants dying within the first week of life.

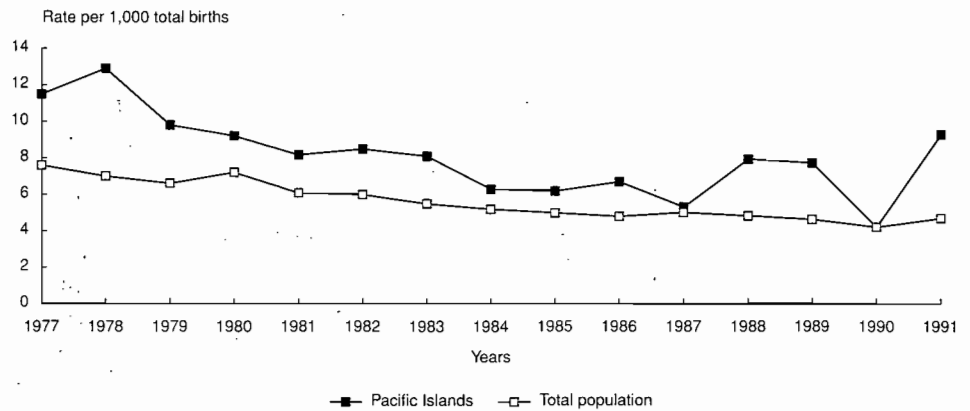
(2) Late fetal deaths and liveborn infants dying within the first week of life.

(3) Liveborn infants dying after 28 days and before the first birthday.

(4) Liveborn infants dying in the first year of life.

In 1977-1979, the Pacific Islands late fetal death rate (10.9 per 1,000 total births) was 54 percent higher than the rate in the total population (7.1 per 1,000 total births). Between the two periods (1977-1979 and 1988-1991), the Pacific Islands and national rates declined by 36 percent and 34 percent respectively (Figure 6.1).

FIGURE 6.1: *Late fetal deaths, 1977-1991*

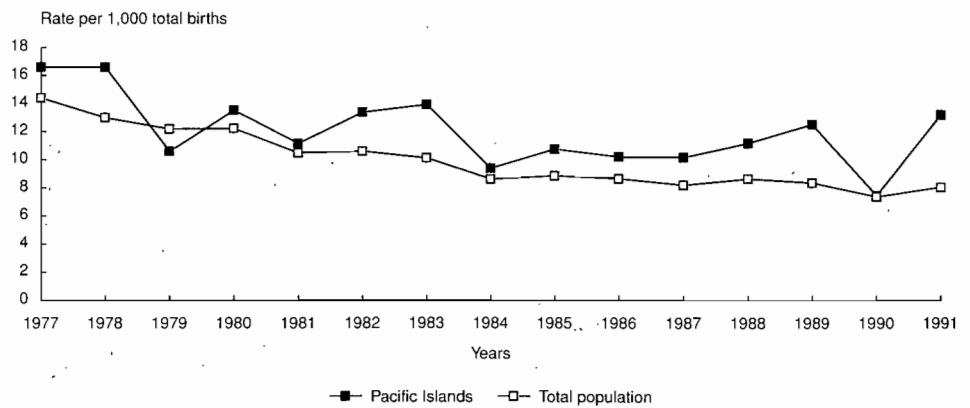


Source: Department of Health, 1987-1991.

Perinatal mortality (late fetal deaths and liveborn infants dying within the first week of life)

The 1987-1991 perinatal mortality rate in Pacific Islands births (10.9 per 1,000 total births) was 34 percent higher (significantly) than the total New Zealand rate (8.1 per 1,000 total births) (Table 6.1). The Pacific Islands rate was due primarily to the high late fetal death rate. Since 1977-1979, the Pacific Islands rate has declined by 25 percent, compared to a 38 percent decrease in the rate for the total population (Figure 6.2).

FIGURE 6.2: *Perinatal mortality, 1977-1991*



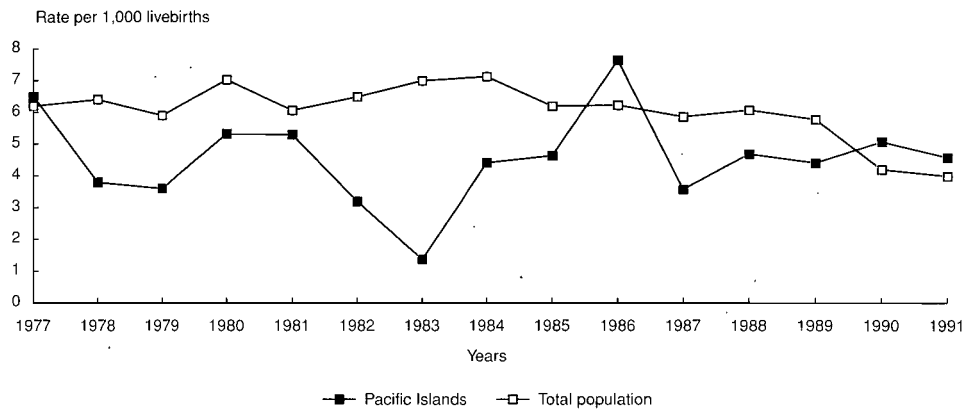
Source: Department of Health, 1987-1991.

Post-neonatal mortality (liveborn infants dying after 28 days and before the first birthday)

In contrast to the late fetal and perinatal mortality rates, the 1987-1991 Pacific Islands post-neonatal mortality rate was lower (14 percent), but not significantly different, from the rate in the total population (Table 6.1).

This compares to a difference of 45 percent between the 1977-1979 Pacific Islands rate (3.4 per 1,000 livebirths) and the rate in the total population (6.2 per 1,000 total births) (Figure 6.3). The national rate rose from 1977 to a peak in 1984 (7.1 per 1,000 livebirths), but has since declined by 44 percent, with an especially rapid decrease occurring during 1989-1991. Despite the fluctuations in the Pacific Islands rate, the rate generally declined throughout the late 1970s and early 1980s to reach its lowest point (1.4 per 1,000 livebirths) in 1983. The rate increased in the latter years of the decade.

FIGURE 6.3: *Post-neonatal mortality, 1977-1991*



Source: Department of Health, 1987-1991.

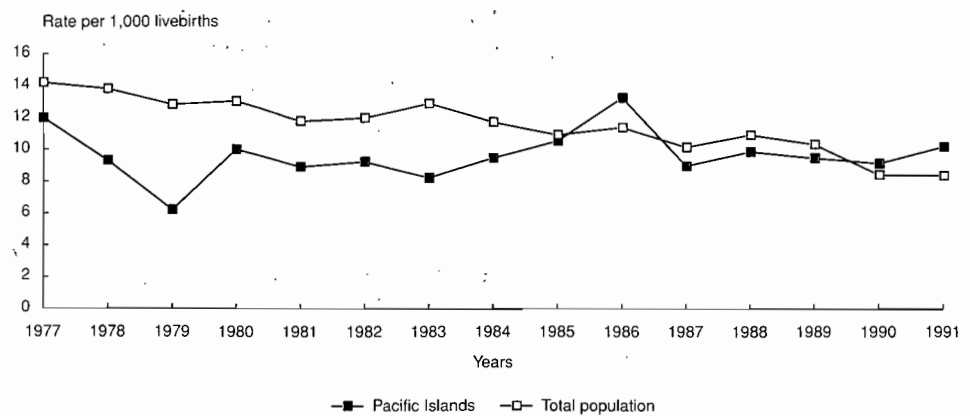
Infant mortality

In 1987-1991, the Pacific Islands infant mortality rate was no different from the rate in the total population (Table 6.1).

In contrast, the Pacific Islands rate in 1977-1979 (7.1 per 1,000 livebirths) was 48 percent lower than the rate in the total population (13.6 per 1,000) (Figure 6.4). The Pacific Islands rate increased throughout the last decade and exceeded the national rate in 1990 and 1991. Conversely, the national rate generally increased up to 1984, but declined subsequently.

Birth defects (28 percent) and sudden infant death syndrome (SIDS, 22 percent) were the major causes of infant mortality among Pacific Islands livebirths in 1987-1990. The rate of birth defects (2.7 per 1,000 livebirths) was little different, but the rate of SIDS (2.1 per 1,000 livebirths) markedly lower, than the respective national rates (2.4 per 1,000 and 3.6 per 1,000 livebirths).

FIGURE 6.4: *Infant mortality, 1977-1991*



Source: Department of Health, 1987-1991.

Hospitalisations

In 1987-1991, the overall rate of hospitalisation for Pacific Islands infants under 1 year of age (478.8 per 1,000 livebirths) was nine percent higher than the rate for the total population (437.4 per 1,000 livebirths).

The hospitalisation rate for Pacific Islands infants for pneumonia was nearly three times the national hospitalisation rate (Table 6.2). The Pacific Islands rates were also high for acute respiratory infections (which includes acute bronchitis and bronchiolitis), infections specific to the perinatal period, and other respiratory diseases of the newborn.

TABLE 6.2: *Hospitalisation of infants under one year of age for the period 1987-1991*

Cause	Pacific Islands infants		Total infants
	Number	Rate ⁽¹⁾	Rate ⁽¹⁾
Acute respiratory infections	1,369	60.5	38.2
acute bronchitis and bronchiolitis	1,050	46.4	21.9
Other respiratory diseases of the fetus and newborn	742	32.8	21.7
Pneumonia	475	21.0	7.5
Infectious and parasitic diseases	366	16.2	14.8
Asthma	224	9.9	8.5
Unintentional injuries	153	6.8	10.7
Infections specific to the perinatal period	116	5.1	3.2
Otitis media	63	2.8	4.9

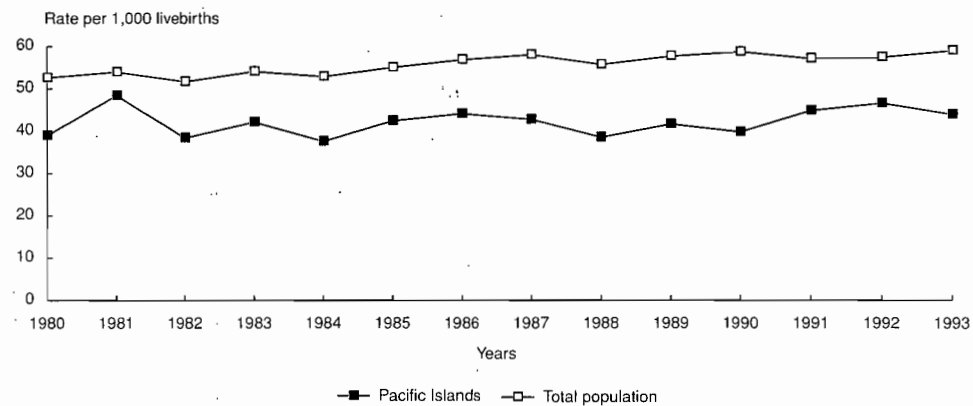
Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rate per 1,000 livebirths. These are five-year, not annual, rates.

Birthweight

A recent study found that in 1989-1991 the rate of Pacific Islands women giving birth to an infant weighing under 2,500 g was 43.0 per 1,000 livebirths (Borman, 1993). By comparison, the rates for non-Maori and Maori women were respectively 55.5 and 73.4 per 1,000 livebirths. Since 1980, the rate of low birthweight infants born to Pacific Islands women has increased slightly, but has remained below the national rate (Figure 6.5).

FIGURE 6.5: *Low birthweight (<2,500 g), 1980-1993*



Source: Calculated from data supplied by the New Zealand Health Information Service.

Infants aged 1-4 years

Mortality

In the 1987 and 1990 period, there were six female and 13 male Pacific Islands infant deaths in this age group. The number of deaths is too small for further meaningful analysis.

Hospitalisation

Between 1987 and 1991, Pacific Islands boys and girls were hospitalised for pneumonia at three times the rate for all children in this age group (Table 6.3). Pacific Islands children also had high hospitalisation rates for asthma, acute respiratory infections (specifically acute pharyngitis, acute bronchitis and bronchiolitis), infectious and parasitic diseases generally (and specifically septicaemia, chickenpox and measles), burns, and unintentional injuries due to motor vehicle crashes.

Pacific Islands hospitalisation rates for otitis media were similar to the national rate, but the rate for cancer among boys was 37 percent higher.

Prior et al (1977) had found previously that Tokelauan children resident in New Zealand (Porirua East) had high prevalences of ear and chest infections, asthma, purulent skin lesions and eczema.

TABLE 6.3: Hospitalisation of children aged 1-4 years for the period 1987-1991

Cause	Males			Females		
	Pacific Islands		Total population	Pacific Islands		Total population
	Number	Rate ⁽¹⁾	Rate ⁽¹⁾	Number	Rate ⁽¹⁾	Rate ⁽¹⁾
Asthma	1,425	2,040	1,223	774	1,205	758
Acute respiratory infections	840	1,202	1,024	539	839	669
acute pharyngitis	47	67	39	32	50	32
acute laryngitis and tracheitis	125	179	298	60	93	130
acute bronchitis and bronchiolitis	320	458	228	213	332	164
Unintentional injuries	806	1,153	1,218	416	648	884
motor vehicle traffic crashes	70	100	66	40	62	51
accidental falls	149	213	347	95	148	271
Pneumonia	708	1,013	357	597	929	285
Infectious and parasitic diseases	352	504	465	279	434	420
Otitis media	298	427	469	214	333	343
Burns	153	219	129	78	121	84
Cancer	89	127	93	30	47	80
Forearm fractures	38	54	81	19	30	57
Inflammatory diseases of the central nervous system	28	40	29	15	23	24

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Immunisation

A national random survey of the extent of immunisation coverage was carried out in 1992. It was concluded that "children whose principal caregiver identified themselves as being a Pacific Islander were not significantly less likely to have received the full series of childhood immunisations by age two years compared with European children" (Department of Health, 1992).

Mortality

In the period 1987-1990, there were five female and eight male deaths among Pacific Islands children aged 5-9 years.

Hospitalisation

The pattern of hospitalisations for this age group was similar to that for the preceding age group (Table 6.4). Pacific Islands children aged 5-9 years were again hospitalised for pneumonia at twice the rate for all children in this age group. The difference between the two rates was greatest for girls.

Children aged 5-9 years

Pacific Islands children aged 5-9 years continued to have high rates of hospitalisation from asthma, unintentional injuries due to motor vehicle crashes, and burns. Among Pacific Islands girls, the rates for cancer, acute rheumatic fever, acute glomerulonephritis and diabetes were also well in excess of the New Zealand rates.

In contrast to the experience for 1-4 year olds, the hospitalisation rate for Pacific Islands 5-9 year-olds for acute respiratory infections was lower than the total rate.

In the case of Tokelauan children, studies in the 1980s reported that the prevalence of asthma doubled following migration to New Zealand (Waite et al, 1980; Crane et al, 1989). According to Waite et al, patients with asthma classically include a high proportion giving a history of rhinitis and/or eczema. Both these conditions became much more prevalent among Tokelauan children living in New Zealand compared with those living on the atolls (Waite et al, 1980).

Mitchell and Quested (1988) and Pattemore et al (1989) have suggested that the high rate of hospitalisation for asthma among Polynesian children (which includes Maori and Pacific Islands children) may be related to patterns of medical management, rather than genetic or socioeconomic factors. Garret et al (1989) have also commented on possible reasons why Pacific Islands children are admitted more frequently than others to hospital with asthma.

TABLE 6.4: Hospitalisation of children aged 5-9 years for the period 1987-1991

Cause	Males			Females		
	Pacific Islands		Total population	Pacific Islands		Total population
	Number	Rate ⁽¹⁾	Rate ⁽¹⁾	Number	Rate ⁽¹⁾	Rate ⁽¹⁾
Unintentional injuries	692	973	890	407	617	619
motor vehicle traffic						
crashes	113	159	77	59	89	48
accidental falls	250	352	402	171	259	316
Asthma	335	471	356	277	420	238
Otitis media	187	263	303	147	223	239
Pneumonia	127	179	88	113	171	65
Forearm fractures	117	165	199	67	102	160
Infectious and parasitic diseases	102	144	126	79	120	104
Acute respiratory infections	74	104	127	46	70	81
Cancer	43	61	58	48	73	47
Acute rheumatic fever	27	38	12	22	33	9
Acute glomerulonephritis	21	30	7	14	21	4
Burns	15	21	19	14	21	11
Diabetes	4	6	13	20	30	20

Source: Calculated from data supplied by New Zealand Health Information Service.

(1). Rates per 10,000 population. These are five-year, not annual, rates.

