Department of Labour
TE TARI MAHI

MIGRANTS AND LABOUR MARKET OUTCOMES
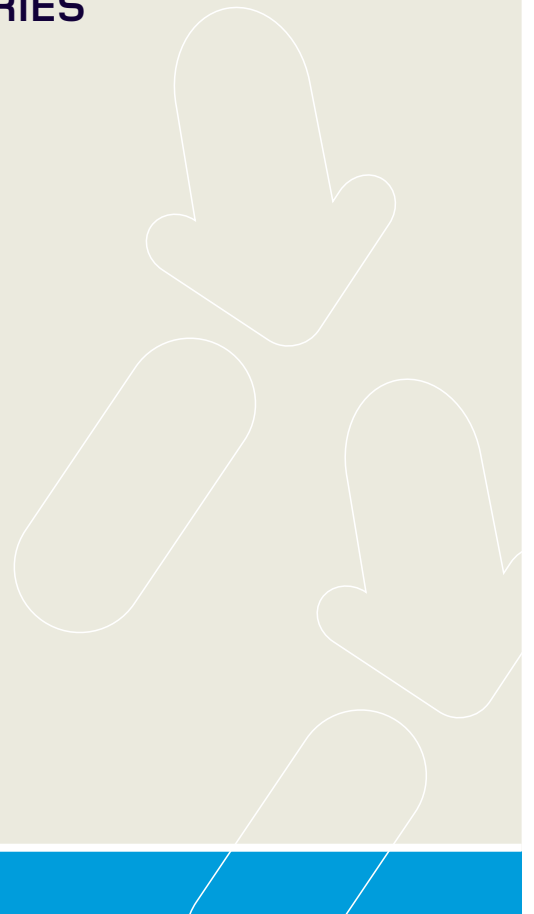
ECONOMIC IMPACTS OF IMMIGRATION
WORKING PAPER SERIES

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Report to:
Economic Impact of Immigration, Department of Labour

Migrants and Labour Market outcomes

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EXECUTIVE SUMMARY

This project aims to identify the labour market outcomes of migrant groups to New Zealand. It also investigates whether differences in such outcomes can be explained by the differing characteristics of various migrant groups.

We investigate the relationships between basic labour market characteristics and basic labour market outcomes, and the differences between the migrant types in terms of these characteristics and outcomes over time. Information from migrant arrival cards, as well as detailed cross-section data from the 1981, 1996, 2001 and 2006 Censuses are used.

Headline observations follow:
- 18% of New Zealand's working-age population in 1981 were overseas born. This proportion increased to 25% in 2006. In the last five years, overseas born people represented at least 60% (or 162,000) of the increase in the working-age population.
- Focusing more closely on the high labour force participation age groups of 30–49 years old, over 2001–2006, there was a net inflow of 64,200 overseas born and a net outflow of 1,200 New Zealand born. Further, the 64,200 net inflow of migrants was spread across the whole range of birthplace regions.
- Migrants who subsequently left New Zealand numbered at least 50,000 between 2001 and 2006. This implies a rate of outmigration of 24 per 100 arrivals over the 2001–2006 period. This is less than the 42 per 100 arrivals rate experienced over the 1996–2001 period. Interestingly, the highest rate of outmigration is for migrants from countries with mainly European ethnicity. This group presumably has few language and other constraints on their global mobility. Return migration is likely to be high to countries with high incomes, such as Australia and the United Kingdom.
- The labour market outcomes for migrants are shown to improve as their length of residence in New Zealand increases. The decline in the rate of outmigration shows that New Zealand is increasing its ability to attract people to settle and stay here. Buoyant economic conditions between 2001 and 2006 and a change in policy matching skills with employment undoubtedly play an important role.

Within this background, we constructed models from high-level cross-tabulations to investigate four main labour market outcomes: income levels, sources of income, labour force status and occupations. The conclusions below arise from two sets of analysis – observations from numerous multi-way cross-tabulations of census data and a multivariate analysis of migrant and non-migrant-related influences determining labour market outcomes.

General conclusions

In describing differences in labour market outcomes, migrant-related characteristics (region of birth and years in New Zealand) were helpful in only some cases. Furthermore, such characteristics were of relatively small importance in these cases.

- In most cases, the large majority of the differences in labour market outcomes across the various sub-groups of the population could be described by non-migrant-related characteristics, i.e. by differences in age composition and highest qualifications possessed.
- Amongst the migrant-related factors that were found to be helpful in describing the differences, the main one was years in New Zealand. In particular, inferior labour market outcomes for migrants with less than five years in New Zealand were observed in some cases.
- Notably, once migrants had more than 15 years in New Zealand, labour market outcomes became close to indistinguishable from the New Zealand born in most cases. Further, birthplace (including New Zealand) was found, in the main, to be a relatively unimportant factor in many of the equations that were estimated. It should be noted that this may be a feature of the methodology/data, as the duration in New Zealand was split into three groups. An analysis with unit record data may well reveal the 'time to convergence' to be shorter.
- Policy implications of these findings suggest, firstly, a focus on the qualifications as well as the matching of skills with employment of migrants and, secondly, a focus on their retention (i.e. ensuring they stay in New Zealand).

1   INTRODUCTION

The objective of this project is to identify different labour market outcomes for immigrants with different characteristics.

The methodology is to investigate the relationships between basic labour market characteristics and basic labour market outcomes and the differences between the migrant types in these characteristics and outcomes over time.

Investigating and determining the basic relationships between immigration and labour market outcomes over time presents a major challenge to integrate use of two sets of data. The two datasets are:
• 	time series data on immigration, and some characteristics of migrants obtained from the arrival cards
• 	detailed cross-section data on the profile of migrants settled in New Zealand obtained every five years in the Census of Population and Dwellings.

The time series data from the arrival cards show, most importantly, the quantum of flow of inward migrants over time. These show the existence of reasonably consistent long-term trends upwards in migrant inflows and periodic short-term (three to five year) 'bubbles' in migrant arrivals. It is these bubbles that can cause difficulties in causing short-term distortions to the composition of migrants at the following census cross-section profile.

The labour market data provided by the arrival card data are time series information on inward migrants including:
• 	whether they are New Zealand born or immigrants
• 	their age group and gender
• 	whether they are economically active or not
• 	if economically active, their occupation.

The cross-section census data we have obtained are for the 1981, 1996, 2001 and 2006 Censuses and provide the main parameters of immigrant characteristics and labour market outcomes.

The basic relationships between immigrant characteristics and labour market outcomes relate mainly to the core trend flows of migrants, perhaps separately from the short-term inflows in the bubbles. The four tasks in the process we follow to investigate these basic relationships are listed below:
1. 	Complete initial analyses of the time series data to determine profiles of immigration, especially in the five years prior to each census.
2. 	Create spreadsheet models with the census cross-section data that can deliver analyses of the relationships between immigrant characteristics and labour market outcomes, with the ability to isolate the recent arrivals, i.e. those arriving since the last census.
3. 	These cross-section spreadsheet models can then track (through inter-census comparison and 'date of arrival' data) the profile of changes in labour market

outcomes of migrant groups during their period of living in New Zealand since their immigration.

4. Determine the extent of recent changes in immigrants' labour market outcomes. This acknowledges the context, in particular, of major behavioural changes in the labour market over the 2001–2006 period.

Section 2 provides headline analysis and context of migrant flows, their characteristics and labour market outcomes over the 1981–2006 period.

Section 3 takes a closer look at the interaction between immigration flows and the working-age population over the 1981–2006 period. This section reports on the influence of outmigration, as well as inter-census changes in the birthplace of migrants.

Thereafter, we proceed to an analysis and investigation of the data from the four censuses. In section 4, we outline propositions that motivate our investigation, define the terms and variables used in the discussion and provide a summary of the findings of the investigation.

In particular, this investigation has two parts. One part makes observations from numerous cross-tabulations of the data. Of course, not all cross-tabulations can be covered in this report. However, a spreadsheet tool has been developed to enable desired comparisons to be easily generated and depicted. A selection of these comparisons is provided in sections 5–8.

Another part undertakes a formal diagnosis in the form of multivariate regression models of the migrant- and non-migrant-related influences determining labour market outcomes. The appendix section 10 details this examination.

Section 9 contains our concluding comments.

2   IMMIGRANT CHARACTERISTICS OVER TIME

2.1   Migration and the labour market

The scope of this research programme is migrants and the labour market; hence, it includes consideration of inward New Zealand born migrants as well as overseas born immigrants. Nevertheless, the main interest is in the labour market characteristics and behaviour of the overseas born immigrants.

This section is concerned with showing the pattern of flows of migrants over time, and following sections are concerned with showing the labour market behaviours of migrants.

This section covers three aspects of the patterns of migrants. By way of introduction, we use time series information from arrival and departure cards to provide:
- a long-term general picture of the rate and shape of inward migration since 1951
- the New Zealand born contribution to the shape of migration since 1979
- a picture of labour demand from 1986–2006.

In section 3, we follow this analysis with an examination of census data from the 1981, 1996, 2001 and 2006 Censuses. This examination provides details of the patterns of migrants in New Zealand from 1981–2006, especially of working age, and the implied inter-census flows.

2.2   A picture of inward migration 1951–2006

A general picture of the time pattern of inward migration is obtained from the track of data arising from arrival cards for people who classify themselves as 'permanent and long-term arrivals' or PLT inflows. There are a number of issues[1] around using the data generated by Statistics New Zealand from the arrival and departure cards, and these issues include the number of 'category jumpers' who have a certain intention on entering or leaving and then change their intention. For example, some people say they are arriving in New Zealand permanently or for the long term (i.e. at least for more than a year), but go home or to another country within 12 months. In these cases, they are not PLT on leaving New Zealand.

The PLT inward migration flows can indicate a level of immigrant settlement greater than actually taking place because of this category jumper effect. For this reason, this phenomenon of 'outmigration' is attracting much attention in the research community and among policy makers.[2]

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[1] See, for example, Glass, Hayden and Wai Kin Choy, *Brain Drain or Brain Exchange*?, Treasury Working Paper 01/22, page 15, for a more complete discussion of these issues.

[2] Bedford, Richard, Elsie Ho, Jacqueline Lidgard, *International migration in New Zealand: Context, Components and Policy Issues*. Discussion Paper, Migration Research Group and Population Studies Centre, Department of Geography, University of Waikato, Hamilton, New Zealand. October 2000.

With these caveats in mind, the time series of the PLT flows show an upward trend in inward migration since 1951 and three main bubbles of inflow. The impact of migrants is indicated by the gross migrant inflow in relation to the resident New Zealand population.

Figure 2.1 Annual gross migration inflows 1951–2006
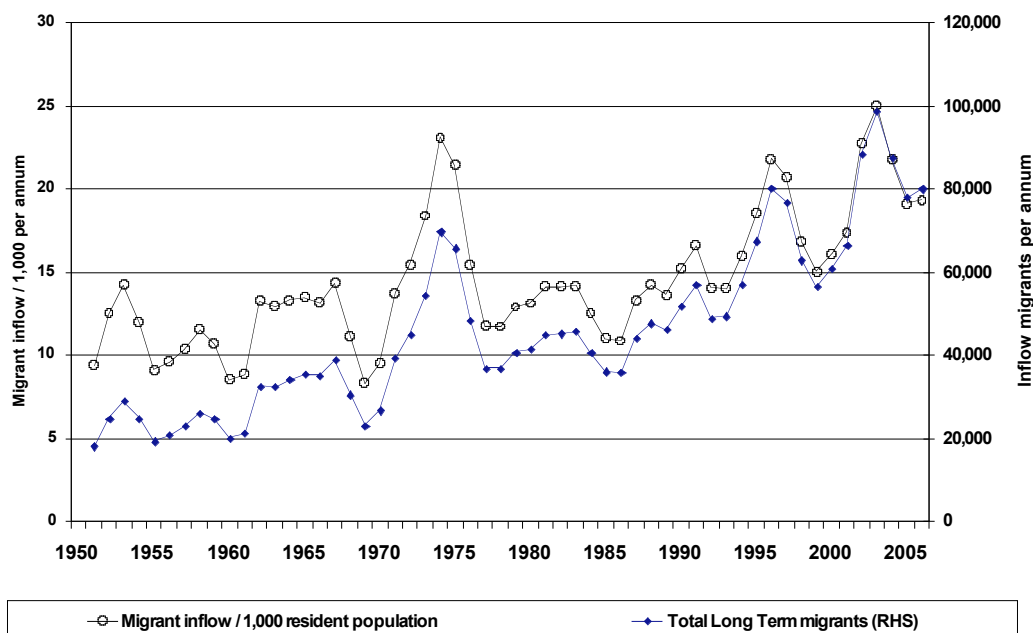
Over the relatively long term from 1951–2006, the trend of long-term migrant inflow per 1,000 residents was 10–12 migrants per 1,000 in the 1950s, lifting to about 12–15 per 1,000 residents from 1960–1985 and then trending upwards quite strongly to be about 20 per 1,000 in 2006.

The increase in the rate of the average inflow during the late 1980s coincides with the 1986 Immigration Policy Review and the subsequent Immigration Act 1987. This introduced a residence system based on specified migrant streams (skills and business, family, and humanitarian) rather than national or ethnic origin. The most important category was the skilled and business category, with the October 2001 New Zealand Immigration Programme subsequently establishing the proportions for each stream at 60%, 30% and 10% respectively. An increasing focus on attracting skilled as well as business migrants since 2001 has seen numerous changes and modifications to immigration rules. These have involved language criteria, as well as increases in the overall points level required. However, the overall trend in migrant arrivals has continued upwards, with policy changes being targeted more at influencing the composition of migrants as opposed to discouraging such arrivals.

In terms of total numbers of migrants, this seems to have followed a relatively steady trend from about 20,000 in 1950 to about 45,000 in 1990. This is an average trend increase of about 600 per annum. From 1990–2006 (years ending March), the trend appears to have increased from about 45,000 per annum in

1990 to about 80,000 per annum in 2006. This is an average trend annual increase of over 2,000.

Superimposed on these trends have been three major bubbles of migrant inflow. These were in 1972–1976, from 1995–1997 and from 2002–2004. In each of these bubbles, the gross inflow was about 23–25 migrants per 1,000 of the then resident population.

The peak years in these last two bubbles were 1996 and 2003. Both were notable for strong inflows from Asia – the first coinciding with the change in governance in Hong Kong and the second with a major increase in Asian students coming to New Zealand. The first of these was characterised by Bedford et al as "the *Asian invasion* of the mid-1990s".

The strong upward trend has been maintained through the latter two cycles, and we can be reasonably confident of a trend inflow of migrants increasing by about 2,000 per annum. However, in terms of determining labour market outcomes from recent migrants, we must be aware of the effect these bubbles will potentially have had on the profile of immigrants in New Zealand at Census 2001 and Census 2006.

2.3   Returning New Zealanders and other migrants 1979–2006

The inward migrant flows discussed above include immigrants and returning New Zealand citizens. In the comparable data we have available for migrant arrivals since 1979 (calendar years),[3] the number of New Zealand citizens returning has been remarkably steady over the period, sitting in the range of 18,000–29,000. The average inflow was 23,000, and in all but four years of the 26-year period, the inflow was in the range of 21,000–25,500.

This implies that most of the variation in the total long-term migrant arrivals has been in the number of non-New Zealand citizen arrivals, as shown in Figure 2.2.

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[3] Glass and Choy noted an issue with data from arrival and departure cards as a result of changing seasonality in arrivals, departures and net flows, and that calendar years are not the optimal measure. Indeed, March years are a better option.

Figure 2.2 Migrant arrivals – New Zealand citizens and non-New Zealand citizens
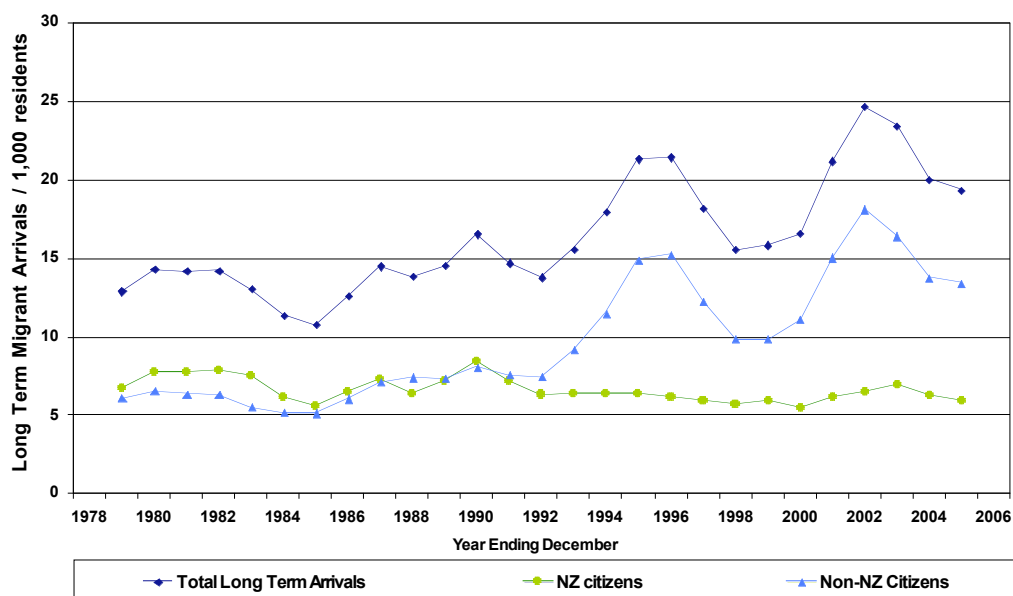
The pattern has been that, at the beginning of the period in the early 1980s, the number of returning New Zealand citizens was about equal with the inflow of non-New Zealand citizens. From 1992 onwards, the number of non-New Zealand citizens began to trend upwards and, following two sharp bubbles of inflow, appears to be settling at about 30,000 more per annum than the returning New Zealand citizens. It certainly seems that the increase in the overall trend inflow we identified as occurring in about 1990 was due to an emerging trend increase in arrivals of immigrants.

It can also be concluded that the shape of the number of migrant arrivals over time is largely determined by the number of arrivals of non-New Zealand citizens. This, in turn, means that the two most recent bubbles in the inflow were due to immigrants, not returning New Zealand citizens.

Looking at the returning New Zealand citizens, the rate of inflow per 1,000 residents in the 1980s and early 1990s fluctuated really widely in the range from 6 per year per 1,000 to 9 per year per 1,000 residents. The average during the period was 7 per year per 1,000 residents. Since 1992, the rate has been mostly in the range 6.5–7.0 per year per 1,000 residents except in the peak and trough years. The implication is that the relative impact on the population of returning New Zealand citizens is declining somewhat over time. In fact, given that the stock of New Zealanders overseas is increasing, it shows that the propensity of New Zealanders to return to New Zealand is declining.

On the other hand, the impact of non-New Zealand citizens on the population had a reasonably steady increase from 6.5 per year per 1,000 residents in the early 1980s to 7.5 per year per 1,000 residents in the early 1990s. Since then, the trend has increased strongly from about 10 per year per 1,000 residents in 1993 to 15 per year per 1,000 residents in 2005.

2.4   A picture of labour demand 1986–2006

The major labour market changes in New Zealand are likely to have affected migrant inflows and so a picture of employment change over the recent period provides a background for interpreting migration changes. The most detailed information on the labour market is available since the introduction of the Household Labour Force Survey (HLFS) in 1986.

The overall cyclical pattern of employment changes was of employment decline from 1987–1990, some fluctuations between 1991 and 1993, and a strong employment growth cycle from 1993–1996. There was a rapid fall between 1997 and 1999 for two years. From 2000 to the present, employment has generally increased in the range of 40,000–60,000 per year.

Figure 2.3 Annual employment change 1987–2006

Employment Annual Change 1987 to 2006
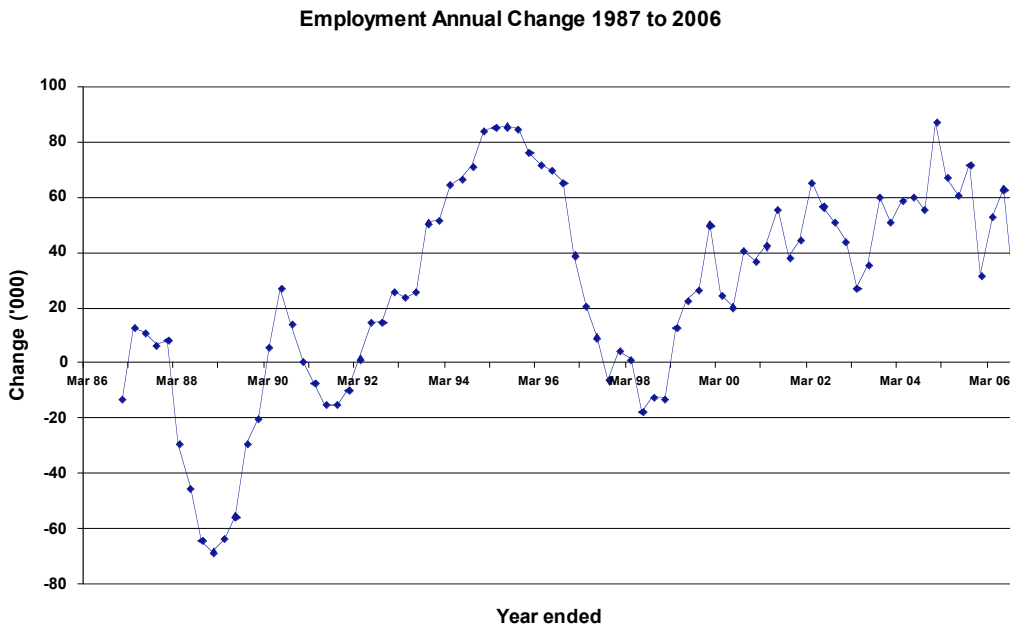
Apart from illustrating wide fluctuations in employment change over the period, Figure 2.3 illustrates the three features most likely to affect migration over the period from 1981–2006. These are the large job losses between 1988 and 1990, the major growth in employment from 1993–1997 and the steady employment growth between 2001 and 2006.

Migration effects that may be observed in the census data for 1996, 2001 and 2006 are, firstly, the large increase in employment from 1993–1997, which mostly occurred before 1996 and was accompanied by a major migrant inflow, especially from Asia. Secondly, there has been steady employment growth from 2001–2006 and, incidentally, a large inflow across 2002–2003, again mainly from Asia.

3 MIGRANTS AND WORKING-AGE POPULATION 1981–2006

Data have been obtained from the censuses of 1981, 1996, 2001 and 2006. Because of changes in questions and classifications, all data are not comparable across all censuses, but sufficient comparability has been obtained to allow analyses of migrants and their labour market behaviour. In the first instance, we shall explore details of the patterns of migrants as a component of the working-age population from 1981–2006. The people available to participate in the labour force are the working-age population, namely those 15 years old and over.[4]

The data from each census are a 'snapshot' at a given point in time and mainly describe whether the number of migrants of various characteristics has increased or declined. It is possible to explore the outmigration phenomenon by using age group data and data on years since arrival to find figures for gross and net migrant inflows – the difference being the migrants who left between censuses. In later sections, we shall analyse the changes in employment, unemployment and other labour market behaviours.

As with all datasets, there are some weaknesses, and the main one with this census data is that there are significant numbers of people that either have no birthplace recorded, or who are known to be overseas born but have an unknown overseas birthplace. The incidence of non-reporting of birthplace varies across censuses.[5]

3.1 The working-age population 1981–2006

The numbers and characteristics of the working-age population from 1981–2006 are explored in relation to migrant influences on change.

3.1.1 Changes in numbers of the working-age population 1981–2006

Over the period 1981–2006, the number of working-age people in New Zealand increased from 2.30 million to 3.16 million, an increase of 864,000 people (or 37.6%). This is a compound growth rate of 1.29% per annum over this 25-year period.

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[4] Of these people, a number will be unavailable to participate in employment because they are not in the labour force for a number of reasons and, consequently, are not available for paid employment for even one hour per week. The main categories of these people are those full-time studying, fully retired, at home (either looking after children or otherwise) and a number for unspecified reasons.

[5] The percentages of the total working-age population reporting an unknown birthplace in each of the censuses were 0.4%, 4.6%, 4.1% and 4.6% in 1981, 1996, 2001 and 2006 respectively.

Table 3.1 Working-age population 1981–2006

Working-age Population	Census Data				Intercensal Change			Total
	1981	1996	2001	2006	1981-96 Ave. 3 Censi	1996-01	2001-06	1981 to 2006
	('000s)				('000s)			('000s)
Total Overseas Born	409.0	545.0	626.7	789.0	45.3	81.7	162.3	380.0
New Zealand Born	1,878.6	2,114.1	2,145.7	2,224.5	78.5	31.6	78.8	345.9
Unknown Birthplace	9.2	127.2	117.2	146.9	39.3	-10.0	29.7	137.7
TOTAL 15 years plus	2,296.7	2,786.2	2,889.5	3,160.4	163.2	103.3	270.8	863.7

The pattern of changes in the working-age population (WAP) between censuses from 1981–2006 has fluctuated, particularly over the last decade.

In the first 15 years (1981–1996), there was an average increase in the WAP of 163,000 in each five-year period. In the period 1996–2001, the increase in the WAP was only 103,000 over the five years, but in the following period (2001–2006), it rebounded. In the latter five-year period, there was an increase of 270,000 in the WAP. Even though this increase is much higher than the previous periods, it mainly compensates for the below-average growth in the preceding period (1996–2001).

These increases can be given another perspective by considering the impact they will have on the existing population. It is likely that the level of impact on an existing population of any increase in population will be dependent on the increase per 1,000 of the existing population. To provide this perspective, we have taken the above increases in the WAP over five years and calculated what these increases would be, expressed as the number of people increase per year for every 1,000 people in the existing population at that time.

These figures are that there was an increase by 12.8 people per year for every 1,000 WAP from 1981–1996. The impact figure dropped to an increase by 7.3 people per year for every 1,000 WAP from 1996–2001. Finally, the impact lifted to an increase by 17.9 people per year for every 1,000 WAP from 2001–2006. This analysis does put the recent trough and boom over the period 1996–2006 into medium-term perspective. The average of 7.3 and 17.9 is 12.6 and so the average annual rate of increase between 1996 and 2006 was 12.6 people for every 1,000 WAP. This is similar to and very slightly below the average increase by 12.8 people per year for every 1,000 WAP for the 15 years 1981–1996.

The 2001–2006 increase is a compound growth rate of 1.8% per annum over the five years. This major change in population growth rate was driven by increases in numbers of both New Zealand born people as well as migrants. The future profile of working-age population change depends on whether the future impact is similar to the 1996–2001 annual impact of a 7.3 increase per 1,000 WAP, or a continuation of the 2001–2006 annual impact of a 17.9 increase per 1,000 WAP. The conservative assumption would probably be that the impact would lie between the average for the periods 1981 to 1996 to 2006, i.e. between 12.8 and 12.6 per annum per 1,000 WAP.

Ignoring those with unknown birthplace, the New Zealand born population had been increasing by about 78,000 per census from 1981–1996, then declined to just 31,600 from 1996–2001. The number has now increased back to about 78,000 between 2001 and 2006. Over the same period, the migrant (overseas born) population increased by about 45,000 per census from 1981–1996. This increased to over 80,000 from 1996–2001 and to over 160,000 from 2001–2006.

(As with all census data, there is a problem in apportioning accurately the increases from each because of those who did not supply a legible census return – in this case, a legible birthplace. There is a significant number in this category, and also the behaviour is erratic, which makes it difficult to postulate which class they may belong to.)[6]

3.1.2 Profile of the working-age population 1981–2006

The changes in the inter-census increases of New Zealand and overseas born people have changed the profile of the working-age population over the period, from a situation in 1981 where, of each 100 people, 82 were New Zealand born and 18 overseas born, to 2006, where 70 were New Zealand born, 25 were overseas born and 5 were of unknown birthplace.

The extreme contrast is that, of those with known birthplace, the inter-census increase from 1981–1996 had 28 of every 100 overseas born, and the 2001–2006 increase had 60 of every 100 overseas born. The comparable figures for New Zealand born were 48 per 100 from 1981–1996 and only 29 for every 100 increase from 2001–2006. (Inclusion of those of unknown birthplace moderates the swing.) Over the whole period 1981–2006, of every 100 increase in the working-age population, 44 were known to be overseas born and 40 were known to be New Zealand born, with 16 having an unknown birthplace.

Table 3.2 Composition of working-age population 1981–2006

Working-age Population	Census Data				Intercensal Change			Total
	1981	1996	2001	2006	1981-96 Ave. 3 Censi	1996-01	2001-06	1981 to 2006
	Profile				*Profile*			*Profile*
Total Overseas Born	18	20	22	25	28	79	60	44
New Zealand Born	82	76	74	70	48	31	29	40
Unknown Birthplace	0	5	4	5	24	-10	11	16
TOTAL 15 years plus	100	100	100	100	100	100	100	100

This change in the profile of increase of working-age population shows clearly the need to understand the effect of migration on the labour market and particularly the behaviour of these overseas born who enter the labour market.

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[6] It may be thought that the number of people of unknown birthplace are most likely to be overseas born and perhaps with English language difficulties. We have not studied the characteristics of the unknown categories throughout the censuses, but note that a change in ethnicity questions and the Aotearoa/New Zealand dichotomy could also have caused some differences among the New Zealand born as between censuses.

3.1.3 Origin of overseas born working-age population 1981–2006

The number of overseas born working-age people increased from 409,000 in 1981 to 789,000 in 2006, an increase by 380,000. Of these 380,000, there was a 162,000 increase in the latest five years between 2001 and 2006.

The origin of the various groups of these people is likely to have some impact on their behaviour within the labour market. This section, therefore, notes that, of the 789,000 overseas born aged 15 and over in New Zealand in 2006, the region of birthplace of 232,000 was United Kingdom and Ireland, 225,000 was Asia, 123,000 was Pacific Islands, 86,000 was Europe and North America, 69,500 was from countries classified 'Other'[7] and 49,000 was Australia. This pattern had changed significantly over the period 1981–2006 (see Table 3.3).