While the hospitalisation rates of Pacific Islands children for otitis media with effusion are below those for all children aged 5-9 years, other statistics suggest that Pacific Islands children do have a higher level of impaired hearing. The failure rate during testing of the hearing of new school entrants in the year ended 30 June 1993 was 14 percent for Pacific Islands children compared with ten percent for all new entrants (National Audiology Centre, 1994).

**Children aged
10-14 years**

Mortality

There were ten Pacific Islands deaths (four females and six males) in this age group during 1987-1991.

Hospitalisations

The Pacific Islands hospitalisation rate for 10-14 year olds for acute rheumatic fever was about five times the New Zealand rate (Table 6.5). The rate of hospitalisation for pneumonia and otitis media among Pacific Islands children was double the rate for all children.

There are also distinct sex differences in the hospitalisation rates. Pacific Islands males have high rates for cancer, asthma, and infectious and parasitic diseases, while females have high rates for diabetes.

The Pacific Islands rate for all unintentional injuries is lower than the national rate.

TABLE 6.5: Hospitalisation of children aged 10-14 years for the period 1987-1991

Cause	Males			Females		
	Pacific Islands	Total population		Pacific Islands	Total population	
		Number	Rate ⁽¹⁾		Rate ⁽¹⁾	Number
Unintentional injuries	613	887	961	273	408	540
accidental falls	168	243	332	85	127	175
motor vehicle traffic						
crashes	68	98	101	34	51	60
Asthma	140	203	181	63	94	145
Otitis media	95	137	60	54	81	46
Forearm fractures	85	123	159	30	45	93
Cancer	75	109	46	20	30	36
Infectious and parasitic						
diseases	65	94	80	43	64	66
Acute rheumatic fever	51	74	16	42	63	11
Pneumonia	54	78	30	38	57	26
Diabetes	2	3	22	47	70	43

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

The rates for cancer hospitalisations of Pacific Islands children should be treated with caution, because the numerator includes not just Pacific Islands children from the population resident in New Zealand but also children from Pacific Islands countries referred to New Zealand for treatment. Ridgway et al (1990) reported that nearly all children in Tonga, Niue Island and the Cook Islands suspected of having cancer were sent to Princess Mary Hospital for Children in Auckland for treatment, and occasional referrals were also seen there from Western Samoa and Tahiti.

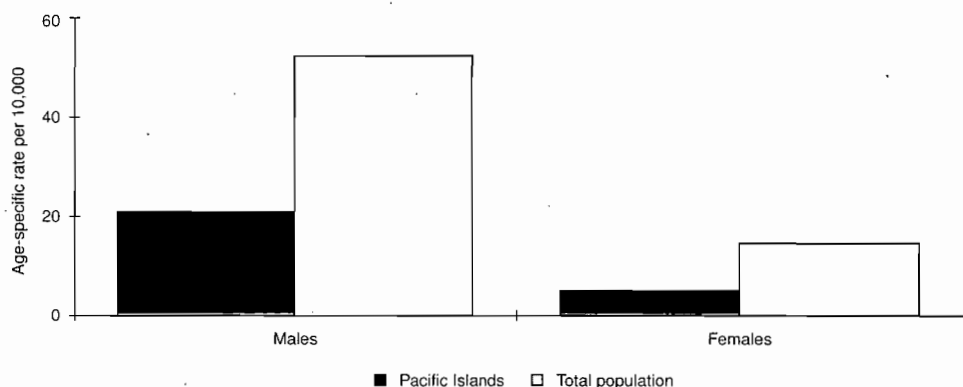
Young people aged 15-24 years

Mortality

Between 1987 and 1991, 84 Pacific Islands young people died in New Zealand, of whom 61 were males. The mortality rates for males and females were 47 and 16 per 10,000 respectively, being well below those of 88 and 30 per 10,000 for males and females aged 15-24 years in the total population.

Almost 60 percent of the deaths were due to unintentional injury (25 percent of these were motor vehicle crashes) and suicide. While young males had higher age-specific death rates for unintentional injury than young females, the rates for Pacific Islands youth were lower than those for all New Zealand youth (Figure 6.6).

FIGURE 6.6: *Deaths from unintentional injuries, ages 15-24 years, for the period 1987-1991*



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual rates.

Among the 61 male Pacific Islands deaths, motor vehicle crashes were the main cause (16). A further 15 died of suicide/intentional self injury and three from cancer. Motor vehicle crashes were also the main cause of death amongst all New Zealand male young people (46 percent).

Of 23 female Pacific Islands deaths, seven young people died of cancer and five from motor vehicle crashes. Motor vehicle crashes were the main cause of death among all female young people during this same period (42 percent).

Hospitalisations

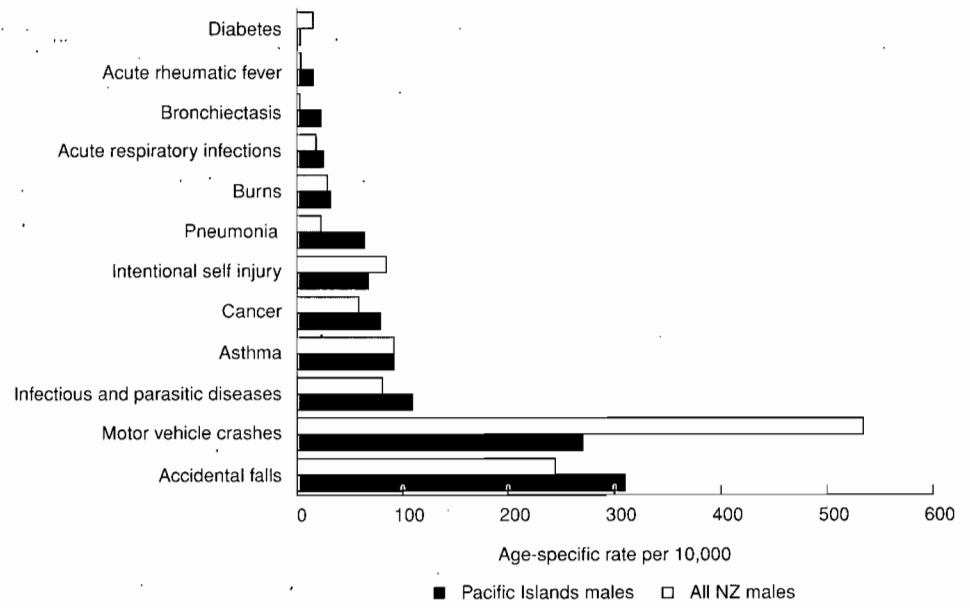
From 1987 to 1991, there were 22,217 inpatient and outpatient discharges of Pacific Islands young people at public hospitals. Eighty percent of these were females, compared to 71 percent of females within the total population.

Male hospitalisations

Accidental falls and motor vehicle crashes were the two leading causes for the hospitalisation of male Pacific Islands young people. Infectious and parasitic diseases, asthma, and cancer were the next main causes. Unintentional injuries accounted for 42 percent of all male Pacific Islands hospitalisations, the proportion being similar to that for all male young people (44 percent).

The male Pacific Islands rate of hospitalisation exceeded that for all New Zealand male young people for accidental falls (310 compared with 245 per 10,000 for the total population), infectious and parasitic diseases (110 compared with 81 per 10,000), cancer (80 compared with 59 per 10,000), and pneumonia (64 compared with 23 per 10,000). The reverse occurred for motor vehicle crashes, where the Pacific Islands youth rate was around half that for all male young people (Figure 6.7).

FIGURE 6.7: Male hospitalisations, ages 15-24 years for the period 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

Female hospitalisations

About three quarters of the hospitalisations of female Pacific Islands young people were for pregnancy, childbirth, or health services related to reproduction. This is considerably higher than the 54 percent recorded for all female young people hospitalised. The difference in rates is partly reflected in the Pacific Islands female age-specific fertility rates (Table 6.6). These are consistently higher for Pacific Islands women aged 15-24 years than for all women in this age group.

TABLE 6.6: Age-specific fertility rates for young women aged 15-24 years, by ethnic group, in 1991

Ethnic group	Age group (years)	Fertility rate ⁽¹⁾
Pacific Islands population	15-19	58.7
	20-24	192.2
Total population	15-19	34.9
	20-24	100.7

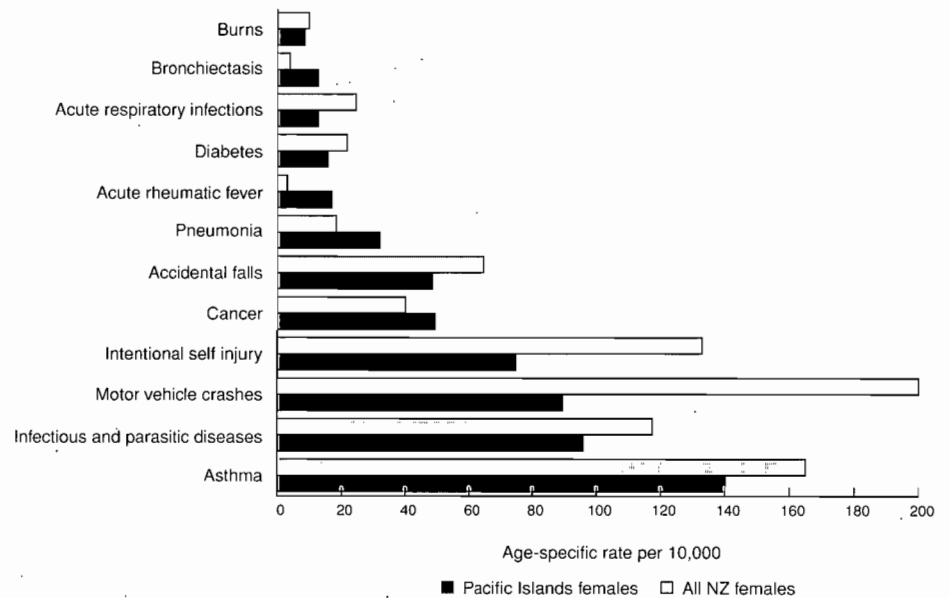
Source: Department of Statistics, 1993.

(1) Per 1,000 women.

Asthma was the second leading cause of hospitalisation among female Pacific Islands young people between 1987 and 1991. Other major causes of hospitalisation were infectious and parasitic diseases, motor vehicle crashes, and intentional self injury. Unintentional injuries accounted for only three percent of young Pacific Islands female hospitalisations (compared with six percent for all female young people, and 42 percent for male Pacific Islands young people).

There were considerable differences between the age-specific hospitalisation rates for Pacific Islands young female people and those in the total population (Figure 6.8).

FIGURE 6.8: Female hospitalisations, ages, 15-24 years, for the period 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

Pacific Islands females have lower hospitalisation rates than all female young people for asthma (140 compared with 165 per 10,000 for the total population), infectious and parasitic diseases (96 compared with 117 per 10,000), motor vehicle crashes (90 compared with 200 per 10,000), and intentional self injury (75 compared with 133 per 10,000). As with male young people, the largest rate difference occurs for motor vehicle crashes, where the Pacific Islands female rate is 55 percent lower than that for all female young people.

Hospitalisation rates are higher for female Pacific Islands than for all female young people for cancer (49 compared with 40 per 10,000), pneumonia (32 compared with 19 per 10,000), and acute rheumatic fever (17 compared with three per 10,000).

Cancer registrations

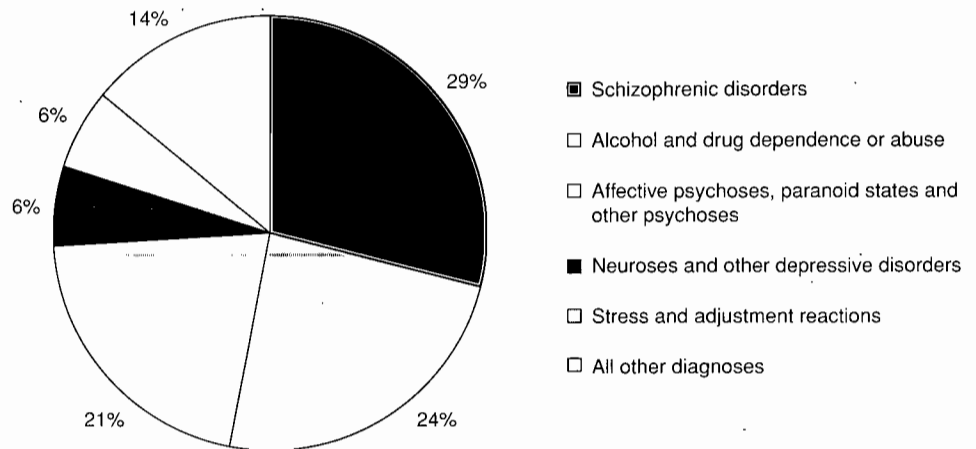
There were 48 new cases of cancer among Pacific Islands youth registered with the National Cancer Registry between 1987 and 1991. Of these, ten cases were bone cancer, five cancer of the ovary, five leukaemia, and four testicular cancer.

Mental health

Between 1987 and 1991, there were 213 first admissions of Pacific Islands young people to psychiatric institutions (62 percent were males).

For males, the main diagnoses at first admission were schizophrenic disorders (29 percent of admissions) and alcohol and drug dependence or abuse (24 percent) (Figure 6.9).

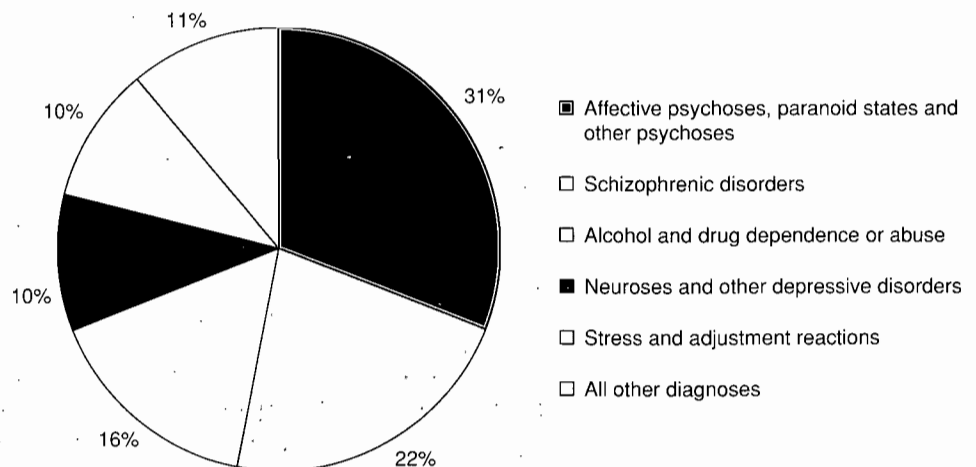
FIGURE 6.9: Major diagnoses at first admission to psychiatric institutions, Pacific Islands males aged 15-24 years, for the period 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

The major diagnoses for females were affective psychoses, paranoid states and other psychoses (31 percent), and schizophrenic disorders (22 percent) (Figure 6.10).

FIGURE 6.10: Major diagnoses at first admission to psychiatric institutions, Pacific Islands females aged 15-24 years, for the period 1987-1991

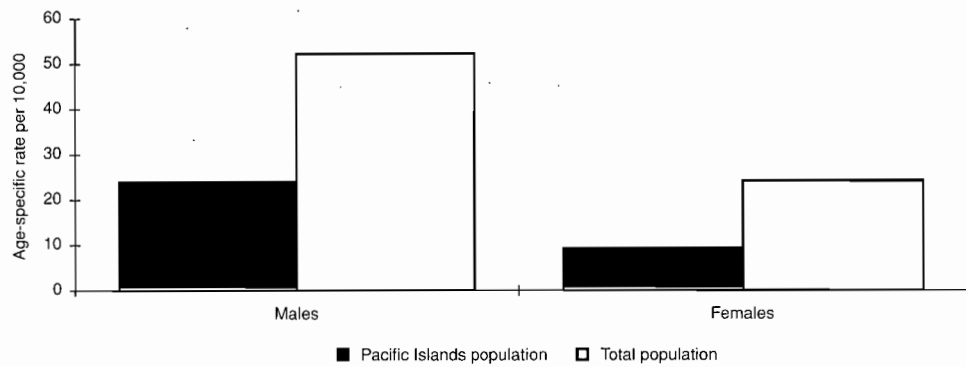


Source: Calculated from data supplied by the New Zealand Health Information Service.