The region with the largest increase over the period was Asia, with an additional 203,000. This figure included an increase of 79,000 between 2001 and 2006. Next largest increase was from the Pacific Islands, with 73,000, increasing at a reasonably steady rate over the period. The Other category increased by 60,000 and Europe and North America by 36,000, both increasing their contributions in the 2001–06 period. Those from the United Kingdom decreased until the 2001–06 period, when there was a reversal to a steady increase.

Table 3.3 Overseas born working-age population 1981–2006

Working-age Population	Census Data				Intercensal Change			Total
	1981	1996	2001	2006	1981-96 Ave. 3 Censi	1996-01	2001-06	1981 to 2006
	('000s)				('000s)			('000s)
Total Overseas Born 15 plus	409.0	545.0	626.7	789.0	45.3	81.7	162.3	380.0
Australia	34.6	39.4	42.0	49.0	1.6	2.6	6.9	14.4
Pacific Islands	49.9	89.7	107.1	122.6	13.3	17.4	15.5	72.6
United Kingdom and Ireland	240.6	220.5	214.2	231.9	-6.7	-6.3	17.7	-8.7
Europe and North America	50.2	67.5	73.1	86.2	5.8	5.6	13.1	36.1
Asia	22.1	99.6	145.7	224.8	25.8	46.1	79.1	202.7
Other	9.8	22.5	41.8	69.5	4.2	19.3	27.7	59.7
Unknown but Overseas Born	1.7	5.7	2.7	5.0	1.3	-3.0	2.3	3.2

When we look at the profile of the inter-census increases in overseas born, we find that the Asian share of the increase has actually declined a little from 56–57% of the increase from 1981–2001, down to 49% of the increase from 2001–2006.

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[7] The people with their stated birthplace classified as 'Other' are those from South America, Africa and the Middle East. Those who are known to be overseas born, but for whom birthplace was illegible, are classified as 'Unknown but Overseas Born'.

Table 3.4 Composition of overseas born working-age population 1981–2006

Working-age Population	Census Data				Intercensal Change			Total
	1981	1996	2001	2006	1981-96 Ave. 3 Censi	1996-01	2001-06	1981 to 2006
	Profile				*Profile*			*Profile*
Total Overseas Born 15 plus	100	100	100	100	100	100	100	100
Australia	8	7	7	6	4	3	4	4
Pacific Islands	12	16	17	16	29	21	10	19
United Kingdom and Ireland	59	40	34	29	-15	-8	11	-2
Europe and North America	12	12	12	11	13	7	8	9
Asia	5	18	23	28	57	56	49	53
Other	2	4	7	9	9	24	17	16
Unknown but Overseas Born	0	1	0	1	3	-4	1	1

The other main change in composition is that, over the period, there has been a relative shift from Pacific Islands born to United Kingdom and Other birthplaces. The Pacific Islands fell from 21–29% of the increase in 1981–2001 to just 10% from 2001–2006. Other places increased to 17%, and United Kingdom and Ireland increased to 11% of the increase in overseas born from 2001–2006.

In absolute terms, as shown in Table 3.3, the working-age population in 2006 had 79,000 more Asian born than in 2001, 28,000 more people from Other birthplaces, 18,000 more United Kingdom and Ireland born and smaller numbers from other birthplace regions. This is in addition to 79,000 more New Zealand born. For the labour market to deliver to the economy, it is important to know the labour market status and behaviour of these various groups, especially the overseas born.

3.2   Scale of outmigration: gross and net increases by birthplace

The figures in the preceding sections are the net changes in number from one census to the next. However, it is possible that people from some birthplaces may be in New Zealand at one census and have left by the next census. In this case, the gross inflow over the inter-census period would have been greater than the net increase between the censuses. The gross inflow from any source must first compensate for any outflow of people from that source (referred to here as outmigration). Any further gross inflow then generates a net increase from that source. The purpose of the present analysis is to ascertain whether or not there has been a significant level of outmigration and, if so, the general nature of it.

Accurate estimates of outmigration would require a full reconciliation of each cohort tracked from one census to the next. This would enable us to track the working-age population (with a given region of birth) at one census and to estimate the expected number in these cohorts resident at the next census. To estimate this, we would add the number turning 15 in the next five years and subtract the number of deaths of those aged 15 and over.

However, the base numbers have significant uncertainties because of the variation in the number with birthplace 'not elsewhere included'. Therefore, in this section, we take an approximation of the net inter-census change in the working-

age population of overseas born. This is compared with a measure of the gross inflow of working-age migrants who have been in New Zealand for less than five years as at the subsequent census.

3.2.1 Outmigration by migrant birthplace

In our database of census information, we have the numbers of people in the working-age population from each birthplace region recorded as having resided in New Zealand for less than five years. This implies that they arrived after the preceding census, and these are called recent migrants. By comparing this number of migrants who had arrived over the previous five years with the net increase over the inter-census period, we can obtain an approximate estimate of the number of existing overseas born in New Zealand at the first census who had left by the time of the second census of that inter-census period. This number is called the approximate outmigration of this group of migrants.

Table 3.5 Approximate outmigration 1996–2006 by birthplace

Working-age Population	Net change in overseas born		New migrants remaining		Approximate outmigration		Outmigration per 100 arrivals	
	1996-01	2001-06	2001	2006	1996-01	2001-06	1996-01	2001-06
	('000s)		('000s)		('000s)			
Total Overseas Born 15 plus	81.7	162.3	139.0	213.1	57.3	50.9	41	24
Australia	2.6	6.9	6.0	8.3	3.4	1.4	56	17
Pacific Islands	17.4	15.5	18.6	21.7	1.2	6.2	6	29
United Kingdom and Ireland	-6.3	17.7	18.5	37.0	24.8	19.3	134	52
Europe and North America	5.6	13.1	14.0	20.6	8.4	7.5	60	36
Asia	46.1	79.1	60.8	95.5	14.7	16.4	24	17
Other	19.3	27.7	20.5	28.8	1.1	1.1	6	4
Unknown but Overseas Born	na	na	na	na	na	na	na	na

Table 3.5 shows that, between 1996 and 2001, there was a net increase in overseas born of 81,700. There were a number of migrants entering New Zealand between 1996 and 2001, and as at Census 2001, there were 139,000 of these recent migrants remaining resident in New Zealand. Since there was a gross inter-census increase by 139,000 and a net inter-census increase of only 81,700, the difference (57,300) could be primarily accounted for by 57,300 overseas born who were migrants resident in New Zealand in 1996 but had left by 2001. Additionally, there could be some migrants who arrived and left all within the inter-census period.

Between 2001 and 2006, the comparable figures are that there was a net increase of 162,300 working-age overseas born, and as at 2006, there were 213,100 recent migrants of working age resident in New Zealand. This implies that 50,900 overseas born working-age migrants who were in New Zealand in 2001 and had left by 2006.

Looking at the birthplace regions, these numbers show that, in both of the inter-census periods, the largest number of existing overseas born working-age migrants who left came from the United Kingdom and Ireland, 24,800 of whom left from 1996–2001 and 19,300 of whom left in the period 2001–2006. The second largest numbers of outmigrants were born in Asia, with 14,700 and 16,400 in the respective periods.

3.2.2 Outmigration per 100 arrivals

The relativity between the number of existing migrants who become outmigrants compared with the recent migrants who arrive could be called the rate of outmigration. For all birthplaces, for the 139,000 recent arrivals remaining in 2001, there were departures of 57,300 existing residents. This means that, for every 100 of the recent overseas born migrants remaining in New Zealand, there were 41 overseas born in New Zealand in 1996 who had become outmigrants by 2001. This is how we have estimated outmigration per 100 arrivals.

The overall outmigration rate of overseas born of working age dropped, from 41 over the 1996–2001 period to 24 from 2001–2006. This, perhaps, indicates that New Zealand increased its ability to retain overseas born working-age migrants even after a period of relatively high inflow during 1996–2001. In this context, the prolonged period of economic growth in New Zealand may have assisted in this outcome, as well as newer policies focusing on matching skills to employment needs.

Another interesting aspect of this outmigration estimate is that the regions of origin with the highest rates in 1996–2001 were United Kingdom and Ireland (134), Europe and North America (60) and Australia (56). These factors had all decreased significantly by the 2001–2006 period. The outmigration of Asian migrants was low, at 24, for 1996–2001 and declined further to 17 for 2001–2006. The migrants born in other countries had an even lower rate of outmigration, at 6 and 4 respectively, perhaps reflecting the ability of South Americans, African born and others to settle in New Zealand and stay. This may reflect the conditions in countries of origin and the increased migration options of English-speaking migrants.

3.3   Age profile of the working-age population

Labour market behaviour of people born in different jurisdictions will differ according to whether they have lived in New Zealand for a period, or have just arrived from their birthplace. This pattern of change is measured by the three main classes of migrants described in later sections, namely recent migrants (0 to less than 5 years resident), intermediate migrants (5–15 years resident) and earlier migrants (over 15 years resident).

3.3.1 Inter-census change in migrants by age group

It is also useful to find whether there are numbers of people in the various age groups who become resident or leave residence in New Zealand between censuses. We are able to find these net flows by comparing the number of people in one five-year age group at one census with the number of people in the next–following five-year age group at the time of the next census. The positive change is the net arrivals in that class, and the negative change is the net departures in that class. (Note that these are the net flows and ignore any outmigration and deaths.)

It will be recalled from section 3.1 that there was an increase in the working-age population by 103,000 between 1996 and 2001 and by 271,000 between 2001

and 2006. The component profile of those changes is repeated, and the breakdown of these changes by main age group is shown in the table below.

Table 3.6 Working-age population by age groups 1996–2006

Working-age Population	Intercensus change 1996 to 2001					Intercensus change 2001 to 2006				
	Net change by age groups					Net change by age groups				
	15-19	20-24	25-69	70 +	Total	15-19	20-24	25-69	70 +	Total
	('000s)					('000s)				
Total Overseas Born	47	8	48	-22	82	56	25	103	-22	162
New Zealand Born	209	-29	-74	-74	32	231	-25	-48	-80	79
Unknown Birthplace	9	-3	-12	-5	-10	13	5	13	-2	30
TOTAL	265	-23	-39	-100	103	300	6	68	-103	271

The inter-census net change in the 15–19 year old age group includes all residents who have turned 15 in that period, plus the net number of 15–19 year olds at the time of the second census who took up residence during the inter-census period. By the same token, the inter-census net age group decrease for the 70 years plus age group includes those who have died as well as the net number who have ceased residence by going overseas during the inter-census period.

The figures of most interest are, therefore, the 20–24 and 25–69 year old age groups, as these represent strictly net migrant flows, with (presumed) relatively small numbers of deaths. Table 3.6 shows that, in 1996–2001, the total working-age population increased by 103,000, and this increase was due solely to the number of people turning 15 years old and/or 15–19 year old inward migrants (265,000) being greater than the total of the net migrant outflow and deaths.

The overall pattern of flow between 2001 and 2006 was remarkably similar in some respects:
• The net increase in 15–19 year olds was 300,000, similar to the 265,000 in 1996–2001, and the birthplace profile was reasonably similar.
• The net decrease in the 70 years plus age group was 103,000, similar to the 100,000 in 1996–2001, and the birthplace profile was similar.
• The net decrease in New Zealand born 20–24 year olds was 25,000, similar to the 29,000 in 1996–2001.

The main difference was that, whereas there was a net decrease of 39,000 people aged 25–69 years in 1996–2001, there was a net increase of 68,000 in this age group in 2001–2006. The cause of this turnaround was both a reduction in the net outflow of New Zealand born, from 74,000 in 1996–2001 to 48,000 in 2001–2006, and an increase in the net inflow of overseas born in this age group from 48,000 in 1996–2001 to 103,000 in 2001–2006.

There was a lesser turnaround also in the net flows of those aged 20–24 years, from an outflow of 23,000 in 1996–2001 to an inflow of 6,000 in 2001–2006. This turnaround was caused mainly by known overseas born net inflow increasing from 8,000–25,000.

The very relevant finding from these analyses is that a significant component of the inter-census increase in working-age population is a net inflow of overseas born people aged 25–69 years. This net increase in 2001–2006 was 103,000.

Delving within that group, our data indicate that 64,200 were in the high-participation age groups of 30–49 years. This is in contrast to a net outflow of just 1,200 New Zealand born in this 30–49 year old age group.

Migration has clearly resulted in a significant increase in the population of people aged 30–49 years old, which should have significant labour market consequences.

3.3.2 Age profiles by source birthplaces

The similarity between the behaviour in 1996–2001 and 2001–2006 in the overall flows follows through to the pattern of behaviour of people from the respective overseas birthplaces. The 2001–2006 figures showed:
- the net increase in 15–19 year olds was 56,000, similar to the 47,000 in 1996–2001, and the birthplace profile was reasonably similar
- the net decrease in those 70 years plus was 22,000, the same as the 22,000 in 1996–2001, and the birthplace profile was reasonably similar.

As with the overall pattern, the big change was in the age group 25–69 years, where the net increase of 48,000 in 1996–2001 lifted to an increase of 103,000 in 2001–2006. This lift of 55,000 came from the United Kingdom and Ireland (+20,000), Asia (+18,000), Europe and North America (+6,000), Other (+6,000) and even Australia born (+3,000).

Table 3.7 Age composition of inter-census migrant working-age population

Working-age Population	Intercensal Change 1996 to 2001					Intercensal Change 2001 to 2006				
	Net change by age groups					Net change by age groups				
	15-19	20-24	25-69	70+	Total	15-19	20-24	25-69	70+	Total
	('000s)					('000s)				
Total Overseas Born 15 plus	47	8	48	-22	82	56	25	103	-22	162
Australia	5	0	-1	-2	3	7	0	2	-1	7
Pacific Islands	8	2	8	-1	17	7	3	8	-2	15
United Kingdom and Ireland	4	0	5	-16	-6	6	1	25	-14	18
Europe and North America	4	1	4	-3	6	5	2	10	-3	13
Asia	20	4	22	0	46	22	17	40	-1	79
Other	5	1	13	0	19	8	2	17	0	28
Unknown but Overseas Born	0	0	-2	-1	-3	0	0	2	0	2

This analysis shows that the contribution of overseas born to the 25–69 age group comes from a broad range of birthplaces – some English-speaking, some not.

Again, we have delved into the 30–49 year age group for the birthplace regions. The composition of the 64,200 net inflow from 2001–2006 of 30–49 year olds reported above was:
- 24,200 from Asia
- 16,800 from United Kingdom and Ireland

- 10,300 from Other
- 6,200 from Europe and North America
- 4,400 from Pacific Islands
- 1,700 from Australia.

The conclusion is that a very significant core of inward migrants contributing to increasing the working-age population is migrants in the high-participation 30–49 year age group, coming from a broad range of birthplaces.

3.4   Working-age migrants – conclusion

In 1981, 18% of New Zealand's working-age population were overseas born. This proportion has increased to 25% in 2006. The working-age population increased strongly between 2001 and 2006, with contributions from both the New Zealand born and the overseas born. In the last five years, at least 60% of the increase in the working-age population were overseas born. This 60% numbered 162,000, of which 79,000 were born in Asia.

Outmigration migrants (migrants who subsequently left New Zealand) numbered at least 50,000 between 2001 and 2006. While relatively high, this implies a rate of outmigration of only 24 per 100 arrivals over the 2001–2006 period. This is less than the 42 per 100 arrivals outmigration experienced over the 1996–2001 period.

The labour market benefits from migration are shown to increase for migrants who remain in New Zealand for longer than five years. The decline in the rate of outmigration shows that New Zealand is increasing its ability to attract people to settle and stay here. It is interesting that the highest outmigration is for countries with mainly European ethnicity. This group presumably have few language and other constraints on their global mobility.

Numbers in the main economically-active age group of 25–69 years old decreased by 39,000 over the 1996–2001 period. However, it increased by 68,000 people over the 2001–2006 period. These changes resulted, in part, from a reduction in the net outflow of New Zealand born – from 74,000 over 1996–2001, to 48,000 over 2001–2006. Conversely, the net inflow of overseas born increased from 48,000 over 1996–2001, to 103,000 over 2001–2006.

Focusing closer on the high-participation age group of 30–49 year olds, over 2001–2006, there was a net inflow of 64,200 overseas born and a net outflow of just 1,200 New Zealand born. Further, the 64,200 net inflow of migrants was balanced across the whole range of birthplace regions.

4 SUMMARY FINDINGS

Given the above background, context and headline analysis, we move to a more detailed investigation of labour market outcomes and the behaviour of migrants. The following section uses census data for the 1981, 1996, 2001 and 2006 years. The main requirement is to create models that can measure the cross-section profiles at each census, and the inter-census changes, where the census data are consistent. The models are also required to be able to create tables of the labour market outcomes of migrants with specified characteristics.

The characteristics of immigrants investigated using data from these four censuses relate to four main labour market outcomes: income levels, sources of income, labour force status and occupations.

In this section, we outline suggested propositions that motivate our investigation and define the terms and variables that are used in the discussion. Thereafter, we provide a summary of the findings of this investigation.

In particular, this investigation has two parts. One part makes observations from numerous cross-tabulations of the data. Of course, not all cross-tabulations can be covered in this report. However, a spreadsheet tool has been developed to enable desired comparisons to be easily generated and depicted. A selection of these comparisons is provided in sections 5–8, with a summary of findings provided in sub-section 4.4.

Another part undertakes a formal diagnosis of the migrant- and non-migrant-related influences determining labour market outcomes.[8] Note that this diagnosis is by no means comprehensive. It is derived from tabulated data from each census, as opposed to unit record data. It is used to both complement and supplement the observations from the numerous data cross-tabulations. It also forms a useful platform for future comprehensive investigations of the various relationships. The appendix section 10 details this examination, with a summary provided in sub-section 4.5.

4.1 Suggested propositions

From the overall project objective, and noting the above background, the following propositions suggest themselves:
- **Default proposition:** Labour market outcomes for migrants to New Zealand are not significantly different from those for comparable New Zealand born people.
- **Additional proposition A:** Labour market outcomes for migrants to New Zealand are initially different from the comparable New Zealand born, but

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[8] Note that, due to difficulties in matching classifications, this formal diagnosis did not use the 1981 Census data. In particular, qualification and occupation classifications could not be satisfactorily matched, even at relatively highly aggregated levels.

these differences become insignificant the longer the migrants remain in New Zealand.

- **Additional proposition B:** Labour market outcomes in New Zealand for migrant groups, according to their place of birth, are significantly different from each other. Consequently, labour market outcomes in New Zealand for some migrant groups are significantly different from the New Zealand born population.
- **Additional proposition C:** Labour market outcomes in New Zealand for some migrant groups, according to their place of birth, are significantly different from the New Zealand born population, but these differences become insignificant the longer the migrants remain in New Zealand.
- **Additional proposition D:** Labour market outcomes for migrants to New Zealand have been different from the New Zealand born population in the past, but these differences are progressively becoming less significant.

4.2 Diagnostic statistics/variables of interest

With the formulation of propositions, the next step in the research method is to establish variables or measures that can be investigated. Aligned to this task, it is necessary to note the distinction between 'outcomes' and 'characteristics'. For this purpose, the categories of labour market outcomes identified are:
- income
- occupation
- labour force status (for example, employer, self-employed, employed, unemployed, not in labour force)
- source of income (for example, wages, benefits, no income).

In turn, the categories of characteristics for labour market participants identified are:
- where born
- years since first arrival in New Zealand
- age
- highest qualification.

Within this characteristics and outcomes framework, variables and/or measures of interest can be identified. However, it should be noted that not all labour market outcomes observable from census data are investigated. Given the limitations of this project, we have focused our assessment on what we consider are the primary drivers of labour market outcomes. As a result, hours worked, industry of employment and job location are not assessed. As for characteristics, we have omitted ethnicity, language and household or family composition from our analysis. Thus, it has to be acknowledged that we have not undertaken a comprehensive investigation of differences in labour market outcomes – just the contribution of the factors listed.

It is pertinent to note the particular importance of the age characteristic. More specifically, the inclusion of full fee-paying international students in the data relating to the migrant population can result in misleading observations regarding labour market outcomes for particular population sub-groups. To redress this concern, we repeated our investigation for the population sub-group aged 25–54.

This age group would limit the influence of full fee-paying international students on the data and so would provide a population group comparable to the New Zealand born 25–54 age group.

Further, more detailed analysis using micro-level data is going to be undertaken in a 2007–2012 Foundation for Research, Science and Technology-funded research programme carried out by Waikato University and Massey University.

1991 Census year data was not used because it does not contain information on the arrival date of the migrant population.

4.3   Definitions and classifications

i. Unless otherwise stated, population groups are restricted to those aged 15 and over.
ii. Migrants are defined as those with non-New Zealand places of birth. Length of residence subsets of the migrant population are defined as:
   a) 'recent' migrants – those with less than 5 years residence in New Zealand
   b) 'intermediate' migrants – those with 5–14 years residence in New Zealand
   c) 'earlier' migrants – those with at least 15 years residence in New Zealand.
iii. Region of birthplace sub-sets of the migrant population are defined as Australia, Pacific Islands, United Kingdom and Ireland, Europe and North America, Asia and Other.
iv. Income is defined as annual, personal, pre-tax income from all sources.
v. Data for highest qualification were grouped as listed in Table 4.1.
vi. Occupation data were grouped as listed in Table 4.2.

Table 4.1 Grouping of census highest qualification data

Highest qualification	1981 Census	1996 and 2001 Censuses	2006 Census
No qualification	• Still at School • No Secondary • 3rd, 4th, 5th Form	• No Qualification	• No Qualification
School qualification	• 6th Form • 7th Form	• School Certificate Qualification • Sixth Form Qualification • Higher School Qualification • School Qualification Not Applicable/Unidentifiable/Not Specified • Overseas School Qualification	• Level 1 Certificate • Level 2 Certificate • Overseas Secondary School Qualification
Vocational qualification	• Polytechnic or Community College • University/ Polytechnic/ Community College • Other Tertiary	• Basic Vocational Qualification • Skilled Vocational Qualification • Intermediate Vocational Qualification • Advanced Vocational Qualification	• Level 3 Certificate • Level 4 Certificate • Level 5 Diploma • Level 6 Diploma
Degree qualification	• University Teachers' Training College • University and Teachers' College	• Bachelor Degree • Higher Degree	• Bachelor Degree and Level 7 Qualification • Post-graduate and Honours Degrees • Master Degree • Doctorate Degree

Table 4.2 Grouping of census occupation data

Occupation group	1981 Census	1996, 2001 and 2006 Censuses
Professional and managerial	• Professional/Technical and Related Workers • Administrative and Managerial Workers	• Legislators, Administrators and Managers • Professionals
Technical	• Agricultural/Forestry and Fishing Workers	• Technicians and Associate Professionals • Agriculture and Fishery Workers
Trades	• N/A	• Trades Workers
Other	• Clerical and Related Workers • Sales Workers • Service Workers • Production/Transport Workers and Labourers and Related Workers • University and Teachers' College	• Clerks • Service and Sales Workers • Plant and Machine Operators and Assemblers • Elementary Occupations (incl Residuals)

4.4   Census data cross-tabulations

According to the measures for income investigated, the observations clearly suggest migrant labour market outcomes are different from those of the New Zealand born. This observation holds, even after adjusting for the qualification characteristics of labour market participants.

However, this conclusion is not supported if the length of residence in New Zealand characteristic of each migrant group is captured. If adjustment for this effect is incorporated, the income measures of earlier migrants are not dissimilar to those of the comparable New Zealand born population group. Conversely, income measures for recent migrants clearly diverge from those of the New Zealand born.

As to sources of income, the observations again suggest migrant labour market outcomes are different from those of the New Zealand born. In general, the Asian and Pacific Islands born groups show lower proportions receiving wage and salary income and higher proportions reporting no source of income. Other migrant groups by birthplace report proportions similar to those for the New Zealand born.

After adjusting for age and years of residence characteristics of labour market participants, the outcomes for the Asian born group move closer to those for the New Zealand born population, as their length of residence in New Zealand increases. This leaves the conclusion that the labour market outcomes investigated by these income source measures are noticeably different for those born in the Pacific Islands, compared to the New Zealand born population.

Participation rate outcomes for migrant groups appear to be noticeably lower than those for the New Zealand born population. While this difference is not apparent for the intermediate migrant population group, the difference does reappear for the earlier migrant group.

The prevalence of self-employed is relatively high for migrant groups, compared to the New Zealand born population. The Europe and North American migrant group is a particularly noticeable feature in this observation. Furthermore, this migrant group also leads in the prevalence of employers. Other migrant groups, however, feature less so in this measure.

In terms of occupations, relatively higher proportions of earlier migrants are found to be in professional occupations. Conversely, the prevalence of migrants in trades or technical occupations is lower than for the New Zealand born population group.

4.5 Multivariate analysis

Isolating the impacts of the various characteristics on labour market outcomes is challenging. We also seek to identify the key explanatory influences through a series of simple multivariate regressions. In particular, we use census data to estimate equations to explain variations in the following measures of labour market outcomes.

Incomes
i.   The percentage of population sub-groups that have income above the 70th percentile of the national income distribution (termed 'high-income' for short-hand purposes).
ii.   The percentage of population sub-groups that have income below the 30th percentile of the national income distribution (termed 'low-income' for short-hand purposes).

Workforce status
iii. The labour force participation rate (%) of population sub-groups.
iv.   The unemployment rate (%) of population sub-groups.

Occupations
v.   The percentage of population sub-groups that are employed in professional occupations.
vi.   The percentage of population sub-groups that are employed in associate professional or technician occupations.

Note further, attempts to estimate equations for the proportion in each sub-group that are employers and self-employed were unsuccessful.[9] In addition, attempts to estimate an equation to explain the proportion of the population sub-groups employed in trades occupations also proved unsuccessful.

As noted earlier, only the 1996–2006 census data information was used here.

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[9] That is, we were unable to obtain an equation where at least one of the explanatory variables available to us from our dataset was statistically significant.

4.5.1 Methodology

Given the definitions stated in section 4.3, we identify 19 different groups in the population, i.e. six different non-New Zealand birthplaces, each with three sub-groups according to years in New Zealand, plus one New Zealand born group. Further, for each of these 19 groups, we have three census year observations. This provides us with a dataset with 57 observations as a basis for our investigation.

The size of each of these population sub-groups in 2006 is listed in Table 4.3. Remember that, throughout this discussion, the population sub-groups referred to are restricted to those aged 15 years and over. Data for those with unknown birthplace and/or years in New Zealand were omitted from the analysis. This related to some 185,000 people, or just under 6% of the 3.16 million in the total New Zealand population of those aged 15 years and over.

Table 4.3 The 2006 New Zealand population (aged 15 years and over)

		Years in New Zealand				
		<5	5 to 15	>=15	Unknown	Total
Birthplace	Australia	8,325	9,369	28,998	2,298	48,990
	Pacific Islands	21,678	27,870	62,760	10,272	122,580
	UK & Ireland	36,972	28,473	159,723	6,753	231,921
	Europe & N. America	20,637	19,053	42,828	3,720	86,238
	Asia	95,517	81,330	39,678	8,310	224,835
	Other	28,779	27,771	10,974	1,923	69,447
	Unspecified overseas	1,221	1,263	2,496	0	4,980
	Total overseas born	*213,129*	*195,129*	*347,457*	*33,276*	*788,991*
	New Zealand					2,224,470
	Unknown birthplace					146,901
	Total population					**3,160,362**

For each of the six labour market outcomes investigated, we followed a similar process to construct an appropriate equation.

Our first step was to identify the presence, if any, of relationships excluding the migrant-specific characteristics. That is, we firstly established the influence (significance) of age composition and/or qualifications possessed by the sub-groups.

Thereafter, we introduced and tested the significance of census year identifiers. This was aimed at determining the importance of changes over the 1996–2006 period in the labour market outcomes across the different groups. At this stage of the process, we would have an appropriate explanation of the labour market outcomes, according to the non-migrant-related characteristics of each of the groups. Of course, such an equation would only successfully explain a proportion of the total variance in outcomes across each group.

The next step was the introduction of migrant-specific characteristics, i.e. birthplace (including New Zealand) and years in New Zealand. The significance or otherwise of identifiers for each of these characteristics enabled us to ascertain whether such migrant-related characteristics significantly improved our explanation of the labour market outcomes. That is, to what degree are labour market outcomes a function of migrant-related characteristics? And, conversely, to what degree are they a function of general population-wide factors?

4.5.2 Findings

This analysis found that migrant-related characteristics improved the explanation of labour market outcomes in only a selection of cases. Furthermore, in these cases, there was a relatively small degree of improvement in the explanations.

In most cases, the large majority of the variation in labour market outcomes across the various sub-groups of the population could be explained by the non-migrant-related characteristics, i.e. by differences in age composition and highest qualifications possessed. After controlling for these factors, the differences in labour market outcomes between and within migrant sub-groups (and compared to the New Zealand born sub-group) was relatively small.

Amongst the migrant-related factors that are significant, the main one was the years in New Zealand variable. In particular, the identifier for recent migrants[10] was significant in indicating inferior labour market outcomes for this sub-group in some of the equations constructed. Notably, though, identifiers for intermediate and earlier migrants were insignificant. Recall that these categories are migrants with 5–15 years in New Zealand and more than 15 years in New Zealand respectively.

As to regions of origin, the identifiers for the separate birthplaces (including New Zealand) were also insignificant[11] in most equations.

4.6 Propositions and conclusions

Note that, in sub-section 4.1, we proposed this default proposition:

> Labour market outcomes for migrants to New Zealand are not significantly different from the New Zealand born population.

It is clear that both the observations from the cross-tabulations of data and the multivariate analysis do not support this proposition. However, the degree to which migrants' labour market outcomes are significantly different from the New Zealand born vary from measure to measure.

In particular, the large majority of the variation in labour market outcomes across the various sub-groups of the population can be explained by the non-migrant-

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[10] That is, those with less than five years in New Zealand.
[11] Or have relatively weak explanatory power.

related characteristics. Differences in age composition and highest qualifications possessed are the most important.

The migrant-related factor that remains important is the number of years in New Zealand. It is clear that there is a selection of inferior labour market outcomes for migrants with less than five years in New Zealand. In addition, the birthplace characteristic also appears as a factor for a few outcome measures, but the effect of birthplace is by no means uniform or widespread.