For both Pacific Islands and New Zealand young people, males had higher admission rates than females for the most common diagnoses, ie, alcohol and drug dependence or abuse, affective psychoses, paranoid states and other psychoses, and schizophrenic disorders (Figures 6.11, 6.12 and 6.13).

First admission rates of Pacific Islands males for alcohol and drug dependence or abuse were 54 percent lower than those for all male young people (Figure 6.11). A similar but lower difference also occurred for female young people. For schizophrenic disorders, rates for Pacific Islands males were 46 percent higher than those for all male young people (Figure 6.13). Rates are also slightly higher among both male and female Pacific Islands young people for affective psychoses, paranoid states and other psychoses (Figure 6.12).

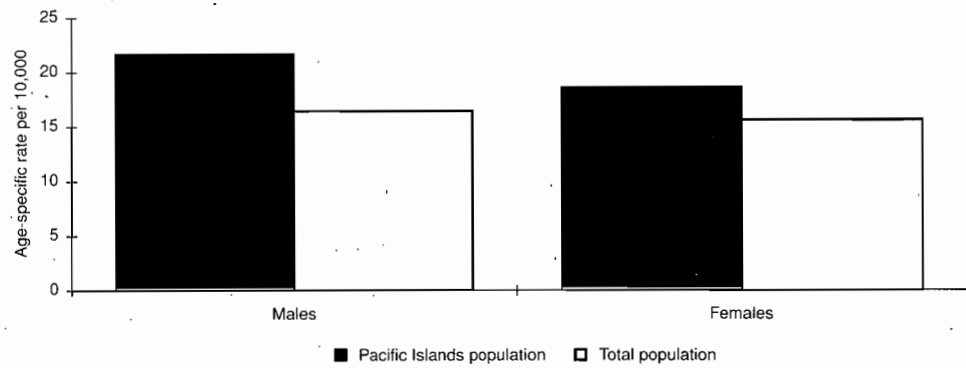
FIGURE 6.11: Rates at first admission to psychiatric hospitals for alcohol or drug dependence and abuse, young people aged 15-24 years, for the period 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

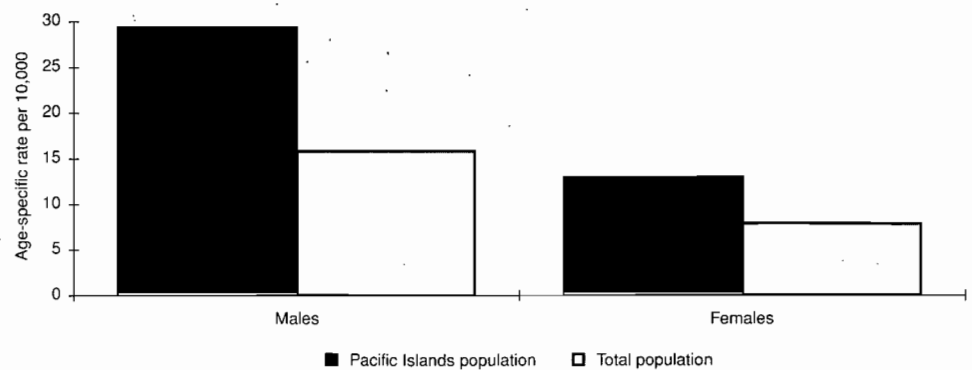
FIGURE 6.12: Rates at first admission to psychiatric hospitals for affective psychoses, paranoid states, and other psychoses, young people aged 15-24 years, for the period 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

FIGURE 6.13: Rates at first admission for schizophrenic disorders, young people aged 15-24 years, for the period 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

Men aged 25-64 years

Mortality

Between 1987 and 1991, there were 124 deaths of Pacific Islands men aged 25-44 years, and 257 among those aged 45-64 years. The mortality rates were 60 and 330 per 10,000 respectively for the five-year period, being under those of 85 and 467 per 10,000 for the total New Zealand male population in these age groups.

Among those aged 25-44 years, unintentional injuries accounted for 23 percent of all deaths, with most of these resulting from motor vehicle traffic crashes. Cancer ranked second as a cause of death (17 percent), followed by coronary heart disease (15 percent) and intentional self injury (eight percent). The rates per 10,000 for all these causes were below the national rates, with the exception of coronary heart disease (Table 6.7).

Among Pacific Islands males aged 45-54 years, the leading causes of death were cancer (28 percent), coronary heart disease (24 percent), cerebrovascular disease (eight percent) and unintentional injury (four percent). The rate per 10,000 for coronary heart disease was only half the national rate for men aged 45-54 years, and the rates for unintentional injury and cancer (including lung and prostate cancer) were also lower. However, the rates for cerebrovascular disease, asthma, infectious and parasitic diseases and cancer of the liver were higher (Table 6.8).

TABLE 6.7: Causes of death for males aged 25-44 years for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Unintentional injury	28	13	1,387	27
motor vehicle traffic crashes	24	12	834	16
All malignant cancers	21	10	657	13
Coronary heart disease	19	9	460	9
Intentional self injury	10	5	669	14
Infectious and parasitic diseases	4	2	161	3
Diseases of arteries, etc	4	2	48	0.8
Asthma	3	1	56	1
Chronic rheumatic heart disease	3	1	44	0.9
Cerebrovascular disease	3	1	95	2
Mortality from all causes	124	60	4,328	85

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

TABLE 6.8: Causes of death for males aged 45-64 years for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All malignant cancers	72	92	4,906	156
lung cancer	25	32	1,463	47
liver	8	10	107	3
colon/rectum	4	5	772	25
Coronary heart disease	61	78	4,873	155
Cerebrovascular disease	21	27	684	22
Unintentional injury	9	12	609	19
Infectious and parasitic diseases	8	10	132	4
Diabetes	6	8	275	9
Intentional self injury	5	6	404	13
Diseases of arteries, etc	5	6	195	6
Asthma	4	5	120	4
Mortality from all causes	257	330	14,642	467

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Hospitalisations

Between 1987 and 1991, 7,309 Pacific Islands males aged 25-44 years and 5,113 aged 45-64 years were hospitalised, the rates for both groups (3,512 and 6,558 per 10,000) being marginally above those for all New Zealand males in these age groups (ie, 3,231 and 6,019 per 10,000, Tables 6.9 and 6.10).

Nearly one-third of hospitalisations among Pacific Islands men aged 24-44 years were due to unintentional injury, the rate being 1,124 per 10,000 population compared with the New Zealand rate of 900. Higher admissions for motor vehicle traffic crashes and unintentional injuries from falls coincided with the increase in hospitalisation for unintentional injury. Important causes of hospitalisation where the admission rates exceeded those for all New Zealand males aged 25-44 years included accidental falls, asthma, infectious and parasitic diseases, pneumonia, cerebrovascular disease and

hypertension. On the other hand, hospitalisation rates were relatively low compared with all New Zealand males for cancers, coronary heart disease, diabetes and alcohol-related diseases (Table 6.9 and Figure 6.14).

Major causes of hospitalisation among Pacific Islands males aged 45-64, in the period 1987-1991, included unintentional injury, cancers, asthma, infectious and parasitic diseases, pneumonia, coronary heart disease, diabetes and cerebrovascular disease. The rates for all these causes except cancer and coronary heart disease were much higher than the corresponding ones in the national population (Table 6.10 and Figure 6.15).

TABLE 6.9: *Hospitalisation of males aged 25-44 years for the period 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Unintentional injury	2,340	1,124	45,634	900
motor vehicle traffic crashes	420	202	9,492	187
accidental falls	350	168	6,786	134
All malignant cancers	216	104	5,544	110
Asthma	207	99	2,402	47
Infectious and parasitic diseases	189	91	3,828	75
all tuberculosis	35	17	223	4
pulmonary tuberculosis	22	10	159	4
Pneumonia	99	48	1,101	22
pneumococcal pneumonia	31	15	301	6
Coronary heart disease	93	45	3,298	65
Intentional self injury	74	35	2,215	44
Cerebrovascular disease	57	27	805	16
Bronchiectasis	37	18	209	4
Diabetes	34	16	1,130	22
Alcohol related diseases	34	16	2,031	40
Hypertension	20	10	332	7
All causes	7,309	3,512	163,822	3,231

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual rates.

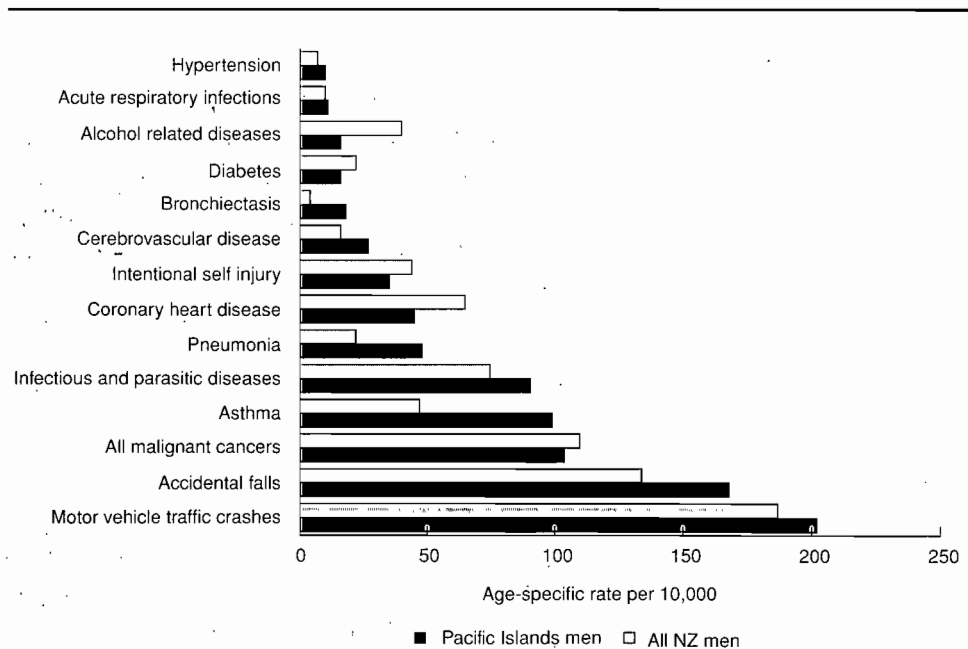
TABLE 6.10: Hospitalisation of males aged 45-64 years for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Unintentional injury	652	811	22,614	721
motor vehicle traffic crashes	84	108	2,632	84
accidental falls	77	99	3,831	122
All malignant cancers	463	594	20,957	668
Asthma	223	286	2,228	71
Infectious and parasitic diseases	140	180	2,005	64
all tuberculosis	45	58	293	9
pulmonary tuberculosis	28	36	188	6
viral hepatitis	17	22	86	3
Pneumonia	151	194	1,756	56
pneumococcal pneumonia	47	60	441	14
Coronary heart disease	273	350	24,317	775
Diabetes	241	309	2,760	88
Cerebrovascular disease	210	269	4,987	159
Alcohol related diseases	57	73	2,447	78
Chronic liver disease	43	55	642	20
Hypertension	40	51	902	29
Bronchiectasis	22	28	241	8
Bronchitis and emphysema	13	17	680	22
All causes	5,113	6,558	188,769	6,019

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

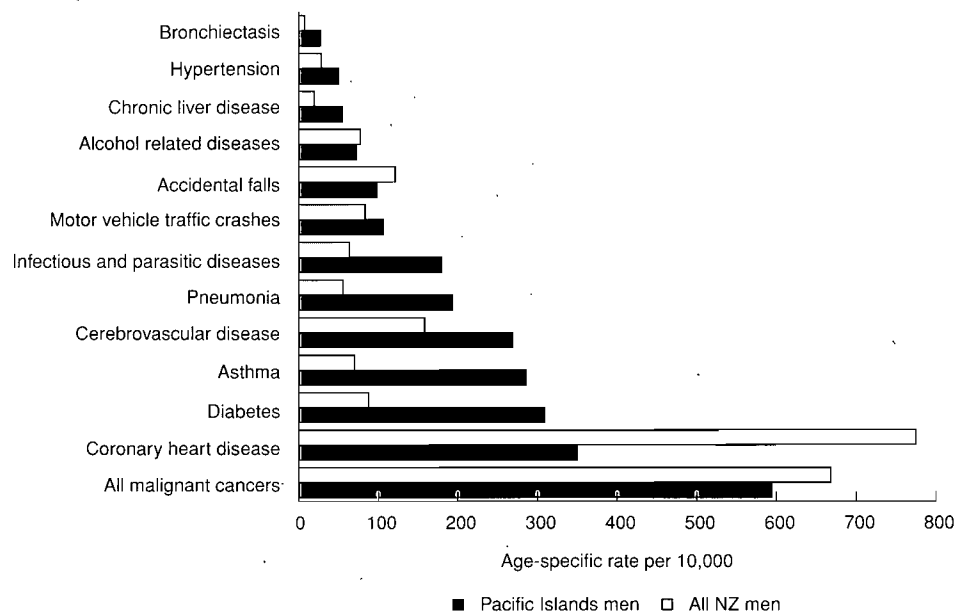
FIGURE 6.14: Hospitalisation rates 1987-1991 for men aged 25-44 years



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates

FIGURE 6.15: Hospitalisation rates 1987-1991 for men aged 45-64 years



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

Important causes of illness in Pacific Islands men

Diabetes

Pacific Islands men aged 45-64 years are over three times as likely to be hospitalised with diabetes as all New Zealand men. Community and workforce studies have found greater prevalence of diabetes mellitus among Pacific Islands people compared with Palagi. This is discussed more fully in the section on adult women.

Hypertension

In both age groups, Pacific Islands men had higher rates of hospitalisation for hypertension than all New Zealand men (Tables 6.9 and 6.10).

The recent workforce study examined the ethnic variations in blood pressure levels and whether hypertension was being treated (Scragg et al, 1993). The study found that compared to Palagi, Pacific Islands men's mean systolic and diastolic blood pressure was higher even after adjusting for body mass index. The prevalence of hypertension among Pacific Islands men was 16.6 percent, of which 6.2 percent was being treated and 10.4 percent was untreated. Among Palagi men, the prevalence was 9.9 percent, 7.3 percent being treated and 2.6 percent remaining untreated.

Coronary heart disease

The Auckland Regional Coronary Or Stroke Study (ARCOS study) suggests that the mortality rate for coronary heart disease in Pacific Islands men is higher than that indicated in the New Zealand Health Information Service data because of differences in the way ethnicity is recorded.

In the ARCOS study, from 1983 to 1986, there were 56 deaths of Pacific Islands men aged between 35-64 years compared to 52 deaths reported in NZHIS data. In the study population, the age standardised mortality rate from coronary heart disease for Pacific Islands men age 25-64 years was 175 per 100,000 compared with 154 per 100,000 for Palagi men (Tukuitonga et al, 1990).

In a more recent analysis of ARCOS data (Bell et al, 1994), it was found that the age standardised mortality rate per year for Pacific Islands men aged 35-64 years fell from 303 per 100,000 between 1983 and 1985 to 228 per 100,000 between 1989 and 1991, a 25 percent decline. The corresponding annual rates for Palagi men dropped from 223 per 100,000 in the period 1983-1985 to 124 per 100,000 from 1989 to 1991, a 44 percent decline. The fall in the rate for Palagi men was statistically significant, but this was not so for the rate change for Pacific Islands men.

Contrary to the pattern for fatal events, the ARCOS data revealed there was an increase in non-fatal coronary heart disease events among Pacific Islands men. The age standardised rate rose from 123 per 100,000 per year between 1983 and 1985 to 159 per 100,000 per year between 1989 and 1991. However, this 29 percent increase was not statistically significant. The non-fatal coronary event rate per year for Palagi men during the same two periods declined from 263 to 170 per 100,000, a decline of 35 percent which was found to be statistically significant.

Asthma

As discussed in the section on adult women, Pacific Islands people are less likely to have ideal care for asthma. Pacific Islands men have higher rates of hospitalisation than all New Zealand men in both age groups 25-44 and 45-64 years.

Cancer

The 1987-1991 cancer registration rate for Pacific Islands males aged 25-44 years was similar to the national rate (ie, 42 per 10,000 compared with 41 per 10,000). Leukaemia of all types was the leading cancer reported for Pacific Islands men, followed by cancer of the liver and intrahepatic bile ducts, the stomach and the trachea, bronchus and lung. The rates for all these cancers were higher than those for all New Zealand males aged 25-44 years, but the numbers reported were very small (Table 6.11).