Consequently, we would conclude by arguing the most appropriate of the alternative propositions suggested is that labelled C:

> Labour market outcomes in New Zealand for some migrant groups, according to their place of birth, are significantly different from the New Zealand born population, but these differences become smaller the longer the migrants remain in New Zealand.

5   INCOME OF MIGRANTS

The outcome measures investigated in relation to migrant incomes were proportions of each sub-group that had income below and above the 30th and 70th percentiles, respectively, of the national income distribution. As noted earlier, we use the terms 'low-income earners' and 'high-income earners' as short-hand labels for these groups. For comparison, we observe the proportion of low-income earners and high-income earners in the New Zealand born population and compare with the relevant outcome for the migrant population.

Table 5.1 Outcome measures investigated

Outcome	Variable	Migrant characteristic(s)	Measure
Income	Income below 30th percentile of national income distribution	Where born	% of group with low income/ % of New Zealand born with low income
	Income above 70th percentile of national income distribution		% of group with high income/ % of New Zealand born with high income
Income	Income below 30th percentile of national income distribution	Where born by years in New Zealand	% of group with low income/ % of New Zealand born with low income
	Income above 70th percentile of national income distribution		% of group with high income/ % of New Zealand born with high income
Income	Income below 30th percentile of national income distribution	Where born by age	% of group with low income/ % of New Zealand born with low income
	Income above 70th percentile of national income distribution		% of group with high income/ % of New Zealand born with high income
Income	Income below 30th percentile of national income distribution	Where born by qualification	% of group with low income/ % of New Zealand born with low income
	Income above 70th percentile of national income distribution		% of group with high income/ % of New Zealand born with high income

It should be noted that the qualification classification changed considerably between the 1981 and later censuses; thus, comparisons across this dimension need to be approached cautiously.

5.1   Income and the birthplace dimension

Overall, the proportion of the migrant population with low income has increased across the three censuses investigated. Note, in each year the population-weighted average of this measure is 30%, so a proportion above 30% is above average, while a figure below 30% is below average.

In 1981, 30.2% of the New Zealand born population had low income compared with 29.3% of the migrant population. By 2001, the proportions had changed to 28.5% for the New Zealand born and 35.3% for the migrant population groups. The period between 2001 and 2006 has seen small changes in these proportions, with 28.0% for the New Zealand born and 35.5% for migrants.

Figure 5.1 depicts the changes according to the birthplace of migrants. Amongst migrants, those born in Asia, the Pacific Islands and the other birthplace groupings experienced noticeable proportionate increases between 1981–2001 in those with low income. There is also a smaller increase for those born in Europe and North America. However, there are noticeable reductions in these proportions recorded in the latest period to 2006.

Conversely, there was a fall in this measure over the 1981–2001 period for those born in the United Kingdom and Ireland, with little change for the Australian born population group. Little change over the period to 2006 for these groups was recorded.

Figure 5.1 Proportion of low-income earners in population groups
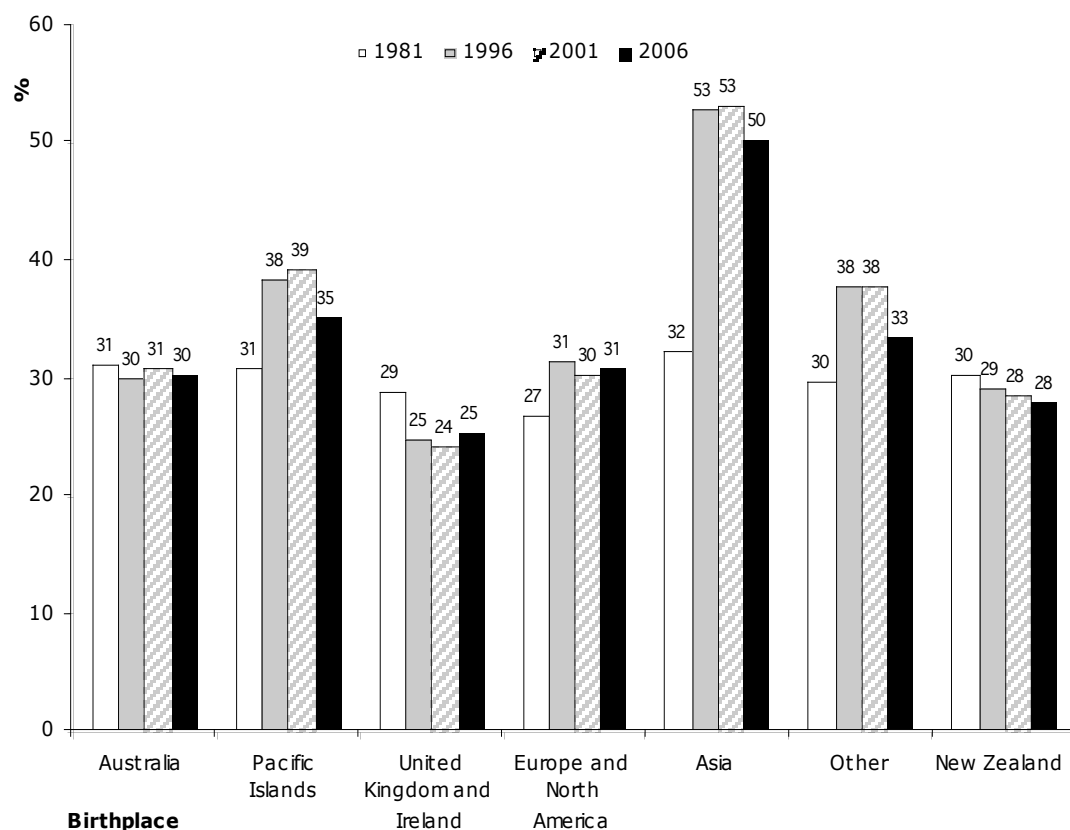
The changes in population proportions for those with high incomes are close to a mirror image of the above picture. For the New Zealand born population, the proportion rose from 29.5% in 1981 to 30.7% in 2001, rising further to 31.0% in 2006. Proportions for the migrant population fell from 32.2% in 1981 to 27.4% in 2001 and remained stable at that figure in 2006. The largest falls to 2001 were for the Asian born migrant group, with falls also recorded for the Europe and North America and Pacific Islands birthplace groupings.

From these figures, it appears that there is a significant difference in incomes according to birthplace, with those born in Asia and the Pacific Islands noticeably so. Noting the differing composition of migrant arrivals since 1981, this suggests

the question of how sensitive this observation is to the length of residence in New Zealand of the migrant groups.

Indeed, the formal analysis presented in section 10 confirmed that much of this difference can be attributed to differing proportions with vocational and degree qualifications. In addition, the age dimension and the significance of recent migrants were also confirmed.

5.2   Income and the years in New Zealand dimension

Recall that earlier migrants is our label for those that have resided in New Zealand for at least 15 years. Across all earlier migrants, the proportion with low income dropped from 28.4% in 1981 to 25.9% in 2001. However, this proportion rose back to 27.2% in 2006.

The decline to 2001 movement mirrors that for the New Zealand born population and is in stark contrast to the increase noted earlier for the total migrant population.

This observation suggests the difference in incomes according to birthplace noted in the previous section is indeed sensitive to the length of residence in New Zealand.

Calculating the proportion for each of the earlier migrants by birthplace population groups with income in the lowest three deciles leads to Figure 5.2. This picture shows considerably less differences between the different migrant groups than that for all migrants depicted in Figure 5.1 earlier. Note there remains an increase between 1981 and 2001 for those born in Asia and the Pacific Islands, but the increase is noticeably smaller than that for all migrants from these areas.

We also note the increase recorded in the period to 2006 appears across those born in United Kingdom and Ireland, Asia, and Europe and North America. One possible reason for this is a greater proportion of earlier migrants have now reached retirement than in earlier years.

Figure 5.2 Proportion of low-income earners in earlier migrant groups
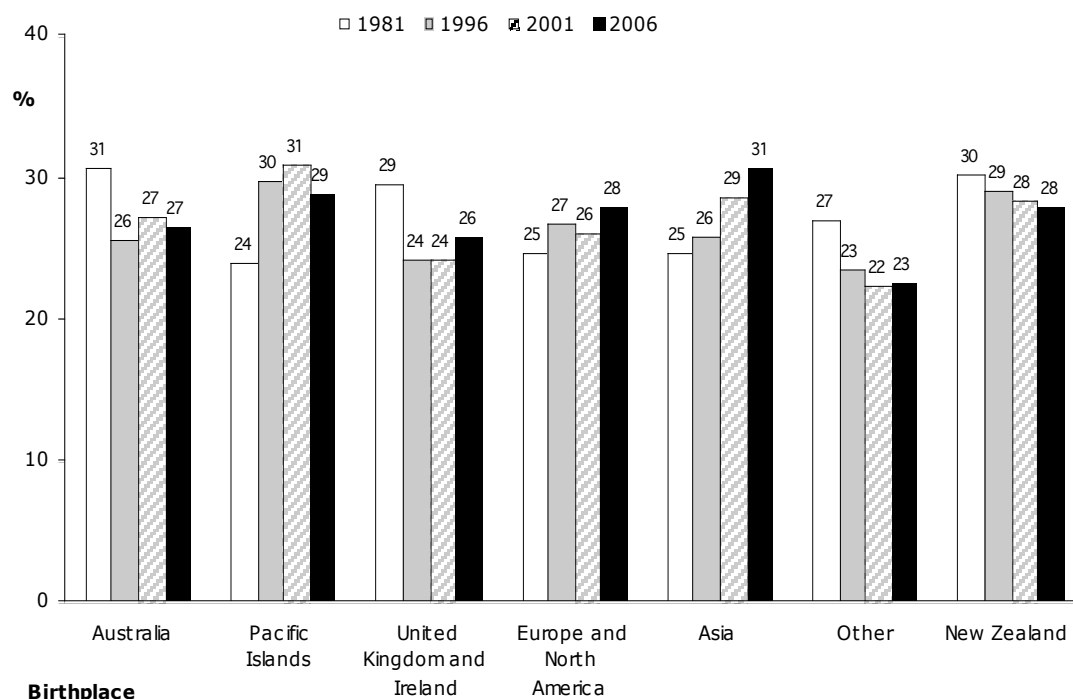
Recent migrants have the greatest difference (compared to the New Zealand born) in the calculated income measures. This observation holds for both the actual levels of the measures, as well as their changes over the 1981–2001 period. For example, 50.8% of recent migrants had low incomes in 2001, compared with 28.5% for the New Zealand born population. Furthermore, the proportion for recent migrants grew from 37.3% in 1981 compared to 30.2% for the New Zealand born group. We note that this contrast did narrow in 2006 to 44.7% for migrants compared to 28.0% for the New Zealand born. The divergence, however, remains noticeably significant.

The relativities within the recent migrant group by their birthplace are similar to that for all migrants. For example, the 44.7% figure for 2006 comprises a proportion of 59.3% for those born in Asia, 48.1% for the Pacific Islands born group and 34.5%, 28.4% and 23.5% for the Europe and North America, Australia, and United Kingdom and Ireland groups respectively.

This analysis suggests the income measures for Asian and Pacific Islands born recent migrants, in particular, are different to those of other migrants. They are also different to those of the New Zealand born population.

Noting the potential differing characteristics of the migrant populations, in addition to issues noted earlier with the presence of full fee-paying international students, a further dimension that should be explored is the age of migrants. We do this by investigating the labour market outcomes of those aged 25–54 years old.

5.3 Income and the age dimension

5.3.1 All migrants aged 25–54

Looking solely at the population aged 25–54 years old, the proportion of the New Zealand born group with low income fell from 21.8% in 1981 to 18.6% in 2001. Indeed, this proportion fell further to 17.3% in 2006.

Figure 5.3 Proportion of 25–54 year old migrants with low income
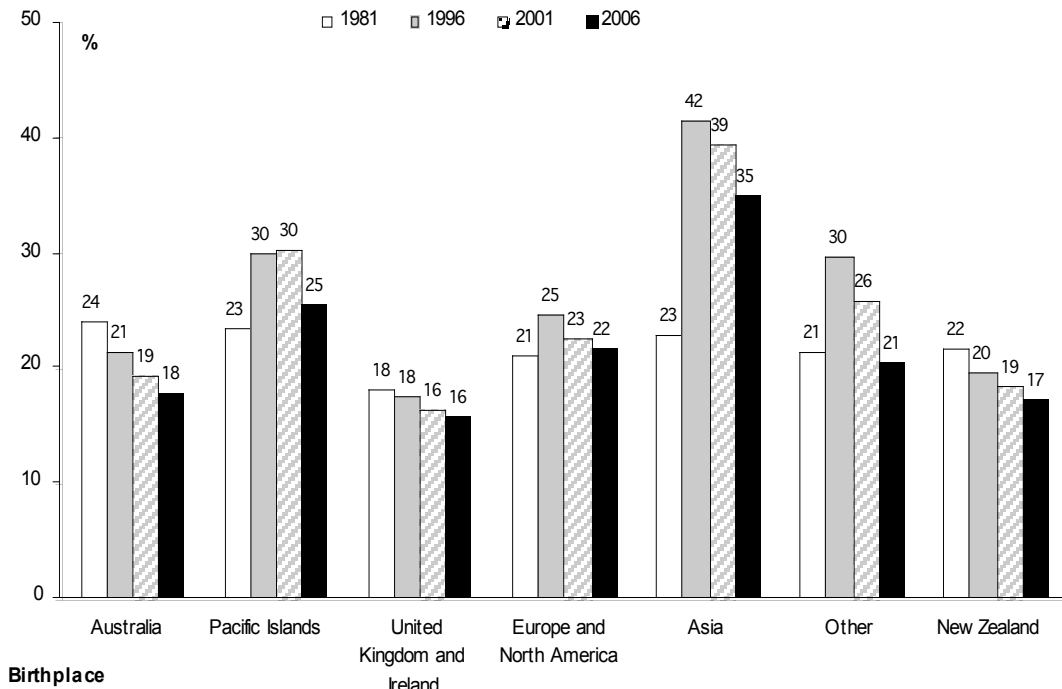
In a similar vein, the proportion of 25–54 year olds with low income fell over the 1996–2006 period across most of the migrant sub-groups depicted in Figure 5.3. However, the 2006 proportions with low income in each of these migrant populations remained above that for the equivalent New Zealand born group aged 25–54, with the exception of those born in the United Kingdom and Ireland.

5.3.2 Recent migrants aged 25–54

Breaking down the population sub-groups further, we observe the income of recent migrants (i.e. less than five years resident in New Zealand). Calculating the comparable proportions for each of the recent migrant groups aged 25–54 years old by birthplace leads to Figure 5.4. It is noticeable that, for each of these sub-groups, the calculated proportion is above the comparable figure for the New Zealand born group for each of the four years, with only one exception.

The one exception is the case of United Kingdom and Ireland born recent migrants in 2001.

Again, the more interesting feature of the comparisons shown in Figure 5.4 is the fall in the proportions across almost all groups between 1996–2006. This is despite increases between 1981 and 1996 in the proportions with low incomes of

recent migrants aged 25–54 from Europe and North America, Asia and the Pacific Islands.