TABLE 6.11: *Cancer registrations of men aged 25-44 years, National Cancer Registry, 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All leukaemia	10	5	78	2
Liver and intrahepatic bile ducts	7	3	34	0.7
Stomach	7	3	43	0.9
Trachea, bronchus and lung	6	2	67	1
Brain	5	2	86	2
Lymphoid and histiocytic tissue	5	2	106	2
All cancers	87	42	2,099	41

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

A greater number of registrations occurred for Pacific Islands males aged 45-64 years, with the rate of 321 per 10,000 being higher than the national rate of 278 per 10,000. The leading sites were cancer of the trachea, bronchus and lung, cancer of the liver and intrahepatic bile ducts, stomach cancer and prostate cancer. The rates were higher than those for New Zealand males in the same age group (Table 6.12). Cancer of the colo-rectal area, on the other hand, is not as common among Pacific Islands men as it is within the New Zealand adult male population as a whole.

As pointed out in Chapter 5, the registration data for Pacific Islands people includes some people referred directly from Pacific Islands countries to New Zealand for treatment.

TABLE 6.12: *Cancer registrations of men aged 45-64 years, National Cancer Registry, 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Trachea, bronchus and lung	63	81	1,719	55
Liver and intrahepatic bile ducts	27	35	129	4
Stomach	21	27	322	10
Prostate cancer	15	19	538	17
Colon/rectum	13	17	1,886	60
Oesophagus	10	13	186	6
Lymphoid and histiocytic tissue	6	8	235	7
All leukaemia	6	8	208	7
Multiple myeloma	6	8	125	4
Brain	5	6	231	7
Bladder	5	6	358	11
Pancreas	5	6	216	7
All cancers	250	321	8,733	278

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Mental health

Between 1987 and 1991, the first admission rates of Pacific Islands men to psychiatric hospitals, public hospital psychiatric units and institutions licensed under the Alcohol and Drug Addition Act were well below those for all men in New Zealand. The rates were 62 per 10,000 for Pacific Islands men aged 25-44 years and 27 per 10,000 for those aged 45-64 years, compared with national rates of 97 and 57 per 10,000 respectively for the same age groups.

Table 6.13 provides information on the diagnoses of first admissions of men aged 25-44 years. Alcohol dependence, schizophrenic disorders, affective psychoses, and neurotic and other depressive disorders, were the leading diagnoses in that order. The Pacific Islands male admission rates per 10,000 for alcohol and drug dependence in particular were not as high as those for all males in New Zealand, although that for schizophrenic disorders was greater.

TABLE 6.13: Diagnoses at first admission to psychiatric institutions for males aged 25-44 years, for the period 1987-1991

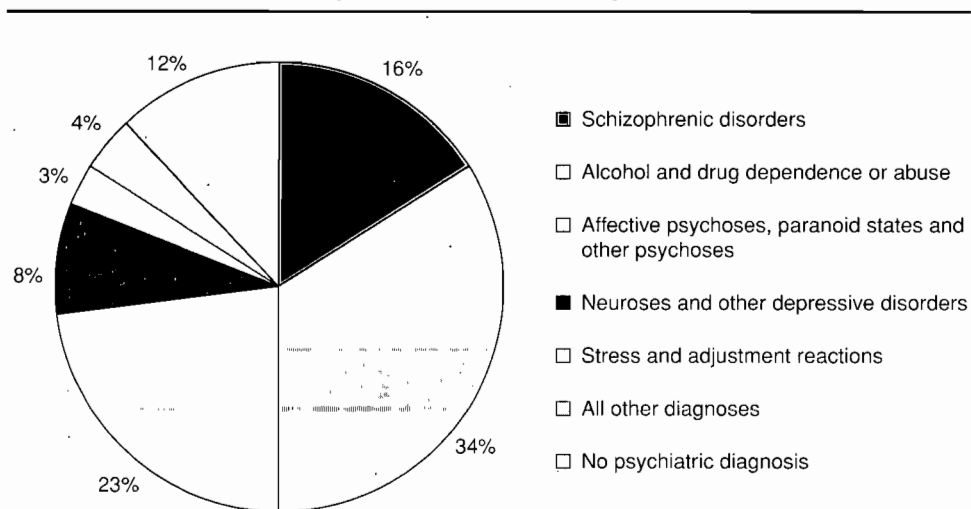
Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Alcohol dependence or abuse	36	17	1,610	32
Schizophrenic disorders	21	10	447	9
Affective psychoses	17	9	463	9
Other psychoses	9	4	158	3
Neurotic and other depressive disorders	10	5	510	10
Drug dependence or abuse	8	4	559	11
Sub-total	101	-	3,747	-
All other diagnoses	15	-	938	-
No psychiatric diagnosis	14	-	233	-
Total admissions	130	62	4,918	97

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Figure 6.16 summarises the relative importance of first admissions of Pacific Islands males aged 25-44 years to psychiatric hospitals between 1987 and 1991 by major group.

FIGURE 6.16: Major diagnoses at first admission to psychiatric institutions for Pacific Islands males aged 25-44 years, for the period 1987-1991



Source: Calculated from data supplied by the New Zealand Health Information Service.

Between 1987 and 1991, there were only 21 first admissions among Pacific Islands men aged 45-64 years. Of these, seven were admitted for alcohol dependence or abuse (nine per 10,000 compared with the national rate of 21 per 10,000). No other short list diagnosis recorded more than two cases.

Women aged 25-64 years

While mortality and hospitalisation records provide much of the information on the health of Pacific Islands women, a handful of community-based studies have provided additional material.

Mortality

The important causes of mortality for the years 1987-1991 for women aged 25-44 years are shown in Table 6.14 and for women aged 45-64 years in Table 6.15. For both age groups, the major cause of death was cancer, but rates were lower than those in the comparable population of all New Zealand women.

TABLE 6.14: Causes of death for females aged 25-44 years for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All cancers	34	15	1,007	19
Coronary heart disease	5	2	93	2
Cerebrovascular disease	1	0.4	113	2
Diseases of arteries	1	0.4	13	0.2
Chronic rheumatic heart disease	3	1	28	0.5
Asthma	4	2	61	1
Pneumonia	1	0.4	10	0.2
Diabetes	1	0.4	32	0.6
Infectious and parasitic diseases	2	1	23	0.4
Unintentional injury	11	5	398	8
motor vehicle crashes	5	2	297	6
Suicide	1	0.4	183	4
Mortality all causes	77	35	2,413	46

Source: Calculated from data supplied by the New Zealand Health Information Service.

Rates per 10,000 population. These are five-year, not annual, rates.

TABLE 6.15: Causes of death for females aged 45-64 years for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All cancers	49	62	4,490	144
Coronary heart disease	25	32	1,478	47
Cerebrovascular disease	21	27	545	18
Diseases of arteries	1	1	85	3
Chronic rheumatic heart disease	6	8	91	3
Asthma	5	6	143	5
Diabetes	8	10	233	8
Infectious and parasitic diseases	3	4	65	2
Unintentional injury	2	3	233	8
motor vehicle crashes	2	3	161	5
Suicide	2	3	123	4
Mortality all causes	153	193	9,116	292

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

For women aged 45-64 years, coronary heart disease was the second leading cause of death followed by cerebrovascular disease. The mortality rate for Pacific Islands women for cerebrovascular disease was higher than the rate for all New Zealand women (27 per 10,000 over five years compared with 18 per 10,000), whereas the rate for coronary heart disease was lower.

As mentioned earlier, the Auckland Regional Coronary Or Stroke Study (ARCOS study) suggests that the mortality rate for coronary heart disease in Pacific Islands people is actually higher than the NZHIS data indicates because of differences in the recording of ethnicity.

In the ARCOS study, from 1983 to 1986, there were 16 deaths of Pacific Islands women age between 35-64 years compared to 14 deaths reported in NZHIS data. In the study population, the age standardised mortality rate from coronary heart disease for Pacific Islands women age 25-64 years was 52 per 100,000 compared with 36 per 100,000 for Palagi women (Tukuitonga et al, 1990).

A follow up to this study (Bell et al, 1994) found that the age standardised mortality rate for Pacific Islands women aged 35-64 years fell from 95 per 100,000 in 1983-1985 to 83 per 100,000 in the years 1989-1991, a 13 percent decline. The corresponding rates for Palagi women showed a drop from 51 per 100,000 in 1983-1985 to 40 per 100,000 in 1989-1991, a 22 percent decline. Neither decline was statistically significant.

The rates per year for non-fatal coronary heart disease events increased in Pacific Islands women from 39 in 1983-1985 to 61 per 100,000 in 1989-1991, an increase of 56 percent, though this, too, was not statistically significant. This compares with the rate in Palagi women for non-fatal events which fell from 61 to 41 per 100,000 between the two time periods, a decline of 33 percent, which was statistically significant.

For Pacific Islands women aged between 25-44 years, the major single cause of death recorded in NZHIS data in the period 1987-1991 was breast cancer (with a similar rate to that for all New Zealand women in the age group, Table 6.16), followed by unintentional injury.

TABLE 6.16: *Deaths from cancer for females aged 25-44 years, for the period 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Breast	14	6	333	6
Stomach	5	2	40	1
All cancers	34	15	1,007	19

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

The low numbers of deaths from other causes make it difficult to draw firm conclusions, but it is of note that Pacific Islands women had higher mortality rates from chronic rheumatic heart disease and asthma in both age groups and from diabetes in the age group 45-64 years.

Mortality from cancer increases with age (Tables 6.16 and 6.17). Mortality rates from both "all cancers" and specific cancers for Pacific Islands women were generally lower than those for all New Zealand women. One Pacific Islands woman aged 25-44 years died from each of cancer of the cervix, uterus, ovary, lung and colon and from leukaemia during 1987-1991. Among Pacific Islands women aged 45-64 years, there

were two deaths from each of cancer of the uterus, liver and from leukaemia during the five years.

TABLE 6.17: *Deaths from cancer for females aged 45-64 years, for the period 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Breast	11	14	1,174	38
Stomach	5	6	128	4
Cervix	3	4	185	6
Ovary	7	9	289	9
Lung	7	9	688	22
All cancers	49	62	4,490	144

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Although the numbers of deaths were low, breast, ovarian, lung and stomach cancer were the most important causes of mortality from cancer of Pacific Islands women. The five-year mortality rate for Pacific Islands women aged 45-64 years for stomach cancer was higher than the rate for all New Zealand women, 6.3 per 10,000 compared with 4.1 per 10,000.

Hospitalisations

The most frequent cause of hospitalisation of women in the 25-44 years age group was pregnancy and childbirth, and services related to reproduction.

Other important causes were unintentional injury, all malignant cancers and asthma.

TABLE 6.18: *Hospitalisation of women aged 25-44 years for the period 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All malignant cancers	403	181	9,044	173
Asthma	395	178	5,544	106
Bronchitis and emphysema	10	5	141	3
Pneumonia	89	40	1,139	22
pneumococcal pneumonia	32	14	282	5
Infectious and parasitic disease	155	70	3,210	62
tuberculosis	49	22	216	4
Unintentional injury	843	379	20,640	396
motor vehicle crashes	146	66	3,858	74
falls	109	49	2,822	54
Diabetes	58	26	1,109	21
Cerebrovascular disease	34	15	911	18
Coronary heart disease	15	7	848	16
Hypertension	22	10	378	7
All causes	32,135	14,450	545,868	10,461

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

For older women aged 45-64 years, all malignant cancers, unintentional injury, asthma and diabetes were important (Table 6.19).

TABLE 6.19: Hospitalisation of women aged 45-64 years for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All malignant cancers	496	626	22,429	719
Asthma	313	395	3,591	115
Bronchitis and emphysema	12	15	635	20
Pneumonia	117	148	1,376	44
pneumococcal pneumonia	25	32	342	11
Infectious and parasitic disease	113	143	1,816	58
tuberculosis	40	51	183	6
Unintentional injury	404	510	15,633	501
motor vehicle crashes	40	51	1,830	59
falls	45	57	3,904	125
Diabetes	280	354	2,563	82
Cerebrovascular disease	114	144	3,329	107
Coronary heart disease	144	182	8,750	281
Hypertension	52	66	1,025	33
All causes	4,849	6,123	176,393	5,654

Source: Calculated from data supplied by the New Zealand Health Information Service.

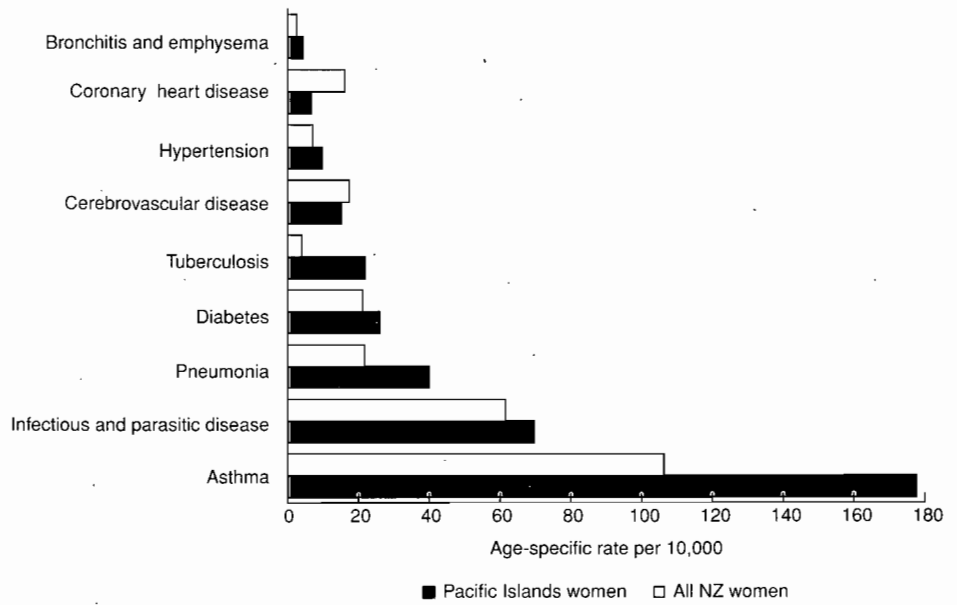
(1) Rates per 10,000 population. These are five-year, not annual, rates.

Rates of hospital admission for hypertension, cerebrovascular disease, and coronary heart disease increase with age. Pacific Islands women aged 45-64 years had a higher rate of hospitalisation from hypertension and cerebrovascular disease than all New Zealand women of the same age group.

Important causes of illness in Pacific Islands women

Some of the more important differences in the pattern of illness between Pacific Islands women and all New Zealand women as a group are discussed in the following sections (Figures 6.17 and 6.18).

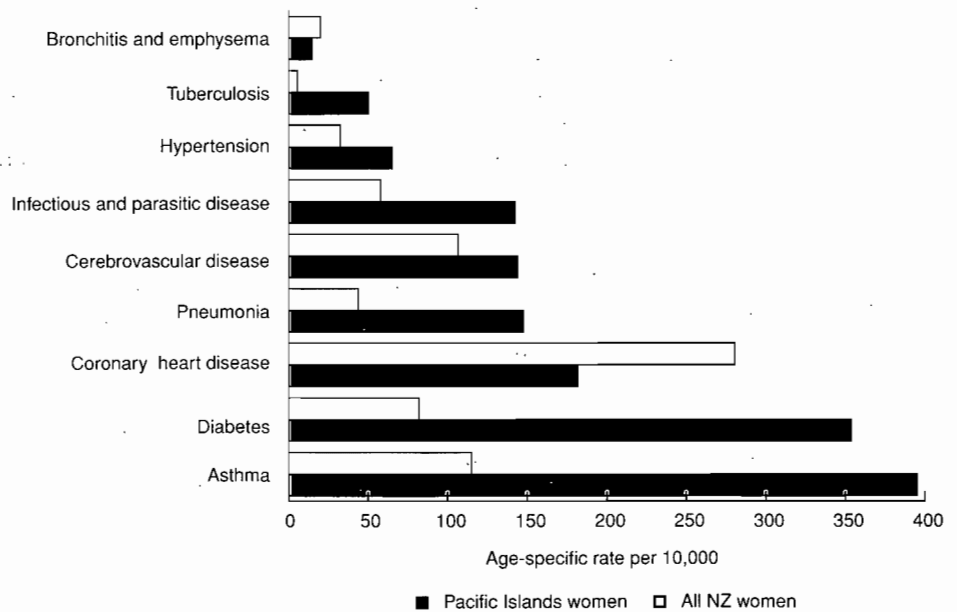
FIGURE 6.17: Hospitalisation rates 1987-1991 for women aged 25-44 years



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

FIGURE 6.18: Hospitalisation rates 1987-1991 for women aged 45-64 years



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

Diabetes

Possible influences of diet and body mass index on the increased prevalence of diabetes in Pacific Islands people have been discussed in Chapter 4.

The cross sectional survey of a multicultural workforce aged 40-64 years at worksites in Auckland and Tokoroa carried out between 1988 and 1990 provided information on the prevalence of diabetes (Scragg et al, 1991). Of the sample of 665, 12 percent were Pacific Islands people. No differences were found between men and women, either in the numbers of people known to have diabetes, or in those who were newly diagnosed with diabetes as a result of the study. The study reported that the age standardised prevalence of new and known diabetes mellitus was 8.9 percent in Pacific Islands people compared with 1.9 percent among Palagi. Of the Pacific Islands people, 5.3 percent were known to have diabetes mellitus and 3.6 percent were newly diagnosed as a result of the survey, compared with 1.1 percent known to have diabetes mellitus among Palagi and 0.8 percent newly diagnosed in the survey. The prevalence of diabetes in the general community may differ from that in the workforce (Scragg et al, 1991).

In 1992, a study of 22,651 residents described the prevalence of known diabetes in the multiethnic community of Otara in South Auckland. As noted in Chapter 4, the survey found that 4.6 percent of Pacific Islands people, after age adjustment, had known diabetes mellitus compared with 2.8 percent of Palagi. For the age group 40-59 years, 7.2 percent of Pacific Islands people (ie, males and females combined) were known to have diabetes mellitus compared with 2.9 percent of the Palagi population. The study suggested that since the Pacific Islands population was a young one, the number of people with diabetes could be expected to rise considerably once the size of the older population increased (Simmons et al, 1994a).

A study of people attending the diabetes hospital service in South Auckland in 1990 found that Pacific Islands people knew less about their illness and were less likely to have received diabetes education at diagnosis than Palagi people. Overall, 69 percent of Palagi people had received education compared with 49 percent of Pacific Islands people. The preferred method for gaining knowledge about diabetes for Pacific Islands people is to receive it from the South Auckland Diabetes Centre (a community-based education centre with a specialist nurse and Pacific Islands lay educators), rather than through hospital or general practitioner-based education (Simmons et al, 1994b).

Whereas the hospitalisation rate of Pacific Islands women aged 25-44 years with diabetes mellitus is not significantly higher than that of all New Zealand women, the rate for Pacific Islands women aged 45-64 years is more than four times as high (Table 6.19).

Hypertension

The workforce study described earlier examined the ethnic variations in blood pressure levels and whether hypertension was being treated (Scragg et al, 1993). The study found that compared to Palagi, Pacific Islands people's mean systolic and diastolic blood pressure was higher even after adjusting for body mass index. The prevalence of hypertension was 15.7 percent of Pacific Islands women, of whom 11.6 percent were treated and 4.1 percent untreated compared with prevalences of 10.2 percent treated and 1.0 percent untreated among Palagi women.

In both age groups, Pacific Islands women had higher rates of hospitalisation with hypertension than all New Zealand women (Tables 6.18 and 6.19).

Asthma

Asthma is an important cause of illness of Pacific Islands women. Pacific Islands women of the 25-44 years and 45-64 years age groups have higher rates of hospitalisation and death than all New Zealand women as a group. The difference increases with age: Pacific Islands women aged 45-64 years have over three times the rate of hospitalisation of all New Zealand women (ie, 395 per 10,000 compared with 115 per 10,000 for the five years 1987-1991).

A study of people aged 15-49 years presenting to the accident and emergency department of an Auckland hospital suggested that the Pacific Islands people with asthma were less likely than Palagi to have a regular general practitioner, be on prophylactic medications such as inhaled steroids or sodium cromoglycate, or have the information or a plan on how to manage their asthma (Garrett et al, 1989). The study also suggested that Pacific Islands people were more likely to attend an accident and emergency department with an illness including asthma compared with Palagi, although there was no difference for injuries. The Pacific Islands people attending did not generally have more severe asthma, and the results were thought to represent deficiencies in the availability of health care and the delivery of appropriate care (Garrett et al, 1989).

Pneumonia

Pacific Islands women have higher rates of hospitalisation from pneumonia (including pneumococcal pneumonia) than all New Zealand women in both the 25-44 and 45-64 years age groups.

Infectious and parasitic disease

Although the hospitalisation rate for infectious and parasitic disease for Pacific Islands women for the 25-44 years age group is comparable with the rate for all New Zealand women, the rate for women in the 45-64 years age group is over twice the total New Zealand rate. Pacific Islands women in both age groups had higher hospitalisation rates for tuberculosis than all New Zealand women, although numbers are low even over five years.

Cancer

The National Cancer Register reports on all cancer patients who are domiciled in New Zealand but, as Pacific Islands women may come to New Zealand for treatment, the reported rates may be inflated.

Pacific Islands women had similar rates of cancer registration to all New Zealand women for all cancers combined from 1987 to 1991 (Tables 6.20 and 6.21).

TABLE 6.20: *Cancer registrations of females aged 25-44 years, National Cancer Registry, 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Breast	57	26	1,339	26
Cervix	28	13	571	11
Ovary	18	8	173	3
Uterus	11	5	70	1
Leukaemia	8	4	78	1
Stomach	8	4	56	1
Lung	5	2	97	2
Colon/rectum	3	1	215	4
Liver	3	1	15	0
All cancers	176	79	4,114	79

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual rates.

TABLE 6.21: Cancer registrations of females aged 45-64 years, National Cancer Registry, 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Breast	69	87	3,278	105
Cervix	24	30	431	14
Ovary	18	23	437	14
Uterus	25	32	469	15
Lung	17	21	814	26
Stomach	16	20	159	5
Colon/rectum	9	11	1,545	50
Liver	5	6	45	1
Leukaemia	5	6	146	5
All cancers	257	324	10,155	326

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual rates.

Rates for certain types of cancer were higher for Pacific Islands women, such as cancer of the cervix, the uterus, the ovary and the stomach. Pacific Islands women had a lower incidence of cancer of the lung and of the colon and rectum than all New Zealand women.

Cancer of the cervix

Pacific Islands women of the 25-44 and 45-64 years age groups have higher rates of incidence of cancer of the cervix (excluding carcinoma *in situ*) compared with all New Zealand women (Tables 6.20 and 6.21).

A 1990 survey of New Zealand women, before the start of the National Cervical Screening Programme, found that 71 percent of the Pacific Islands women reported a cervical smear test within the last three years and that 25 percent had never been screened. For all New Zealand women, 82 percent had been screened in the last three years and seven percent had never been screened. Very few Pacific Islands women took part in this study, so it is difficult to generalise the findings (Bonita and Paul, 1991).

A study of Pacific Islands women in Auckland found that of the 1,613 aged 15 years and over who were interviewed, only 38 percent had a cervical smear in the three years to November 1991. Screening rates were higher in women under the age of 35 years compared with older women, suggesting that older women, who are at greater risk of cancer of the cervix, were not being screened. As 68 percent of the smears had been done in the last two years, the study results suggested that the cervical screening programme may have influenced uptake of screening by Pacific Islands women (Tukuitonga, 1991).

Cancer of the breast

Breast cancer is the most frequently reported cancer in both age groups for Pacific Islands women and all New Zealand women.

A study of women with breast cancer in the Auckland region from 1976 to 1985 found there was no significant difference in the incidence of breast cancer between Palagi, Maori and Pacific Islands women. However, there was an important difference in the extent of the disease at the time of presentation. Pacific Islands women were more likely than Palagi women to present with larger tumours and metastases (Newman et al, 1992). There was no difference in survival between ethnic groups when controlled for tumour size, although numbers were small (Lethaby et al, 1992).

Reproductive health

The fertility patterns and pregnancy outcome for Pacific Islands women are discussed in Chapter 2 and in the section on infant health in this chapter.

Information has been collected from women attending hospital for termination of pregnancy.

A Wellington study compared information on contraception practice among women aged 13-44 years presenting for termination of pregnancy at the Wellington clinic for eight months between 1988 to 1989, with information collected in 1981 (North and Sparrow, 1991). It was found the abortion rate had increased over time, with the number of Pacific Islands women presenting for an abortion in 1988 being disproportionately high compared with their proportion of the Wellington female population. In addition, the proportion of Pacific Islands women not using contraception was higher (60 percent), with 44 percent of this group never having used contraception at any stage. The study did not discuss the relationship between age, ethnicity and contraceptive practice to see if this differed among the women, but it suggested that cultural differences and barriers to contraceptive advice and services needed to be identified (North and Sparrow, 1991). Additional information on contraception and abortion is provided in Chapter 2.

Mental health

To date, epidemiological studies of mental health in the community have not discussed the health of Pacific Islands women.

From the data collected on diagnosis at first admission to a psychiatric hospital between 1987 and 1991, Pacific Islands women are found to have had a lower rate of hospitalisation (Tables 6.22 and 6.23).

TABLE 6.22: *Diagnoses at first admissions to psychiatric institutions for women aged 25-44 years, for the period 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Schizophrenic psychoses	20	9	308	6
Affective psychoses	23	10	710	14
Other psychoses	11	5	239	5
All causes	86	39	4,604	88

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

TABLE 6.23: *Diagnoses at first admissions to psychiatric institutions for women aged 25-44 years, for the period 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Schizophrenic psychoses	9	11	130	4
Affective psychoses	6	8	408	13
Other psychoses	4	5	70	2
All causes	26	33	1,675	54

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Pacific Islands women had higher rates of admission with schizophrenia in both age groups although the numbers were small. For Pacific Islands women aged 25-44 years, 63 percent of admissions were for the diagnoses of schizophrenic psychoses, affective psychoses and other psychoses compared with 27 percent for all New Zealand women. Seventy-three percent of Pacific Islands women aged 45-64 years were admitted with the above diagnoses compared with 36 percent of all New Zealand women. Pacific Islands women were rarely admitted to a psychiatric hospital with a diagnosis of neurotic depression or drug and alcohol disorders compared with all New Zealand women.

Suicide is a rare cause of death of Pacific Islands women of both age groups (Tables 6.14 and 6.15).

Older people aged 65 years and over

The Pacific Islands population aged 65 and over is very small, there being only 2,142 females and 1,599 males in 1991, collectively representing less than two percent of the total Pacific Islands population.

The most common causes of hospital admissions and death among older Pacific Islands peoples are degenerative diseases, many of which are related to diet and lifestyle. This follows the pattern for older people in the New Zealand population as a whole. However, older Pacific Islands people do have rates of hospitalisation and death from certain diseases that are higher than those for the national elderly population.

Mortality

Between 1987 and 1991, the mortality rates for Pacific Islands men and women aged 65 and over were about half the national rates. For Pacific Islands men, the five-year rate was 1,504 per 10,000, and for women, 1,056 per 10,000, the national rates being 2,949 and 2,267 per 10,000 respectively.

The lower mortality rate for elderly Pacific Islands people may have been influenced by the "younger" age structure of their population. In 1991, only 25 percent of Pacific Islands people over the age of 65 years were aged 75 and over compared with 40 percent of the total New Zealand population aged 65 years and over.

Causes of death are shown in Tables 6.24 and 6.25.

The leading causes of death are very similar for men and women. Cancer, coronary heart disease and cerebrovascular disease are the major ones for both sexes, followed by pneumonia and diabetes.

The mortality rates for all cancers, coronary heart disease, cerebrovascular disease, pneumonia and diseases of the arteries, are well below the national rates for older Pacific Island men and women.

Of the deaths from cancer, lung and prostate cancers are the two leading causes for men, the five-year rates being 113 and 67 per 10,000 respectively. Breast and cervical cancers are the leading causes for women, with five-year rates of 15 and 10 per 10,000. With the exception of cervical cancer among women and liver cancer among men, the rates for the leading cancers are lower than those for all New Zealand older people.

Among Pacific Islands men, asthma and diabetes are the main diseases where the death rates exceed the national ones for the same age group. For Pacific Islands women, it is the rates for diabetes, bronchiectasis and asthma which exceed the national rates.

TABLE 6.24: Causes of death for males aged 65 years and over, for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All malignant cancers	56	373	11,597	723
lung	17	113	3,006	187
prostate	10	67	1,821	114
liver	3	20	154	10
colon/rectum	3	20	1,482	92
Coronary heart disease	47	313	14,953	932
Cerebrovascular disease	28	186	4,486	280
Diabetes	12	80	676	42
Pneumonia	10	66	2,217	138
Asthma	7	47	243	15
Bronchitis and emphysema	7	47	986	62
Diseases of arteries, etc	6	40	1,507	94
Mortality all causes	226	1,504	47,312	2,949

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

TABLE 6.25: Causes of death for females aged 65 years and over, for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Coronary heart disease	46	231	13,582	619
All malignant cancers	30	151	9,987	455
lung	2	10	1,304	60
breast	3	15	1,520	69
cervix	2	10	186	8
Cerebrovascular disease	30	151	7,420	338
Pneumonia	16	80	3,293	150
Diabetes	16	80	721	33
Bronchiectasis	7	35	76	3
Diseases of arteries, etc	5	25	1,293	59
Asthma	3	15	250	11
Mortality all causes	210	1,056	49,730	2,267

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Hospitalisations

The hospitalisation rates for Pacific Islands men aged 65 and over for cancer, cerebrovascular disease, coronary heart disease, pneumonia, diabetes, infectious and parasitic disease, and asthma are all much higher than the rates for younger men.

The areas where the rates for older Pacific Islands men exceed the national rates include hospitalisations for cerebrovascular disease, pneumonia, diabetes, infectious and parasitic diseases, asthma and chronic liver disease (Table 6.26 and Figure 6.19). The rate for cancer is not much below that for all New Zealand older men, although the rate for coronary heart disease is only half the national rate.

For Pacific Islands women, the leading causes of hospitalisation are cancer, unintentional falls, cerebrovascular disease, pneumonia, diabetes, coronary heart disease, infectious and parasitic diseases, and asthma. The rates for all these conditions are much higher than those for younger Pacific Islands women. Rates which are well above the national rates include those for cerebrovascular disease, diabetes, infectious and parasitic diseases, and asthma (Table 6.27 and Figure 6.20).