Figure 5.4 Proportion of 25–54 year old recent migrants with low income
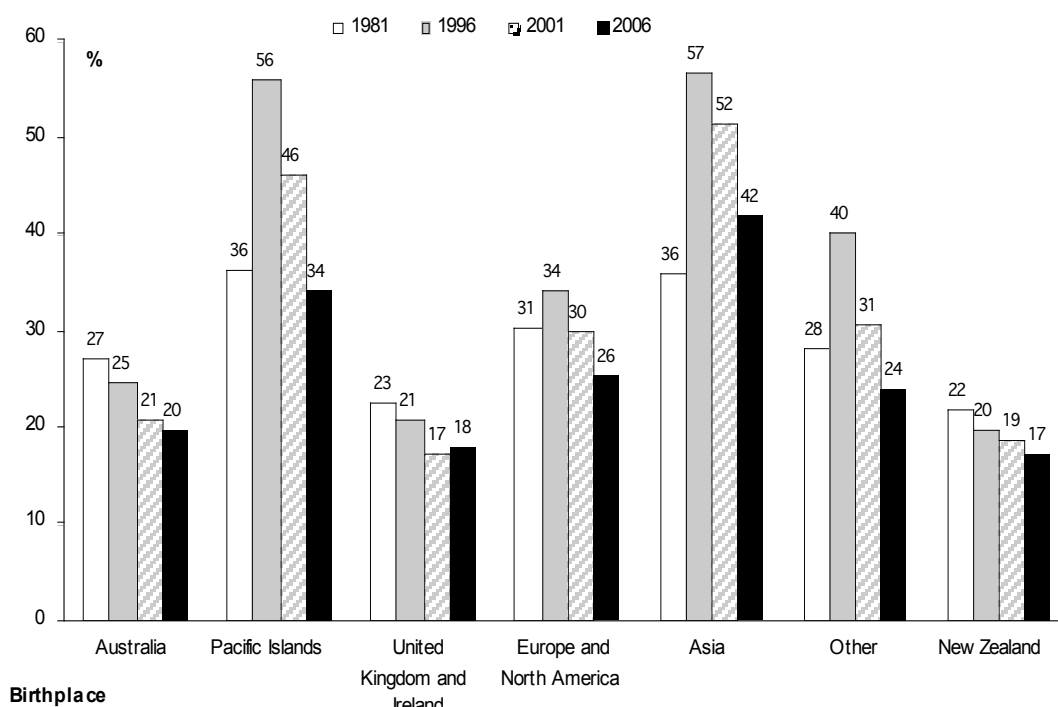
In comparison, movements in the proportion of each population sub-group that receives high income are not as clear cut. For example, Figure 5.5 illustrates the proportions for recent migrants aged 25–54 receiving high income compared to the New Zealand born population in that age group. This chart shows these proportions as remaining relatively stable over the 1996–2006 period. This suggests the reduction in proportions receiving low incomes is mirrored in increases in those receiving 'middle' incomes.

Also of note, is that a relatively low proportion of recent migrants aged 25–54 born in Asia and the Pacific receive high income. The 18% proportion for these two sub-groups in 2006 compares with 33% for all recent migrants aged 25–54 and 43% for the New Zealand born 25–54 sub-group. An increased proportion of those from Australia and the United Kingdom receive high incomes. This is likely due to the increased proportion in professional occupations (see section 8.1).

Figure 5.5 Proportion of 25−54 year old recent migrants with high income
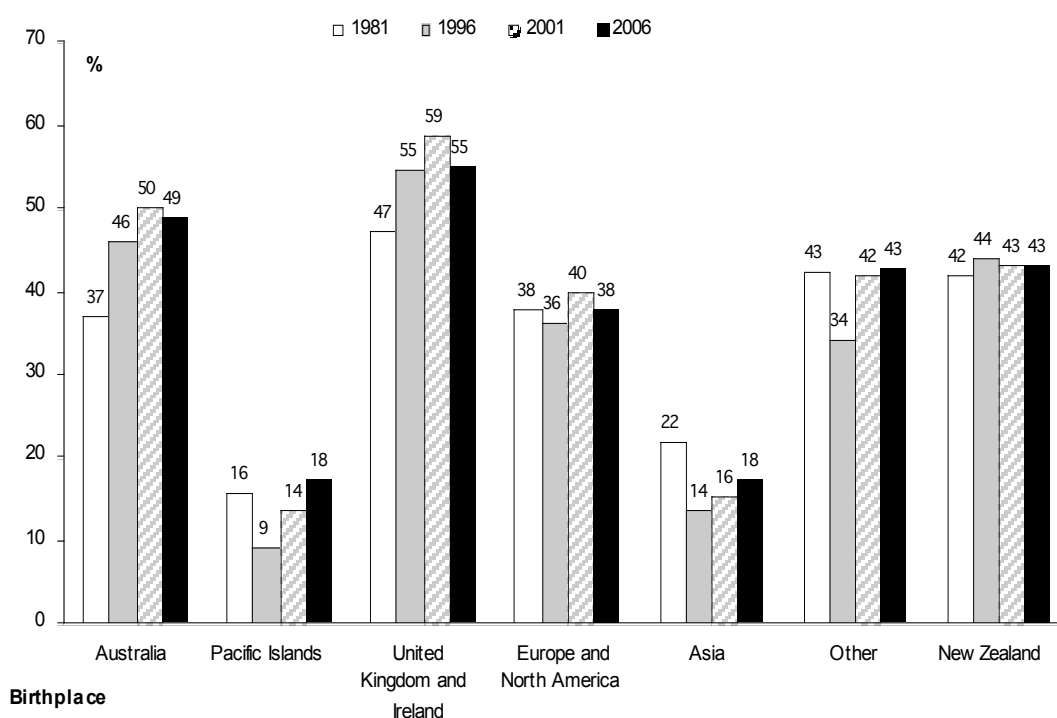
5.3.3 Earlier migrants aged 25−54

Amongst earlier migrants aged 25−54, it is noticeable that the proportions with low income are broadly similar, as illustrated in Figure 5.6. Further, these proportions have consistently fallen over the 1981−2006 period.

The primary exception to this observation is the sub-group of those born in Asia. While the proportions for this group remain comparable to those others shown in the chart, the increases pictured for the 1981−2006 period suggest other influences are at play here. However, it is not immediately clear what these influences could be, noting that this group of earlier migrants (i.e. at least 15 years resident in New Zealand) should exclude those in New Zealand as full fee-paying international students.

Figure 5.6 Proportion of 25–54 year old earlier migrants with low income
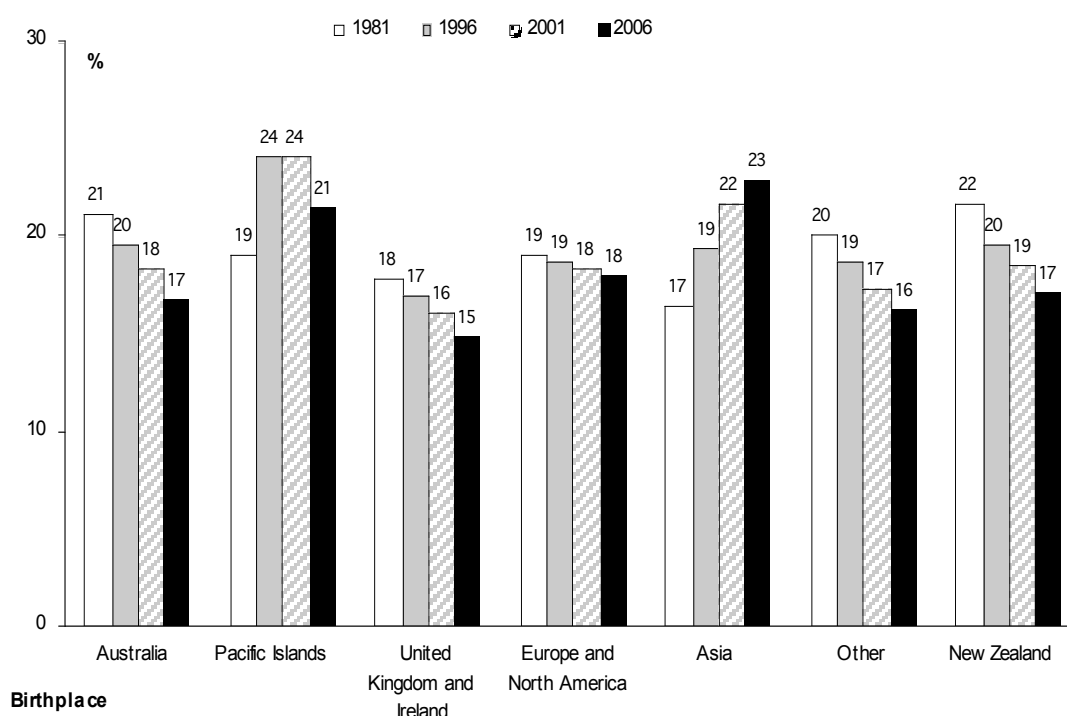
The improvement in the majority of migrant income measures between 1996 and 2006, as well as the different outcomes for recent and earlier migrant groups, begs the question as to whether there have been similar movements in other labour market outcomes across different groups. Clearly, the overall picture for incomes of total migrants (as depicted in Figure 5.1, for example) is noticeably different to those for groups where key characteristics such as age and length of residence in New Zealand are captured.

5.4   Income and the qualification dimension

The qualification dimension is informative in assisting comparisons of population groups that should, *a priori*, be similar from a labour market perspective. However, as noted above, changes in the classification of qualifications between 1981 and later censuses require caution in comparing change over time in measures using this dimension.

For the New Zealand born population, 60.3% of those with degree qualifications had high incomes in 2006. This proportion was down slightly from the 63.3% recorded in both 1996 and 2001. In comparison, the figures for the migrant population with degree qualifications were 52.6% in 1996, 52.9% in 2001 and 48.5% in 2006. Figure 5.7 shows that the proportions for the different migrant groups according to birthplace vary considerably. In particular, in 2006, the lowest proportion was the 32.5% recorded for the Asian migrant group, while the highest proportion was the 63.6% for the United Kingdom and Ireland born group.

Figure 5.7 Proportion of migrants with degree qualification with high income
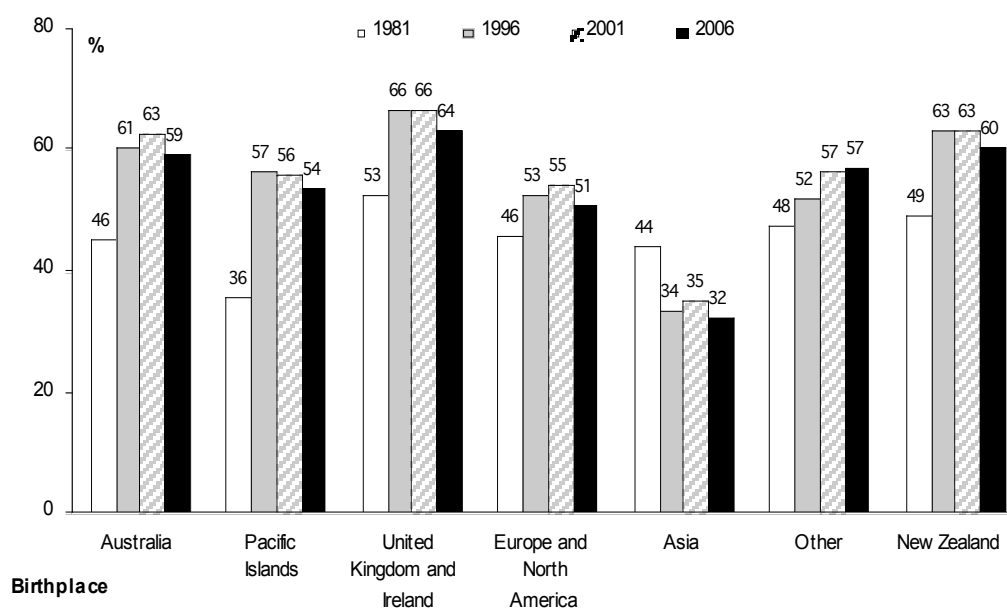
In line with the relative stability in this proportion over the 1996–2006 period for the New Zealand born population, the movement for the different migrant groups over this period appears minimal.

There do appear to be classification issues with the 1981 data, so we do not infer anything from the movement in proportions between 1981 and later censuses. However, the differences in the 1981 proportions between the migrant groups are a valid comparison. In particular, we note that the proportions range from a low of 35.9% for the Pacific Islands born group of migrants to a high of 52.8% for those born in the United Kingdom and Ireland. Noticeably, the figures for those born in Asia, Australia, and Europe and North America are closely grouped at 44.4%, 45.6% and 45.7% respectively. The comparable New Zealand born figure is 49.3%.

A tentative observation is that the migrant proportions for 1981 (excluding the Pacific Islands group) are closer to the New Zealand born figure than in later years. It is unclear why this would be the case and casts further doubt on the comparability of the 1981 data.

Following the analysis earlier, we amend the qualifications dimension to add the years in New Zealand dimension. Figure 5.8 shows a remarkable similarity of proportions with high incomes across the earlier migrant groups with degree qualifications.

Figure 5.8 Proportion of earlier migrants with degree qualifications with high incomes
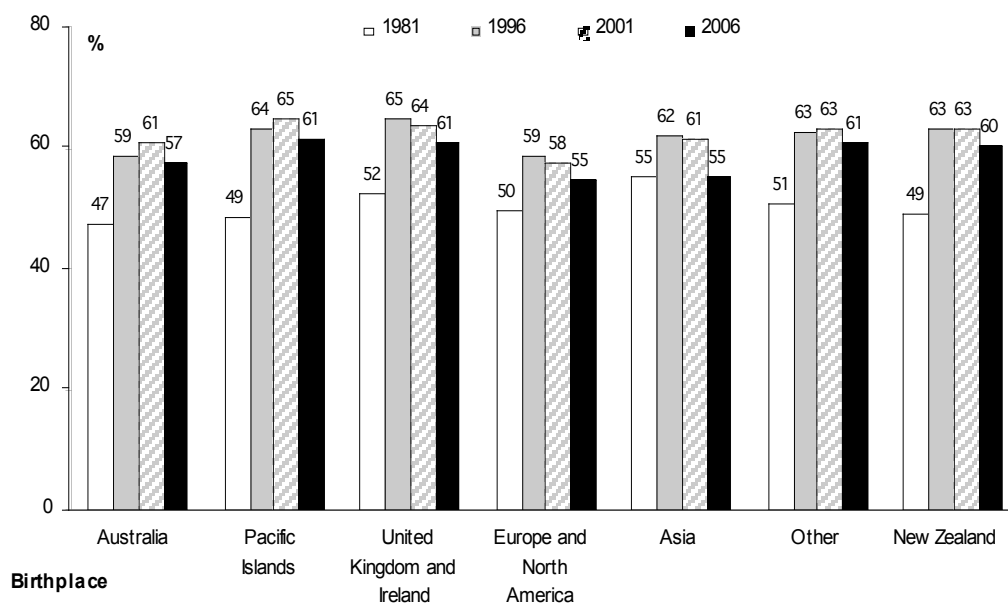
This contrasts starkly with proportions with high incomes for recent migrants,[12] which range from 22.2% for Asian born migrants to 70.7% for the United Kingdom and Ireland born group. Within this range are figures of 35.9% for Pacific Islands born, 48.6% for the Europe and North America group and 65.9% for those born in Australia. Notably, the figure for the Australia born group is closest to the comparable 63.3% proportion for the New Zealand born. These observations were confirmed by the findings of the formal modelling process described in section 10; that is, controlling for qualifications and years in New Zealand is critical in any analysis of relationships between migrants' birthplace and income.

5.5 Income measures summary

According to these measures for income, the observations clearly suggest migrant labour market outcomes are different from those of the New Zealand born, even after adjusting for the qualification characteristic of labour market participants. However, this conclusion is not supported if the length of residence in New Zealand characteristic of each migrant group is captured. If adjustment for this effect is incorporated, the income measures of earlier migrants are not dissimilar to those of the comparable New Zealand born population group. Conversely, income measures for recent migrants clearly diverge from those of the New Zealand born.

These observations clearly support the conclusions noted later in section 10.

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[12] That is, those with less than five years in New Zealand.

6   SOURCE OF MIGRANT INCOME

The source of income question was not asked in the 1981 census, so data from 1996, 2001 and 2006 only are available for scrutiny here. Measures of potential interest are listed in Table 6.1.

Table 6.1 Outcome measures for income sources investigated

Outcome	Variable	Migrant characteristic(s)	Measure
Source of income	No income	Where born	% of group with no income/% of New Zealand born with no income
	Wage and salary		% of group with wage and salary income/% of New Zealand born with wage and salary income
	Unemployment benefit		% of group with unemployment benefit income/% of New Zealand born with unemployment benefit income
Source of income	No income	Where born by years in New Zealand	% of group with no income/% of New Zealand born with no income
	Wage and salary		% of group with wage and salary income/% of New Zealand born with wage and salary income
	Unemployment benefit		% of group with unemployment benefit income/% of New Zealand born with unemployment benefit income
Source of income	No income	Where born by age	% of group with no income/% of New Zealand born with no income
	Wage and salary		% of group with wage and salary income/% of New Zealand born with wage and salary income
	Unemployment benefit		% of group with unemployment benefit income/% of New Zealand born with unemployment benefit income

6.1   Income source and the birthplace dimension

At the total population level, it is clear that migrant groups record different outcomes – in terms of sources of income – to those of the New Zealand born.

In 1996, 76.4% of those born in New Zealand reported receiving wage and salary income. This figure fell slightly in 2001 to 75.6%, but surged in 2006 to 78.1%. The comparable figures for the migrant population were 67.8% in 1996, 64.8% in 2001 and 70.1% in 2006. Also, there are noticeable differences between the migrant groups according to their place of birth. For example, the lowest proportion for 2006 was the 62.9% calculated for the Asian born group, with the highest being the 80.0% of Australian born migrants receiving wage and salary income. Figure 6.1 depicts these comparisons.

Figure 6.1 Proportion of population group reporting income from wages and salaries
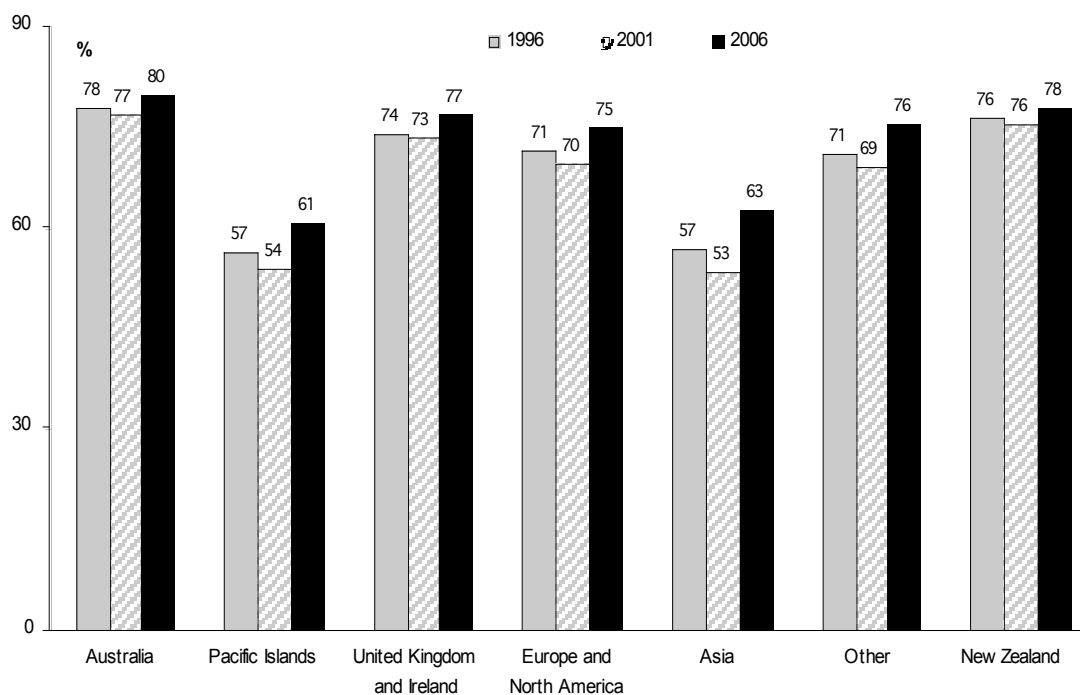
The differences between the New Zealand born and overseas born populations and also within the migrant groups by birthplace extends to proportions receiving unemployment benefit income and to figures reporting no source of income.

For example, 6.7% of the New Zealand born population reported receiving some unemployment benefit income in 2001, compared to 5.3% of those born overseas. However, this divergence has narrowed considerably during the period to 2006. The 2006 figures were 3.0% for the New Zealand born and 3.2% for migrants. This is likely, in part, due to the buoyant labour market and immigration policy focusing on employment.

Within the migrant group, the proportion for 2006 ranged from 1.13% for the United Kingdom and Ireland born population to 5.3% for the Pacific Islands born group. All of these proportions have declined from their 1996 levels, although the relativities across the groups remain broadly similar.

Within the New Zealand born population, 4.6% reported having no source of income in 2006, compared to 9.2% of those born overseas. Within the migrant group, this proportion ranged from 3.4% for the United Kingdom and Ireland born population to 17.5% for the Asian born group. The result for the Asian group is likely due to the large proportion of full fee-paying international students. We further note that all of these proportions have increased slightly from their 1996 and 2001 levels. Again, though, the relativities across the groups remain broadly similar.

6.2 Income source and the years in New Zealand dimension

As before, we explore the years in New Zealand dimension for these income source responses.

We observe that the proportions of the recent migrant population groups receiving wage and salary income show greater differences than for the all migrant groupings. In particular, as depicted in Figure 6.2, only recent migrants born in Australia and the United Kingdom and Ireland have comparable (or better) proportions than the figure for the New Zealand born group. This finding is broadly consistent with the income measures for recent migrants discussed earlier.

Figure 6.2 Proportion of recent migrants receiving wage and salary income
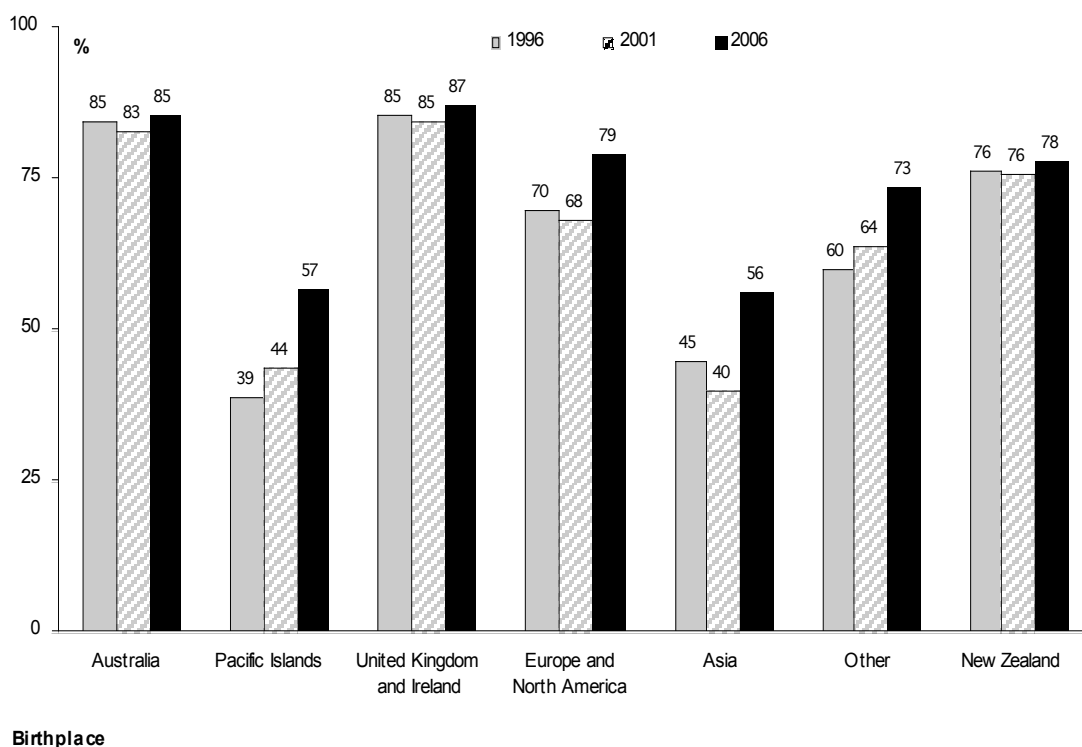
The differences in this figure appear not to be explained through the receipt of unemployment benefit income. Proportions of recent migrants in 2006 receiving income from this source lie in a relatively narrow range – from 0.5% for those born in the United Kingdom and Ireland to 4.7% for the Other region birthplace group.

From Figure 6.3, it would appear the explanation lies in the proportions with no source of income. Clearly, the proportion of both Pacific Islands and Asian born recent migrants with no source of income is notably larger than for the New Zealand born group. Again, the result for the Asian group is largely driven by the proportion of full fee-paying international students. The Other region birthplace recent migrant group also records a higher proportion here. This characteristic suggests the age dimension for these groups may be worthy of investigation. This is pursued in the following sub-section.

Figure 6.3 Proportion of recent migrant groups with no source of income
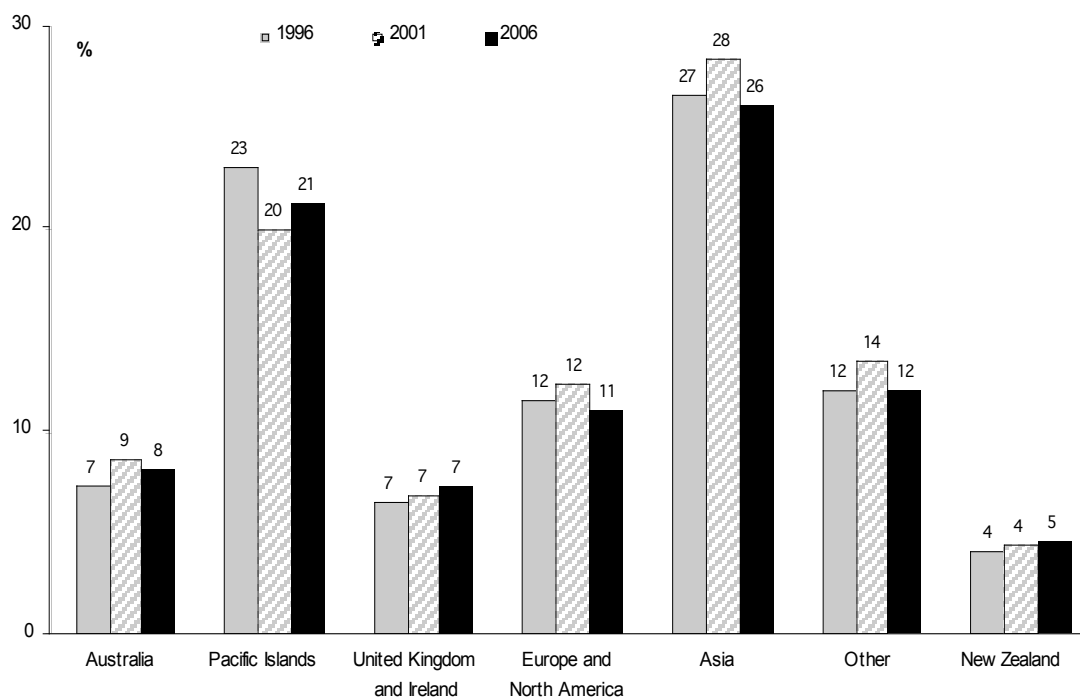
Birthplace

Looking at the data for the earlier migrant group and their sources of income sees a narrowing of the gap between the New Zealand born and migrant proportions. For example, 73.2% of the earlier migrant group in 2006 report income from wages and salaries compared to 78.1% for the New Zealand born group. Within the earlier migrant group, the lowest proportion is the 64.2% for those born in the Pacific Islands. Other groups, though, are notably closer to, or higher than, the New Zealand born figure. Figures are 73.5% for the Europe and North American born, and 73.9%, 77.3% and 80.4% for United Kingdom and Ireland, Asian and Australian groups respectively.

Notably, the proportions with no source of income in 2006 for all of the earlier migrant groupings are, with one exception, below the New Zealand born figure of 4.6%. The exception is the 4.8% recorded for those born in Asia.

Similarly close to the comparable New Zealand born figure are the proportions with income from unemployment benefit in 2006. These proportions range from the 1.5% for the United Kingdom and Ireland born earlier migrant group to the 5.0% for the Pacific Islands earlier migrant group, with the New Zealand born group proportion being 3.0%.

6.3 Income source and the age dimension

6.3.1 All migrants aged 25−54 years old

Adjusting for age in our investigation of labour market outcomes, we note the income sources of the population groups aged 25−54 years old. As before, this age group provides interest in that it is likely to possess similar characteristics

and, *a priori*, similar labour market outcomes across the various population groupings.

For this age group, 86.7% of the New Zealand born population in 2006 had income from salary and wages, 2.7% reported no source of income and 2.8% received some unemployment benefit income. Only the unemployment benefit figure has changed noticeably since 1996, with the 1996 figures being 84.6%, 3.2% and 8.0% respectively.