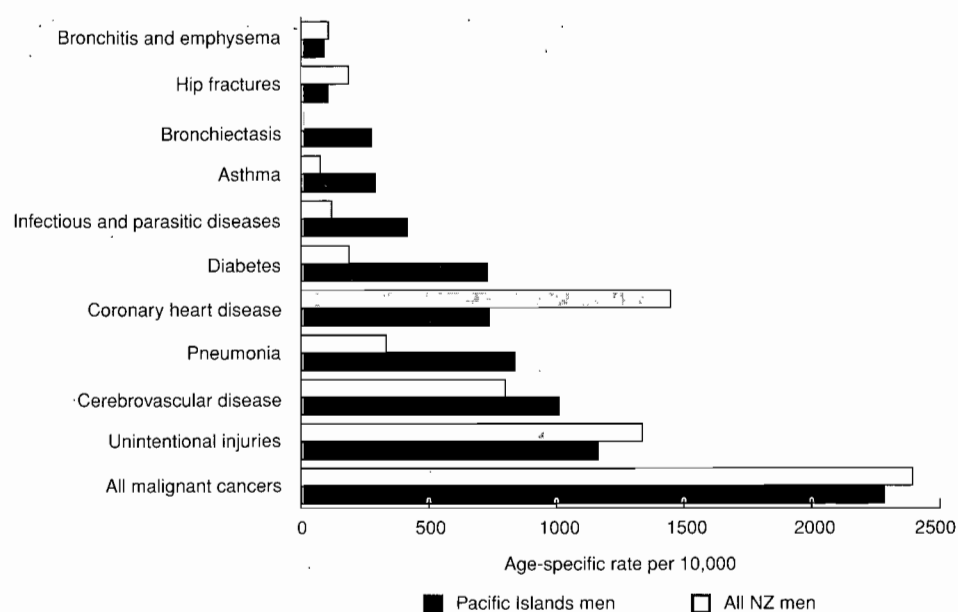
TABLE 6.26: *Hospitalisation of males aged 65 years and over, for the period 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All malignant cancers	343	2,282	38,384	2,392
Unintentional injury	175	1,164	21,476	1,339
motor vehicle traffic crashes	11	73	1,392	87
falls	33	220	6,590	411
Cerebrovascular disease	152	1,011	12,844	801
Pneumonia	126	838	5,370	335
pneumococcal pneumonia	32	213	994	62
Coronary heart disease	111	739	23,246	1,449
Diabetes	110	732	3,039	189
Infectious and parasitic diseases	63	419	1,963	122
all tuberculosis	38	253	292	18
pulmonary tuberculosis	27	180	210	13
Asthma	44	293	1,256	78
Bronchiectasis	42	279	206	13
Hip fractures	16	107	3,007	187
Bronchitis and emphysema	14	93	1,770	110
Chronic liver disease	6	40	385	24
Hypertension	6	40	644	40
Burns	6	40	194	12
All causes	2,608	17,352	263,796	16,442

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

FIGURE 6.19: Hospitalisation rates, 1987-1991 for men aged 65 years and over



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

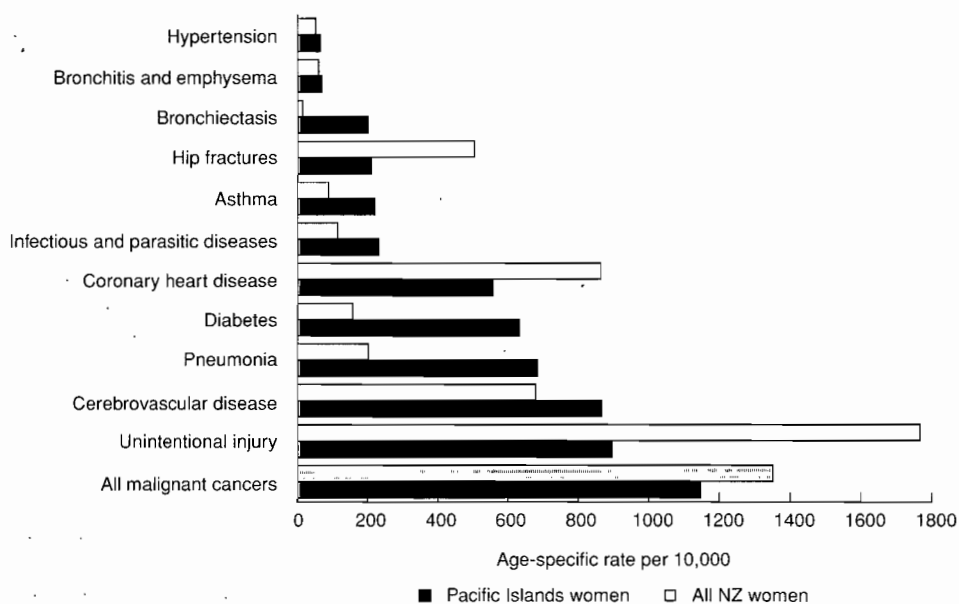
TABLE 6.27: Hospitalisations of females aged 65 years and over, for the period 1987-1991

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
All malignant cancers	228	1,146	29,627	1,351
Unintentional injury	178	895	38,741	1,766
falls	74	372	21,460	978
motor vehicle traffic crashes	8	40	1,713	78
Cerebrovascular disease	172	865	14,886	679
Pneumonia	136	684	4,415	201
pneumococcal pneumonia	23	116	817	37
Diabetes	126	634	3,442	157
Coronary heart disease	111	558	18,945	864
Infectious and parasitic diseases	46	231	2,509	114
tuberculosis	9	45	168	8
pulmonary tuberculosis	7	35	120	5
Asthma	44	221	1,936	88
Hip fractures	42	211	11,053	504
Bronchiectasis	40	201	329	15
Bronchitis and emphysema	14	70	1,325	60
Hypertension	13	65	1,131	52
Burns	10	50	215	10
Acute respiratory infection	8	40	751	34
All causes	2,450	12,318	27,6761	12,619

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

FIGURE 6.20: Hospitalisation rates 1987-1991 for women aged 65 years and over



Source: Calculated from data supplied by the New Zealand Health Information Service.

Note: These are five-year, not annual, rates.

Cancer registrations

Cancer registrations for Pacific Islands men aged 65 years and over between 1987 and 1991 were relatively higher than those for all New Zealand older men, the five-year rates being 1,264 and 1,115 per 10,000 respectively. On the other hand, the registration rate for Pacific Islands women was appreciably lower than the national rate (ie, 568 compared with 722 per 10,000).

The large difference in rates between Pacific Islands men and women is notable. This difference, where the rate for women is only 45 percent that of men, may reflect some degree of sex-bias in the migration of Pacific Islands people to New Zealand for treatment for cancer. A large difference in cancer registrations among Pacific Islands males and females aged 65 years and over has also been detected in registration data for the period 1979-1988 by Tukuitonga et al, who have drawn attention to the influence of the referral of patients from the Pacific Islands to New Zealand on the national cancer statistics (Tukuitonga et al, 1992).

Among Pacific Islands men, the incidences of prostate cancer and cancer of the trachea, bronchus and lung between 1987-1991 were higher than the national rates (Table 6.28). Rates for stomach cancer, cancer of the pancreas, lymphoid and histiocytic tissue sarcoma, and liver cancer were also above the national rates. Colo-rectal cancer registration, on the other hand, was comparatively low.

Among Pacific Islands women, registration rates between 1987-1991 for cancer of the breast, trachea, bronchus and lung, and colo-rectal area were below those for all New Zealand older women. The major exception was cancer of the cervix, where the registration rate was four times higher than the national rate. In all cases, however, the numbers involved were quite small (Table 6.29).

TABLE 6.28: *Cancer registrations of males aged 65 years and over, National Cancer Registry, 1987-1991*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Prostate	44	293	3,553	221
Trachea, bronchus and lung	40	266	3,298	206
Colon/rectum	18	120	3,023	188
Stomach	14	93	830	52
Bladder	9	60	1,071	67
Pancreas	8	53	517	32
Liver and intrahepatic bile ducts	5	33	162	10
Lymphoid and histiocytic tissue sarcoma	5	33	344	21
All cancers	190	1,158	17,540	1,093

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

TABLE 6.29: *Cancer registrations of females aged 65 years and over, National Cancer Registry, 1987-1991 (excludes in situ)*

Cause	Pacific Islands		Total New Zealand	
	Number	Rate ⁽¹⁾	Number	Rate ⁽¹⁾
Breast	15	75	3,119	142
Trachea, bronchus and lung	12	60	1,451	66
Cervix uteri	11	55	280	13
Colon/rectum	11	55	3,416	156
Pancreas	6	30	503	23
Ovary	6	30	499	23
All leukaemia	6	30	443	20
Uterus combined	5	25	539	25
Liver and intrahepatic bile ducts	4	20	109	5
All cancers	113	568	15,835	722

Source: Calculated from data supplied by the New Zealand Health Information Service.

(1) Rates per 10,000 population. These are five-year, not annual, rates.

Mental health

First admissions of older Pacific Islands people to psychiatric hospitals and wards for mental illness are relatively rare. Only nine men and seven women were admitted between 1987 and 1991, the five-year rates being 60 and 35 per 10,000 compared with rates of 77 and 69 per 10,000 in the New Zealand population over the age of 65 years. Pacific Islands people prefer to have those afflicted with mental illness cared for in the home environment rather than in psychiatric hospitals and wards.

References

- Becroft DMO, Gunn TR. Prenatal cranial haemorrhages in 47 Pacific Islander infants: is traditional massage the cause? *NZ Med J* 1989; 102: 207-210.
- Bell C, Swinburn B, Stewart A. Coronary Heart Disease Incidence and Risk Factor Prevalence among Pacific Islanders living in New Zealand. Auckland: Department of Community Medicine, University of Auckland, 1994.
- Bonita R, Paul C. The extent of cervical screening in NZ women. *NZ Med J* 1991; 104: 349-52.
- Borman B. Low birthweight in New Zealand. Presented to a Symposium on Current Issues in Obstetrics and Gynaecology, Dunedin, 1993.
- Crane J, O'Donnell TV, Prior IAM, et al. The relationship between atopy, bronchial hyperresponsiveness, and a family history of asthma: A cross-sectional study of migrant Tokelauan children in New Zealand. *J Allergy Clin Immunol* 1989; 5 (Part 1): 768-72.
- Department of Health. Fetal and Infant Deaths. Wellington: Department of Health, 1987-1991.
- Department of Health. Immunisation Coverage in New Zealand: Results of the Regional Immunisation Coverage Surveys. CDNZ Communicable Disease in New Zealand, Volume 92, Supplement 2, May 1992. Porirua: Department of Health, 1992.
- Department of Statistics. Demographic Trends, 1992. Wellington: Department of Statistics, 1993.
- Garrett JE, Mulder J, Wong-Toi H. Reasons for racial differences in A & E attendance rates for asthma. *NZ Med J* 1989; 102: 121-4.
- Gunn TR, Hayden JE. A comparison of Pacific Islander and European stillbirths. *NZ Med J* 1981; 94: 294-7.
- Lethaby AE, Mason BH, Holdaway IM, et al. Age and ethnicity as prognostic factors influencing overall survival in breast cancer patients in the Auckland region. *NZ Med J* 1992; 105: 485-8.
- Mitchell EA, Quested C. Why are Polynesian children admitted to hospital for asthma more frequently than European children? *NZ Med J* 1988; 101: 446-8.
- National Audiology Centre. New Zealand Hearing Screening Statistics July 1992-June 1993. Auckland: National Audiology Centre, 1994.
- Newman PD, Mason BH, Holdaway IM, et al. Incidence and clinical features of breast cancer in the Auckland region. *NZ Med J* 1992; 105: 117-20.
- North DA, Sparrow MJ. Trends in the contraceptive practices of women seeking abortions in the 1980s. *NZ Med J* 1991; 104: 156-8.
- Pattemore PK, Asher MI, Harrison AC, et al. Ethnic differences in prevalence of asthma symptoms and bronchial hyperresponsiveness in New Zealand schoolchildren. *Thorax* 1989; 44: 168-76.
- Prior IAM, Hooper A, Huntsman JW, et al. The Tokelau Island migrant study. In: G Harrison (ed). *Population Structure and Human Variation*. London: Cambridge University Press, 1977.
- Ridgway D, Skeen JE, Mauger D, et al. Childhood cancer among the Polynesian population. *Cancer* 1991; *Cancer* 1991; 68 (2): 451-54.
- Scragg R, Baker J, Metcalf P, et al. Prevalence of diabetes mellitus and impaired glucose tolerance in a New Zealand multiracial workforce. *NZ Med J* 1991; 104: 395-7.
- Scragg R, Baker J, Metcalf P, et al. Hypertension and its treatment in a New Zealand multicultural workforce. *NZ Med J* 1993; 106: 147-50.
- Simmons D, Gatland B, Fleming C, et al. Prevalence of known diabetes in a multiethnic community. *NZ Med J* 1994a; 107: 219-22.

- Simmons D, Shaw L, Kenealy T, et al. Ethnic differences in diabetes knowledge and education: The South Auckland diabetes survey. *NZ Med J* 1994b; 107: 197-200.
- Statistics New Zealand, Ministry of Health. *A Picture of Health*. Wellington: Statistics New Zealand and Ministry of Health, 1993.
- Tukuitonga CF, Stewart A, Beaglehole R. Coronary heart disease among Pacific Island people in New Zealand. *NZ Med J* 1990; 103: 448-9.
- Tukuitonga CF. Evaluation of the cervical screening programme for Pacific Island women in Auckland. Auckland: unpublished report to the Auckland Area Health Board, 1991.
- Tukuitonga CF, Solomon N, Stewart A. Incidence of cancer among Pacific Island people in New Zealand. *NZ Med J* 1992; 105: 463-6.
- Waite DA, Eyles EF, Tonkin SL, et al. Asthma prevalence in Tokelauan children in two environments. *Clinical Allergy* 1980; 10: 71-5.

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Chapter 7

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Conclusion

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Assessing health status from imperfect statistics

According to the statistics provided in Chapter 5, the standardised mortality rates for Pacific Islands males and females have been below the national ones, although the hospitalisation rates have been higher.

However, the data are not free from error. There is evidence that Pacific Islands people are under-reported in mortality and public hospital data, are under-reported in population censuses, and under-utilise medical services compared with Palagi. It is difficult to assess the relative importance of these different factors.

Misclassification of ethnicity and the under-counting of the Pacific Islands population in censuses does occur, but it is impossible to establish the effect on mortality and hospitalisation rates. Certainly, when the possibility of under-reporting of deaths by as much as 57 percent was used as a benchmark, it was found that the total mortality rates for males and females were still below those for the total New Zealand population.

In the case of hospitalisation rates, Pacific Islands people at the PHC's consultation meetings stated that they under-utilised health services for a variety of personal and cultural reasons (Chapter 1). This has two implications as far as hospitalisation rates are concerned. The first is that the rates cited in Chapter 5, where used as an indicator of the level of morbidity, under-estimate that level in the Pacific Islands population. The second, and quite different, implication is that Pacific Islands males and females have higher hospitalisation rates than all New Zealand males and females because they do not seek medical attention for conditions as early as, or to the same extent as, other groups, and, therefore, are more likely to be hospitalised when they do present for attention. In the context of both implications, it needs to be remembered that 19 percent of Pacific Islands people interviewed in the 1992-1993 Household Health Survey reported their health to be "not so good" or "poor" compared with eight percent of Palagi surveyed (Statistics New Zealand and Ministry of Health, 1993).

Considering the profile of diseases and conditions which emerged from the mortality data, degenerative diseases are far more important than infectious and parasitic ones. The higher rates for cancer, heart disease and diabetes follow the pattern in many Pacific Islands countries where these conditions have increased through time (Chapter 1). The pattern is slightly different for hospitalisations, with asthma, acute respiratory infections, infectious and parasitic diseases, and pneumonia having the highest actual age-standardised rates of hospitalisation.

Cancer, coronary heart disease, unintentional injuries and cerebrovascular disease were the main causes of death in the Pacific Islands male population in New Zealand between 1987 and 1991. With the exception of unintentional injuries, these were also the main causes of death among Pacific Islands females. There are, however, grounds for questioning the rates for some of these causes, in particular, the lower values compared with the total New Zealand population.

One of these is death from coronary heart disease. The long-term (1983-1994) Auckland Regional Coronary Or Stroke Study (ARCOS) is based in the area of New Zealand containing most of the Pacific Islands population and provides information based on self-identification (or family identification) of ethnicity. The study has indicated that

the mortality rates for Pacific Islands adult males and females are higher than those for Palagi, and that CHD is (and has been for some time) a major health problem for the Pacific Islands population (Tukuitonga et al, 1990; Bell et al, 1994). Analysis underway of recent data on cerebrovascular disease collected in Auckland in the same study suggests that Pacific Islands people have higher event rates for that condition as well, compared with Palagi (J Broad, personal communication, August 1994).

Again, in the case of cancer, the National Cancer Register data show that some rates for Pacific Islands people are relatively high. The age-standardised reporting rates in the register for Pacific Islands males are higher than those for all New Zealand males for lung, prostate, stomach and liver cancer; and, among Pacific Islands females, rates higher than the national ones occur for cervical cancer and cancer of the ovary and uterus, as well as for stomach cancer. Areas where rates below the national ones prevailed for Pacific Islands people included colo-rectal cancer, and, among females, breast-cancer. Research is required to determine the reasons for these differences.

Although relatively less important as causes of death, asthma and diabetes were two conditions for which the death rates of Pacific Islands people between 1987 and 1991 were found to be above the national rates. Hospitalisation rates for these conditions, as well as for pneumonia, acute respiratory infections, and infectious and parasitic diseases (especially tuberculosis) were also markedly higher. The higher rates for the latter diseases might result from the larger size of Pacific Islands households, greater overcrowding and perhaps poorer quality of housing occupied. Unfortunately, published national data are lacking on these particular aspects of housing that would allow the housing circumstances of Pacific Islands people to be characterised better than the profile provided in Chapter 3.

There has been a rapid increase in the incidence of diabetes in Pacific Islands countries during the last two decades (Chapter 1), and changes in diet and obesity associated with rising urbanisation and "modernisation" are implicated (Chapter 4). These changes often become much greater for migrants. Weight gain among Samoan people migrating to the USA has been recorded; and weight gain has been detected among migrants to New Zealand, as in the case of the Tokelau Islands Migrant Study. Indeed, TIMS consistently emphasised the importance of diet and weight control as a prerequisite to improving the health of the migrant Tokelauan population in New Zealand (Wessen, 1992). This finding would apply to other Pacific Islands ethnic groups in New Zealand as well.

Simmons et al (1994a), in a household survey of diabetes in Otara, South Auckland, in 1992, have confirmed the high incidence of diabetes among Pacific Islands people compared with Palagi. They point out that the local delivery of diabetes information to Pacific Islands people is "grossly inadequate" and contributes to morbidity and excess admissions to hospitals (Simmons et al, 1994a; 1994b). They also suggest that the crude prevalence of diabetes in New Zealand is likely to increase in the years ahead as the population ages.

This raises the question of what the number of deaths and admissions of people to hospital might be in a decade or so for diabetes and other diseases if the current rates of occurrence remained unchecked but the proportion of older people in the population increases.

Possible future changes in health status in an ageing population

As noted in Chapter 2, the Pacific Islands population at present is a young one compared with the national population but, under one scenario (scenario 6) of the recent set of projections prepared by Statistics New Zealand, it is anticipated that the population aged 25-64 years will increase by 65 percent between 1991 and 2031, with the population over the age of 65 years increasing by 150 percent. Given that the growth rate is not projected to be as pronounced in the 0-14 years age group (ie, 43 percent), the change implies that degenerative diseases associated with older people in particular (Chapter 6) could become more common within the Pacific Islands population as a whole. Also, the population-based rates for some diseases that are primarily concentrated among younger people (eg, acute respiratory infections) might fall.

Tables 7.1 and 7.2 attempt to assess what the impact of the ageing process in the Pacific Islands population might be as far as the future number of deaths and cases of hospitalisations for some conditions are concerned. The figures were derived by finding the average annual number of deaths and hospitalisations between 1987 and 1991 for males and females combined in each age group, deriving annual case rates for the population of sole Pacific Islands ethnicity in 1991, and then multiplying the case rate by the respective male or female population in each age group projected for 2011 and summing the totals. Details are provided in the footnotes to the two tables. The conditions selected are those concentrated primarily in the older section of the population (Chapter 6).

TABLE 7.1: *Projected numbers of deaths for some causes in 2011, based on the 1987-1991 age rates and the projected size of the age groups in the total population in 2011*

Cause of death	Number of annual deaths				Percent increase 1991-2011	
	Pacific Islands		Total New Zealand		Pacific Islands	Total New Zealand
	1991 ⁽¹⁾	2011 ⁽²⁾	1991 ⁽¹⁾	2011 ⁽³⁾		
All cancers	57	150	6,610	11,496	163	74
Coronary heart disease	41	124	7,089	13,465	202	90
Cerebrovascular disease	21	70	2,675	5,134	233	92
Diabetes	9	31	398	710	244	78
Pneumonia	9	29	1,176	2,304	222	96
Asthma	5	14	190	418	180	120
All causes	279	728	26,975	48,218	160	79

Source:

(1) Based on the annual average number of deaths in each age group between 1987 and 1991.

(2) Projected deaths based on the 1987-1991 age-specific number of deaths by cause, and the series 6 projection for the Pacific Islands population given in Statistics New Zealand, 1994.

(3) Projected deaths based on the 1987-1991 age-specific number of deaths by cause, and the series 8 projection for the total population given in Statistics New Zealand, 1994.

TABLE 7.2: *Projected numbers of hospitalisations for some causes in 2011, based on the 1987-1991 age rates and the projected size of the age groups in the total population in 2011.*

Cause of hospitalisation	Number of annual deaths				Percent increase 1991-2011	
	Pacific Islands		Total New Zealand		Pacific Islands	Total New Zealand
	1991 ⁽¹⁾	2011 ⁽²⁾	1991 ⁽¹⁾	2011 ⁽³⁾		
Asthma	4,780	8,394	57,693	67,671	76	17
Acute respiratory infection	3,031	5,112	35,645	41,148	69	15
All cancers	2,633	6,258	132,936	214,901	138	62
Diabetes	955	2,428	16,528	24,904	154	51
Cerebrovascular disease	767	2,278	3,8134	68,509	197	80
Coronary heart disease	750	2,003	79,430	131,127	167	65
All causes	106,266	193,286	2,398,288	3,165,088	81	32

Source:

(1) Based on the annual average number of hospitalisations in each age group between 1987 and 1991.

(2) Projected hospitalisations based on the 1987-1991 age-specific number of hospitalisations by cause and the series 6 projection for the Pacific Islands population given in Statistics New Zealand, 1994.

(3) Projected hospitalisations based on the 1987-1991 age-specific number of hospitalisations by cause and the series 8 projection for the total population given in Statistics New Zealand, 1994.

The number of deaths and hospitalisations associated with conditions that are concentrated primarily in the older section of the population could increase by more than 200 percent in some cases over the next 17 years, with the projected increases being well above those for the national population as a whole because the percentage increment in the Pacific Islands population in the older age groups is expected to be relatively greater. Deaths from cancer, coronary heart disease, cerebrovascular disease, diabetes and pneumonia could increase more than threefold, as could admissions to hospitals for coronary heart disease, cerebrovascular disease and diabetes, with increases by a factor of 1.7 occurring for asthma and acute respiratory infections.

These projections are based on the assumption that the current age-standardised rates of deaths and hospitalisations for the particular causes listed will remain constant through time. If the current rates reduced in the near future (eg, perhaps as a result of changes in behaviour leading to more people in the population taking steps to protect and improve their personal health), then, of course, the projected rates would be quite different. It should also be remembered that Tables 7.1 and 7.2 attempt to cover only the ageing effect on possible hospitalisation and death outcomes at the rates for the current age structure; they do not take into account the “ladder” effect of mobility within the age structure itself (ie, the change in risk for particular conditions that occurs as people age and shift from one cohort to another, as demonstrated in Chapter 6 of this report).

A second difficulty with the projections concerns the mortality and hospital data on which they are based, namely, that Pacific Islands people are under-reported in these two sets of statistics, and, therefore, that both the current rates for different causes (Chapter 6) and the future projected number of cases are likely to be higher.

In regard to morbidity, recent community-based surveys play an important role in indicating trends. In an analysis of the results of the South Auckland diabetes study it was projected that the number of Pacific Islands people in that area with diabetes could increase by 286 percent between 1991 and 2011, to reach 3,447 cases without any change in the prevalence of diabetes and due only to the ageing of the population (Harris et al, 1993). Clearly, the occurrence of diabetes among Pacific Islands people in New Zealand is far greater than the nationwide public hospital admission statistics suggest. It is also clear the number of cases is going to increase very substantially in the future as the age structure of the Pacific Islands population "matures" and if the behaviours conducive to the onset of diabetes mellitus late in life are not arrested.

Impact of socioeconomic change on health status

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The Pacific Islands communities have experienced increased economic hardship since the late 1980s, especially with the steep rise in unemployment (Chapter 3). The impact may not yet have become manifested in an obvious way in health statistics (and less likely in mortality records than in hospitalisations, for example, for injuries resulting from violence), but certain risks to health may have been increased in recent years that could eventually be reflected in such data.

For a section of the Pacific Islands population, poorer nutrition is one ongoing change that may have increased risks (eg, reliance on cheap but fatty meats), as reported by Pacific Islands people consulted by the PHC (Chapter 1). Preliminary surveys show that Pacific Islands people see themselves as being more severely disadvantaged than other ethnic groups with respect to food choice, inability to buy basic food items and choosing between buying food and paying other bills (Manukau City, 1993; Turner et al, 1992). Food banks are used by significant numbers of Pacific Islands people in certain areas, with some meals being missed occasionally due to insufficient food. Those with higher incomes seem less likely not to have enough food, and more likely to be consuming "healthy" meals (Turner et al, 1992).

The level of adverse psycho-social behaviour could also increase if economic conditions for Pacific Islands people deteriorate. The Christchurch Child Development Study (Chapter 3) has indicated that socioeconomic disadvantage is the root cause of offending by young people, with offending by Pacific Islands children in that particular area being higher than offending by Palagi children because of this. Any further deterioration in the economic circumstances of Pacific Islands parents, combined with poor parenting and poor employment prospects, could lead to an increase in youth offending, including areas that have an impact on health (eg, substance abuse). It was also noted in this report that violent offending is currently a major offending area among Pacific Islands men sentenced by the courts, and that Pacific Islands women and children make up nearly 10 percent of clients admitted by the National Collective Refuge movement. The high levels for convictions and admissions to refuges suggest that the control of violence and maintenance of harmony within families are two areas that present a challenge for the Pacific Islands population. Mental health is another. While the official first admission rates for psychiatric care are still below those for the total population, the fact remains that many in need of assistance are not receiving it and that, among those who do, their conditions are not always diagnosed correctly. Bridgeman's assessment is a sobering one: he considers that readmissions of Pacific Islands people for drug abuse and psychosis could rise steeply in the not too distant future (Bridgeman, 1993).

References

- Bell C, Swinburn B, Stewart A. Coronary Heart Disease Incidence and Risk Factor Prevalence among Pacific Islanders living in New Zealand. Auckland: Department of Community Health, University of Auckland, 1994.
- Bridgeman G. The Pakeha ambulance at the bottom of the cliff. *Mental Health News*, Spring 1993: 7-10.
- Harris JJ, Ebert CS, Peev M. An Economic Evaluation of the South Auckland Diabetes Plan: A Report prepared for Middlemore Hospital, 31 March 1993. Unpublished report. Auckland: University of Auckland, 1993.
- Manukau City. Manukau Quality of Life Survey. Technical Report 1. Ethnic Differences in Quality of Life. Auckland: Manukau City, 1993.
- Simmons D, Shaw L, Kenealy T, et al. Ethnic differences in diabetes knowledge and education: The South Auckland Diabetes Survey. *NZ Med J* 1994a; 107: 197-200.
- Simmons D, Gatland B, Fleming C, et al. Prevalence of known diabetes in a multiethnic community. *NZ Med J* 1994b; 107: 219-222.
- Statistics New Zealand, Ministry of Health. A Picture of Health. Wellington: Statistics New Zealand and Ministry of Health, 1993.
- Statistics New Zealand. Demographic Trends 1993. Wellington: Statistics New Zealand, 1994.
- Tukuitonga C, Stewart A, Beaglehole R. Coronary heart disease among Pacific Islands people in New Zealand. *NZ Med J* 1990; 103: 448-9.
- Turner A, Connolly G, Devlin M. Food related needs in a sample of Otara and Manurewa families. Health Promotion Unit. South Auckland Community Services. Auckland: Auckland Area Health Board, 1992.
- Wessen AF (ed). Migration and Health in a Small Society: The Case of Tokelau. Research Monograph on Human Population Biology, No. 8. Oxford: Clarendon Press, 1992.

Glossary

Abortion: The termination of pregnancy under medically supervised conditions.

Acute glomerulonephritis: Localised inflammation of the glomerular loops in the kidney. It is most frequent in children and may develop after a streptococcal infection of the throat or skin.

Adipose tissue: Tissue comprised of cells filled with fat, deposited as a means of storing energy in the body.

Aged dependency ratio: The number of people over the age of 60 years divided by the population aged 15-59 years, multiplied by 100.

Age-specific fertility rates: The number of live births to women in a particular age group (eg, 15-19 years). The rate is normally expressed as the number of live births per 1,000 women.

Age-standardised (or age-adjusted) rates: Rates in which there has been an adjustment for differences in the age distribution of the populations being compared.

Anthropometry: The science of measuring the size, weight and proportions of the human body.

Blood total cholesterol: A measurement of the total amount of cholesterol (a monoatomic alcohol) in the blood (ie, including *LDL-cholesterol*, *VLDL-cholesterol*, *IDL-cholesterol* and *HDL-cholesterol* (see these terms for definitions)) which is equated with risk for some chronic diseases.

Blood lipids: A measurement of the total lipid fraction in the blood, including total cholesterol, triglycerides and lipoproteins.

Blood plasma: The fluid portion of blood, without the blood cells.

Blood serum: The clear liquid separated from whole blood after centrifugation. The blood cells and fibrinogen are removed.

Body mass index (BMI): Body mass index is a measure of body weight which also takes account of a person's height. Expressed as weight (in kg) divided by the square of height (in metres). Desirable BMI differs for differing age groups as follows:

Age group (years)	Desirable BMI (kg/m ²)
19-34	20-25
35-44	20-26
45-54	20-27
55-64	20-28
65+	20-29

Obesity is defined as BMI 30 and over.

Bronchiectasis: The permanent breakdown of small airway passages in the lung, with the formation of cavities, in which infections tend to occur.

Cardiovascular disease: Disease of the heart and blood vessels.

Cerebrovascular disease: A chronic disease affecting the blood vessels in the brain.

Cervical cancer: A malignant disease affecting the cells of the cervix (the narrow lower end of the uterus) causing them to multiply into metastatic tumours.

Child dependency ratio: The number of people aged 0-14 years divided by the population aged 15-59 years, multiplied by 100.

Childhood obesity: This term does not have a specific definition by BMI, but is often determined by comparing the weight and height measurements of children with standard, representative growth charts. It is most likely to be used to describe children over the 95th percentile for weight, and in the 75th percentile or below for height.

Communicable disease: Disease that is capable of being transmitted from one person to the other.

Colo-rectal cancer: A malignant disease infecting cells of the lower part of the large intestine causing them to multiply into metastatic tumours.

Coronary heart disease (also known as ischaemic heart disease): Heart disease resulting from the constriction and obstruction of blood vessels to the heart, thereby decreasing the blood flow and oxygen supply to the heart.

Degenerative disease: A progressive disease which (usually) degrades particular body functions over time. For example, some cardiovascular diseases, diabetes and some cancers are often described as chronic degenerative diseases.

Dengue fever: A viral disease of tropical areas transmitted by mosquitos, which causes severe pains in the head, eyes, muscles and joints and sometimes skin eruptions.

Denominator or divisor: The number used to divide another number (the numerator or dividend). As used in the calculation of mortality and hospitalisation rates throughout this report, the denominator is the population which, at the time of the 1991 census, specified their ethnic group to be a particular Pacific Islands ethnic group or a combination of two Pacific Islands ethnic groups. Persons who specified they belonged to a Pacific Islands ethnic group as well as a non-Pacific Islands ethnic group (eg, Asian, Maori) are not included in the denominator.

Diet-related risk factors: Specific characteristics of food intake which have been shown to increase the risk of chronic degenerative diseases.

Diabetes mellitus: A metabolic disorder in which there is a relative or absolute lack of insulin, resulting in the body being unable to metabolise glucose (from carbohydrate in food) inside cells.

Diastolic blood pressure: The blood pressure measurement taken when the heart muscle is relaxed, during the filling phase. It is part of the complete arterial blood pressure measurement, which is systolic/diastolic blood pressure (see *systolic blood pressure*).

Early neonatal death: A liveborn infant dying before the seventh day of life is completed, measured in hours from the time of delivery. Rates for early neonatal deaths are expressed per 1,000 live births.

Epidemiologic transition: The movement of the distribution and determinants of health-related states or events in specified populations.

Emphysema: A general term describing the build-up of air in tissues or organs. Usually this term refers to pulmonary emphysema, which is an increase in the air-space within the lungs, with irreversible rupture of the alveoli and, therefore, abnormalities in gas exchange.

Filariasis: A parasitic infection with filaria, which is a nematode worm. It occurs in tropical and sub-tropical countries.

Fructosamine concentration: A blood sugar measurement which is taken to indicate the level of long-term blood sugar control in diabetes.

Glucose level: This usually refers to blood glucose level, an indicator of short term control of blood sugar in diabetes.

Glue ear: Common name for serous otitis media with effusion, which is a painless accumulation of fluid in the middle ear due to obstruction of the eustachian tube. This prevents the ear drum from vibrating, causing conduction deafness.

Gout: A metabolic disorder with high blood levels of uric acid. It causes a recurrent acute type of arthritis affecting outlying joints and tendons (usually in the feet or fingers). This is caused by a build-up of crystals of monosodium urate in the joint.

Hookworm: A parasitic nematode worm which can infect the intestine, resulting in serious illness.

Hospitalisations: A term commonly used to give some indication of the morbidity of diseases and conditions in a community. Hospitalisations in the New Zealand health statistics include inpatients who leave hospital to return home, transfer to another hospital or institution, or die in hospital after formal admission. This is a count of episodes of care rather than individuals. For example, a patient who is transferred will be counted twice.

HDL-cholesterol: High density lipoprotein cholesterol. This is seen as the "beneficial" blood cholesterol fraction because it transports cholesterol from the tissues and blood vessels back to the liver for excretion. It is desirable to have high blood levels of this type of cholesterol in relation to other types.

Hyperlipidaemia: High levels of blood lipids (see *blood lipids*).

Hypertension: Persistently high arterial blood pressure (see *diastolic and systolic blood pressure*), which may have no known cause (primary), or be associated with other diseases (secondary).

Hyperuricaemia: An excess of uric acid in the blood, which may lead to the development of crystals causing gout (see *gout*).

Incidence: The rates of new cases or deaths that occur in a given period in a specified population.

Inter-ethnic mobility: The situation where people may change their ethnic self-classification from one population census to the next.

Ischaemic heart disease (also known as **coronary heart disease**): Heart disease resulting from the constriction and obstruction of blood vessels to the heart, thereby decreasing the blood flow and oxygen supply to the heart.

Infectious disease: See *communicable disease*.

Iron deficiency anaemia: When a lack of iron stores in the body leads to a decrease in the amount of iron present in red blood cells as haemoglobin (the component of blood which transports oxygen from the lungs to the tissues). This results in less oxygen being provided to the tissues, causing symptoms such as lack of energy and paleness.

Impaired glucose tolerance: A defect in the normal glucose mechanism, causing elevated blood glucose levels, which may progressively increase, until diabetes mellitus develops.

Infant mortality: Where a liveborn infant dies before the first year of life is completed.

Inpatient: A person admitted to a hospital for medical, surgical or obstetric treatment, observation or care. Babies born in hospital are excluded unless otherwise provided with more medical care than is usually given to the new-born. A healthy person accompanying a sick person is included if formally admitted by the hospital as a "border". Daypatients and outpatients are excluded.

Kwashiorkor: A syndrome caused by severe protein deficiency, with symptoms such as slow growth, changes in skin and hair pigment, build up of fluid in the tissues and liver damage.

Labour force: Those persons employed in full-time or part-time work, and those unemployed but actively seeking full-time or part-time work. In the 1991 population census, the labour force was defined as including all persons aged 15 years and over who had full-time or part-time jobs, or were looking for full-time or part time work, with the remainder of the population over the age of 15 years who did not fall into any of these categories forming the "non-labour force".

Late fetal death or stillbirth: A fetal death of 28 completed weeks of gestation and over. Rates for late fetal deaths are expressed per 1,000 total births.

Late neonatal death: A liveborn infant dying between the seventh day of life and before the 28th day of life is completed. Rates for late neonatal deaths are expressed per 1,000 livebirths.

Low birthweight: Where infants have a birth weigh under 2500 g.

LDL-cholesterol: Low density lipoprotein cholesterol. This has the opposite function to HDL-cholesterol, by transporting cholesterol from the liver and depositing it in the tissues. This is therefore seen as one of the least "beneficial" cholesterol fractions and it is desirable to have a low LDL-cholesterol level in relation to the HDL-cholesterol level.

Malnutrition: Any disorder of nutrition. It is most commonly used to describe under- or over-nutrition.

Marasmus: A syndrome caused by severe energy and protein deficiency, normally occurring in the first year of life, resulting in growth retardation and wasting of fat and muscle tissue.

Micronutrient deficiency: Nonspecific deficiency in one or many vitamins or minerals (eg, iron deficiency anaemia is a deficiency of the micronutrient iron).

Microalbuminuria: The presence of albumin (a protein) in the urine, which is indicative of kidney dysfunction.

Microcytic anaemia: A symptom of iron deficiency anaemia, in which red blood cells are smaller than the normal range in size.

Mono-unsaturated fatty acids (MUFA): Fatty acids in which the carbon chains of the molecules contain only one double bond; found in meat and some vegetable oils such as olive, peanut and canola (see *polyunsaturated fatty acids* and *saturated fatty acids*).

Morbidity: Illness.

Mortality: Death.

Multiple ethnicity: A person who considers themselves to belong to more than one ethnic group.

Myristic acid: Crystalline solid found as glycerides in various vegetable oils and in milk.

Neonatal death: A liveborn infant dying before the 28th day of life.

Nephropathy: Disease of the kidneys

Non-communicable disease: A disease which is not capable of being transmitted from one person to the other.

Numerator or dividend: Where one number, the numerator or dividend, is divided by another, the denominator or divisor (eg, in the calculation of mortality and hospitalisation rates in this report, the numerator is the number of deaths or hospitalisations, and the denominator (divisor) is the number of people in the Pacific Islands population):

Nutrition: The sum of the processes involved in the ingestion, absorption, digestion, processing and assimilation of food by the body.

Nutritional adequacy: Whether the process of nutrition is adequate to maintain health.

Obesity: Where the body mass index (BMI) is greater than or equal to 30 (in Caucasian adults only, not including other races, athletes or children).

Otitis media with effusion: See *glue ear*.

Pacific Island Ethnic Group: The term used by the Department of Statistics in reports on the 1991 Census of Population and Dwellings to cover "those persons who (at the time of the census) stated a Pacific-Island ethnic group as either their sole ethnic group, or as one of several ethnic groups" they belonged to.

Pacific Island Polynesian: People of half or more Pacific Islands Polynesian origin, reported in the 1986 and earlier population censuses.

Palagi (pronounced "pa-langi"): Pacific Islands people's name for Europeans.

Parasitic disease: Disease caused by infection with an organism (protozoa or worm) which lives (for all or part of its life cycle) within the body.

Perinatal death: Fetal deaths of 28 completed weeks of gestation (late fetal deaths) and over plus infant deaths under 168 completed hours (seven days, ie, early neonatal deaths). Rates for perinatal deaths are expressed per 1,000 total births.

Post-neonatal death: A liveborn infant dying between the 28th day and the first year of life. Rates for post-neonatal deaths are expressed per 1,000 live births.

Permanent and long-term migrants: Immigrants intending to stay in New Zealand for 12 months or more, or emigrants departing permanently or intending to be away for 12 months or more.

Post-neonatal mortality: Liveborn infants dying after 28 days and before the first birthday.

Polyunsaturated fatty acids (PUFA): Fatty acids in which the carbon chains of the molecules contain more than one double bond; found predominantly in most vegetable oils except coconut and palm (see *mono-unsaturated fatty acids* and *saturated fatty acids*).

Prevalence: The proportion of the population who have a disease at a given point in time.

Prostate cancer: A malignant disease infecting the cells of the prostate (a gland surrounding the neck of the bladder and urethra in males) and causing them to multiply into metastatic tumours.

Proteinuria: Excess amounts of serum proteins detected in the urine.

Real disposable income: Gross income less tax liability (ie, the "after-tax" purchasing power of gross incomes). Where real disposable incomes over a period of time are compared, the gross incomes are also adjusted for changes in inflation using the Consumer's Price Index. Statistics New Zealand carries out these calculations in the course of preparing the real disposable incomes index for each income bracket for each quarterly period.

Relative risk: The ratio of the incidence of a disease or health outcome that occurs in a group exposed to a risk factor, to a group which is not exposed to the factor. For example, the relative risk of cancer of the lung for those who smoke is the ratio of the incidence of lung cancer among those who smoke to the incidence of lung cancer among non-smokers.

Risk: The probability of harmful consequences arising from a hazard.

Saturated fatty acids: Fatty acids in which the carbon chains of the molecule contain no double bonds and hence are more resistant to chemical and physical change than fatty acids which contain double bonds. Saturated fatty acids are found mainly in animal fats and coconut and palm oil. (See also *mono-unsaturated fatty acids* and *polyunsaturated fatty acids*.)

Segi's World Population: An age distribution used to calculate age-standardised rates of mortality and morbidity for different populations to allow them to be compared directly.

SIDS (sudden infant death syndrome): Death of an apparently healthy infant, for which a number of factors have been implicated, but with no obvious cause.

Substance abuse: This term is defined only by societal disapproval and involves various types of behaviour commonly regarding the use of prescription and non-prescription drugs, solvents or alcohol for recreational purposes, the relief of problems or symptoms, or for the above reasons, but (with subsequent use) the development of dependence and continued use to in part prevent the discomfort of withdrawal.

Sucrose: A type of simple sugar (disaccharide) from sugar cane and other sources, used as a sweetening agent in food.

Systolic blood pressure: The blood pressure measurement taken when the heart muscle is contracted. It is part of the complete arterial blood pressure measurement, which is systolic/diastolic blood pressure (see *diastolic blood pressure*).

Total abortion rate: The average number of abortions 1,000 women would have during their reproductive life if they were exposed to the current abortion rates characteristic of various childbearing age groups.

Total fertility rate (TFR): The TFR for a particular year is the number of births a woman would have during her reproductive life if she was exposed to the fertility rates characteristics of various childbearing age-groups prevailing in that year.

Trauma: A wound or injury that can be physical or psychological.

Triglyceride: A neutral fat which is the usual storage form of lipids in animals (see *blood lipids*).

Unemployment rate: The proportion of unemployed people in the labour force.

Unintentional injury: A wound or damage to the body, inflicted unintentionally by an external force.

Vascular disease: Disease pertaining to the blood vessels.

Yaws: A chronic, non-venereal spirochetes infection, most commonly affecting children in tropical countries which, untreated, causes substantial lesions and scarring.

APPENDIX I

Permanent and long-term arrivals in New Zealand by Pacific Islands country of last residence, for the period 1980-1993

Country	Year ended June													
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Western Samoa	1,164	1,072	1,103	991	1,219	1,558	1,472	1,844	1,774	1,598	1,027	1,069	708	796
Cook Islands	764	699	693	487	405	483	539	713	559	476	391	346	201	228
Papua New Guinea	646	616	790	672	884	724	573	609	494	385	440	453	361	386
Fiji	640	698	723	641	674	731	664	1,212	2,283	2,329	1,799	1,271	1,043	1,065
Tonga	238	266	211	203	423	351	278	423	360	337	369	302	263	398
Niue	217	131	185	128	158	152	170	174	180	104	103	103	103	90
Nauru	144	80	77	42	33	25	10	9	14	13	16	10	16	10
Solomon Islands	75	77	77	99	63	93	76	105	53	81	112	134	77	86
French Polynesia	41	28	18	9	19	10	21	23	30	13	23	13	12	32
Vanuatu	32	42	43	42	64	52	44	41	46	61	64	65	73	59
American Samoa	23	34	46	30	28	20	49	47	64	63	57	66	26	44
Tokelau	19	39	35	17	17	21	23	46	54	67	43	60	35	20
New Caledonia	16	24	38	33	27	22	37	35	28	14	29	27	36	45
Kiribati	14	11	15	23	27	15	19	21	44	28	34	20	40	27
Pitcairn Island	7	0	4	1	5	5	1	7	4	3	1	3	2	5
Tuvalu	6	9	3	13	9	12	21	23	15	15	20	18	20	29
Pacific Island Trust Territories	5	1	12	14	33	2	5	2	0	0	0	0	0	0
Total	4,051	3,827	4,073	3,445	4,088	4,276	4,002	5,334	6,002	5,587	4,528	3,960	3,016	3,320

Source: Tabulations prepared for the PHC by Statistics New Zealand.

APPENDIX 2

Permanent and long-term departures from New Zealand by Pacific Islands country of next permanent residence, for the period 1980-1993

Country	Year ended June													
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Western Samoa	1,043	1,027	857	607	594	671	683	670	849	944	830	1,073	1,448	1,157
Cook Islands	604	566	400	477	404	379	425	506	453	482	519	400	602	487
Papua New Guinea	1,159	1,267	1,068	701	645	802	522	472	378	547	411	396	404	361
Fiji	771	569	461	402	365	305	405	376	277	358	470	505	641	477
Tonga	400	361	312	299	312	270	327	253	330	311	372	467	693	384
Niue	122	90	95	100	82	113	112	121	100	70	64	102	67	78
Nauru	57	66	31	22	12	13	8	1	4	9	7	7	21	11
Solomon Islands	91	91	93	92	84	58	99	110	65	93	100	71	68	42
French Polynesia	20	16	17	17	22	21	30	27	12	28	27	17	15	16
Vanuatu	66	64	71	38	43	54	37	49	70	33	52	55	67	50
American Samoa	65	49	14	15	21	28	23	33	45	72	59	25	42	37
Tokelau	32	35	28	41	45	39	27	47	54	22	34	16	29	17
New Caledonia	26	29	17	8	15	18	15	25	13	29	26	43	43	32
Kiribati	14	23	27	7	4	7	35	19	29	16	11	20	21	21
Pitcairn Island	4	3	5	2	12	1	0	5	0	3	0	5	13	3
Tuvalu	7	8	8	8	11	7	10	9	15	7	2	6	19	12
Pacific Island Trust Territories	30	14	12	11	2	2	9	12	1	0	0	0	0	0
Total	4,511	4,278	3,516	2,847	2,673	2,788	2,767	2,735	2,695	3,024	2,984	3,208	4,193	3,185

Source: Tabulations prepared for the PHC by Statistics New Zealand.

APPENDIX 3

Excess of permanent and long-term arrivals in New Zealand over permanent and long-term departures from New Zealand, for the period 1980-1993

Source/destination	Year ended June													
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Western Samoa	121	45	246	384	625	887	789	1,174	925	654	197	-4	-740	-361
Cook Islands	160	133	293	10	1	104	114	207	106	-6	-128	-54	-401	-259
Papua New Guinea	-513	-651	-278	-29	239	-78	51	137	116	-162	29	57	-43	25
Fiji	-131	129	262	239	309	426	259	836	2,006	1,971	1,329	766	402	588
Tonga	-162	-95	-101	-96	111	81	-49	170	30	26	-3	-165	-430	14
Niue	95	41	90	28	76	39	58	53	80	34	39	1	36	12
Nauru	87	14	46	20	21	12	2	8	10	4	9	3	-5	-1
Solomon Islands	-16	-14	-16	7	-21	35	-23	-5	-12	-12	12	63	9	44
French Polynesia	21	12	1	-8	-3	-11	-9	-4	18	-15	-4	-4	-3	16
Vanuatu	-34	-22	-28	4	21	-2	7	-8	-24	23	12	10	6	9
American Samoa	-42	-15	32	15	7	-8	26	14	19	-9	-2	41	-16	7
Tokelau	-13	4	7	-24	-28	-18	-4	-1	0	45	9	44	6	3
New Caledonia	-10	-5	21	25	12	4	22	10	15	-15	3	-16	-7	13
Kiribati	0	-12	-12	16	23	8	-16	2	15	12	23	0	19	6
Pitcairn Island	3	-3	-1	-1	-7	4	1	2	4	0	1	-2	-11	2
Tuvalu	-1	0	-5	5	-2	5	11	14	0	8	18	12	1	17
Pacific Island Trust Territories	-24	-13	0	3	31	0	-4	-10	-1	0	0	0	0	0
Total	-460	-451	557	598	1,415	1,488	1,235	2,599	3,307	2,563	1,544	752	-1,177	135

Source: Tabulations prepared for the PHC by Statistics New Zealand.

APPENDIX 4

*Comparison of the 1986 and 1991 populations in each age cohort of the Pacific Island Ethnic Group***MALES**

Cohort in 1986	Number of males in 1986	Cohort becomes in 1991	Number of males in 1991	Gain/loss (1991-1986)
0-4	9,504	5-9	10,212	708
5-9	8,931	10-14	9,633	702
10-14	8,127	15-19	8,550	423
15-19	7,050	20-24	7,803	753
20-24	6,168	25-29	7,203	1,035
25-29	5,676	30-34	6,249	573
30-34	5,385	35-39	5,355	-30
35-39	4,491	40-44	4,302	-189
40-44	3,036	45-49	3,005	-31
45-49	2,442	50-54	2,337	-105
50-54	1,605	55-59	1,638	33
55-59	1,206	60-64	1,236	30
60-64	795	65-69	792	-3
65-69	447	70-74	444	-3
70-74	279	75-79	231	-48
75+	207	80+	132	-75

FEMALES

Cohort in 1986	Number of females in 1986	Cohort becomes in 1991	Number of females in 1991	Gain/loss (1991-1986)
0-4	8,886	5-9	9,639	753
5-9	8,490	10-14	9,477	987
10-14	7,692	15-19	8,673	981
15-19	7,173	20-24	8,892	1,719
20-24	6,825	25-29	8,424	1,599
25-29	6,222	30-34	6,831	609
30-34	5,391	35-39	5,430	39
35-39	4,218	40-44	4,245	27
40-44	2,946	45-49	2,994	48
45-49	2,229	50-54	2,374	145
50-54	1,548	55-59	1,701	153
55-59	1,203	60-64	1,386	183
60-64	846	65-69	942	96
65-69	570	70-74	612	42
70-74	327	75-79	330	3
75+	375	80+	258	-117

Source: Department of Statistics, 1986 and 1991 Censuses of Population and Dwellings.

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