Figure 6.4 Proportion of 25–54 year old migrants with wage and salary income
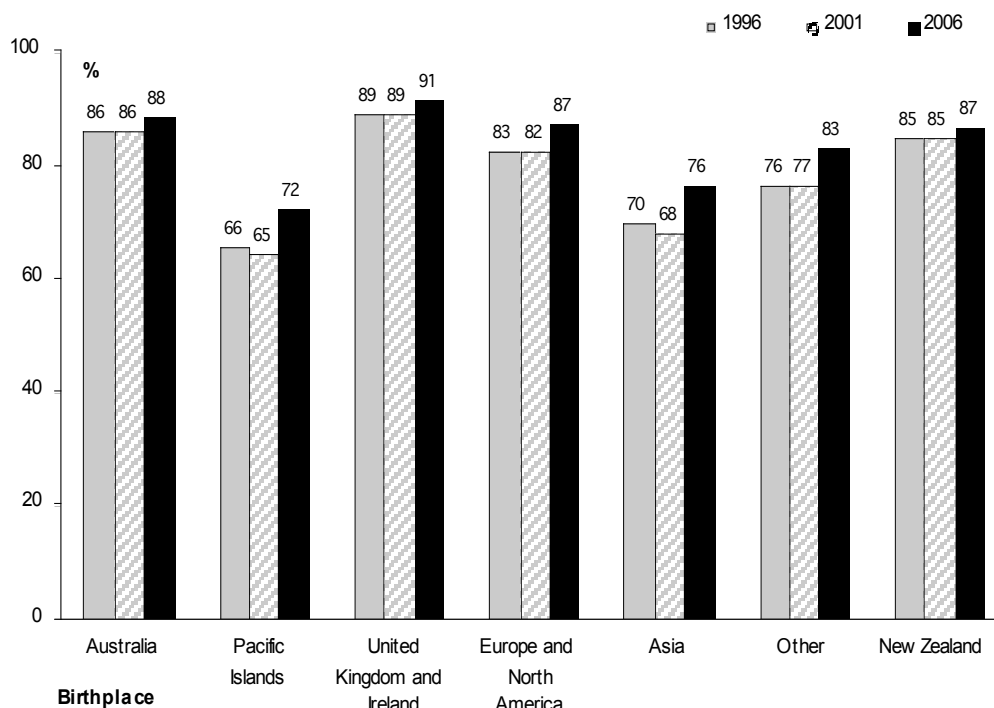
Amongst migrants aged 25–54 years old, the proportion receiving wage and salary income was 81.7% in 2006 – having risen from the 78.9% recorded in 1996. Differentiating across the migrant groups according to birthplace, the 2006 picture finds a lower proportion receiving wage and salary income amongst the Asian, Pacific Islands born and Other region 25–54 year old migrants. Conversely, the Australian, Europe and North America, and United Kingdom and Ireland born groups register wage and salary income proportions higher than the comparable New Zealand born figure.

There appear relatively small differences in proportions in the 25–54 year old age group receiving unemployment benefit income in 2006. The proportion for the New Zealand born group is 2.8%, with the highest proportion being 4.5% for those born in the Pacific Islands and the lowest being 1.2% for those born in the United Kingdom and Ireland.

Figure 6.5 Proportion of 25–54 year old migrants with no source of income
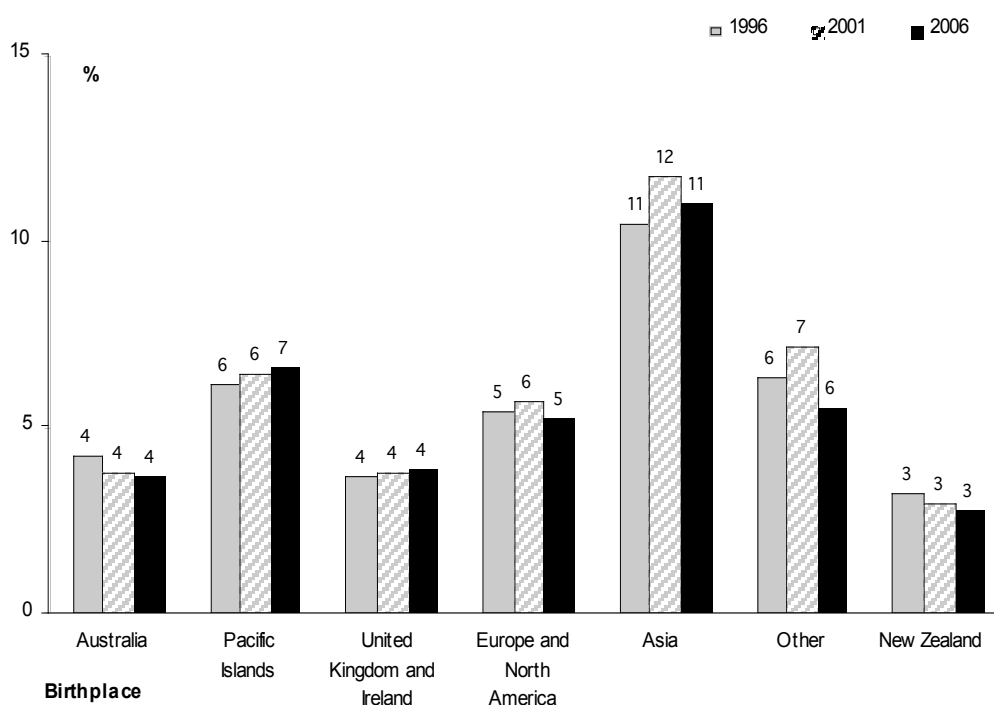
The predominant difference in proportions with no source of income in 2006 in this 25–54 year old age group is for those born in Asia. This proportion is 11.1%, compared to only 2.7% for the New Zealand born group, with the next highest proportion being 6.7% for those born in the Pacific Islands. As before, and given the context of migration patterns and the potential composition of student populations within the Asian migration, we add the years in New Zealand characteristic to the above age dimension investigation.

6.3.2 Recent migrants aged 25–54 years old

Amongst recent migrants aged 25–54 years old, 79.7% reported wage and salary income compared to the 85.7% reported by the earlier migrant group. The comparison for recent migrants depicted in Figure 6.6 shows large differences for those born in Asia and the Pacific Islands – with the proportion reporting wage and salary income in 2006 being close to 70%.

However, within the earlier migrant group, the difference in proportions with wage and salary income is narrower – with those born in Asia close to 85% and the Pacific Islands born group registering 75%.

Figure 6.6. Proportion of recent migrants aged 25–54 with wage and salary income
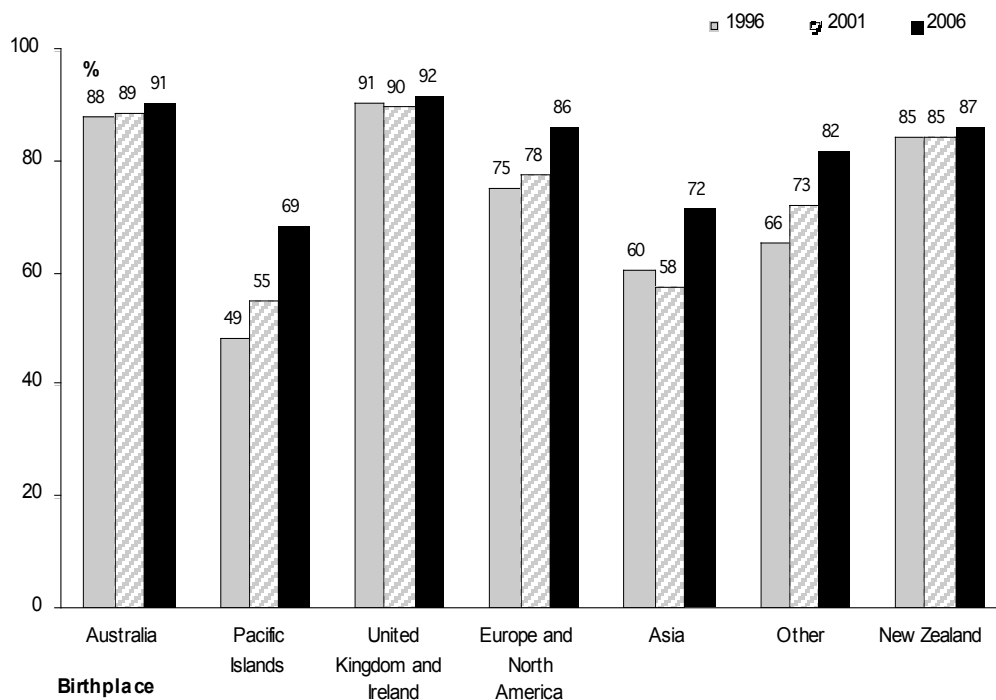
In 2006, 11% of recent migrants aged 25–54 reported no source of income compared to just under 3% for the New Zealand born 25–54 year old population. Amongst recent migrants aged 25–54, those born in Asia and the Pacific Islands report noticeably higher proportions with no source of income, as in Figure 6.7.

Again, though, as the length of residence increases, the differences in these indicators narrows. In particular, amongst earlier migrants aged 25–54 in 2006, only 3.6% report no source of income, with the highest proportion being 4.8% for those born in Asia.

Figure 6.7 Proportion of recent migrants aged 25–54 with no source of income
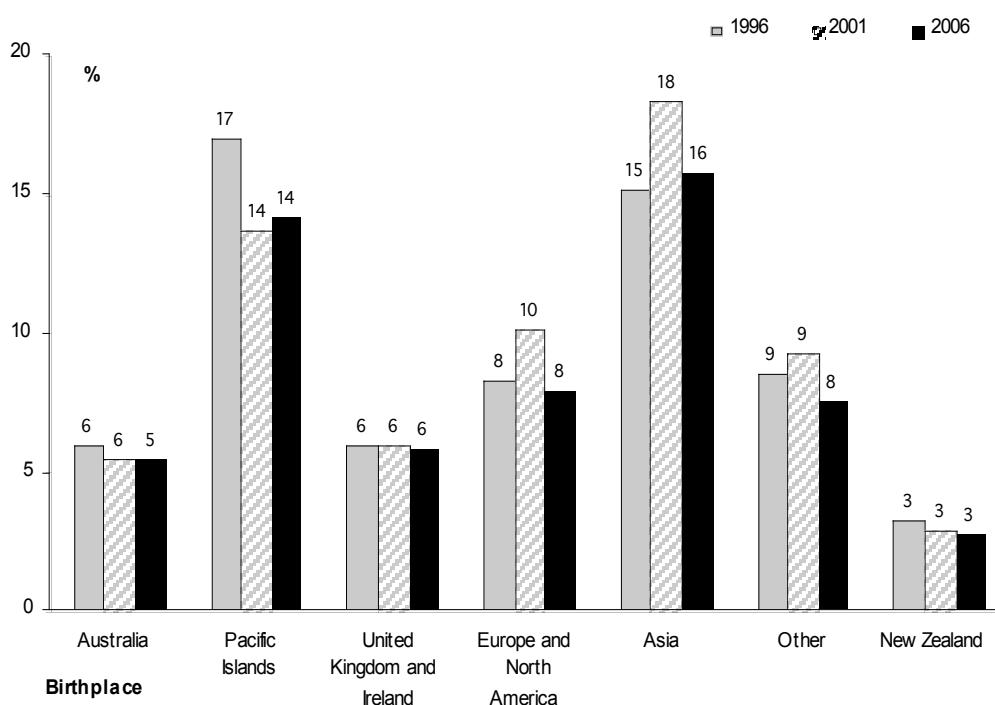
6.4   Source of income summary

According to these measures of sources of income, the observations suggest migrant labour market outcomes are different from those of the New Zealand born. In general, the Asian and Pacific Islands born groups show lower proportions receiving wage and salary income and higher proportions reporting no source of income. Other migrant groups by birthplace report proportions similar to those for the New Zealand born.

After adjusting for age and years of residence characteristics of labour market participants, the outcomes for the Asian born group move closer to those for the New Zealand born population, as their length of residence in New Zealand increases. This leaves the conclusion that the labour market outcomes investigated by these income source measures are noticeably different for those born in the Pacific Islands, compared to the New Zealand born population.

7   LABOUR FORCE STATUS OF MIGRANTS

Amongst labour market outcomes, participation and employment status are variables of interest. We investigate these, differentiating according to migrant characteristics as noted in Table 7.1.

Table 7.1 Labour force status measures

Outcome	Variable	Migrant characteristic(s)	Measure
Labour force status	Participation rate (LFPR)	Where born	LFPR of group/LFPR of New Zealand born
	Self-employed		% of group self-employed/% of New Zealand born self-employed
	Employers		% of group employers/% of New Zealand born employers
Labour force status	Participation rate (LFPR)	Where born by years in New Zealand	LFPR of group/LFPR of New Zealand born
	Self-employed		% of group self-employed/% of New Zealand born self-employed
	Employers		% of group employers/% of New Zealand born employers

7.1   Labour force participation rate

According to the census data, the participation rate for the New Zealand born population increased from 59.3% in 1981 to 67.3% in 1996, 69.0% in 2001 and 70.6% in 2006. Comparable figures for the overseas born population group were 58.6%, 58.6%, 59.6% and 63.6%. These comparisons are depicted in Figure 7.1.

Figure 7.1 Labour force participation rate for population groups
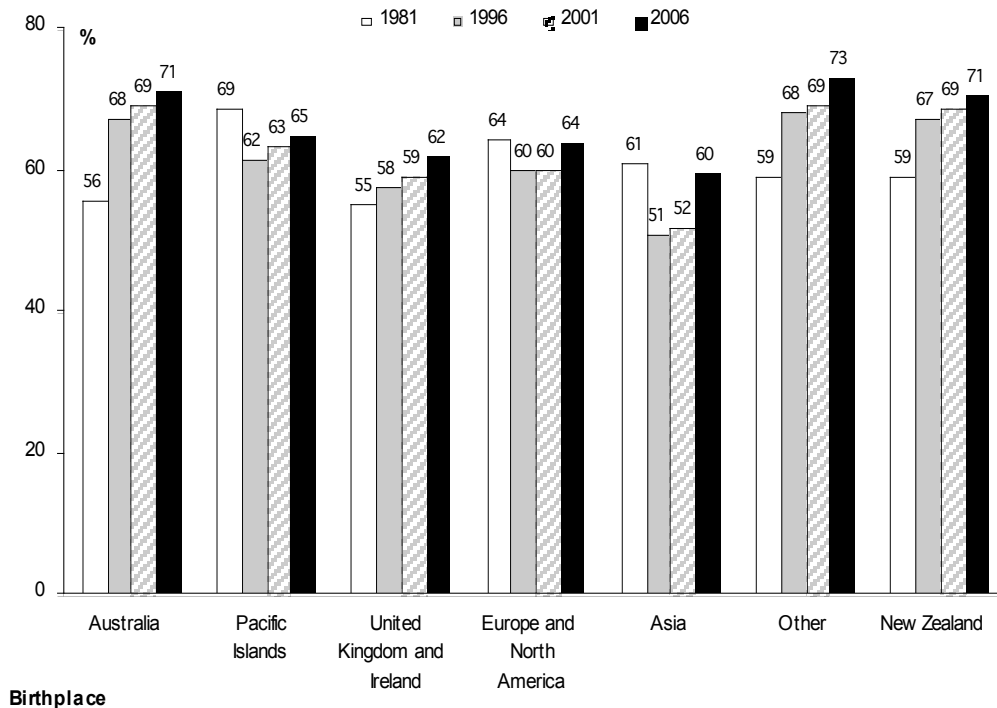
In essence, the noticeable rise in the labour force participation of the New Zealand born over the 1981–1996 period was not reflected in the overseas born population. Of further note are actual reductions in the participation rates between 1981 and 1996 for the Asian, Europe and North American, and Pacific Islands born population groups.

Interestingly, incorporating the years in New Zealand dimension to the participation rates analysis suggests that the intermediate migrant group (i.e. those with between 5 and 14 years residence in New Zealand) are closest to the New Zealand born outcome. Conversely, participation rates for recent and earlier migrant groups are below those of the New Zealand born, with the exception being the 1981 recent migrants group.

Figure 7.2 Participation rate for migrant groups by years of residence in New Zealand
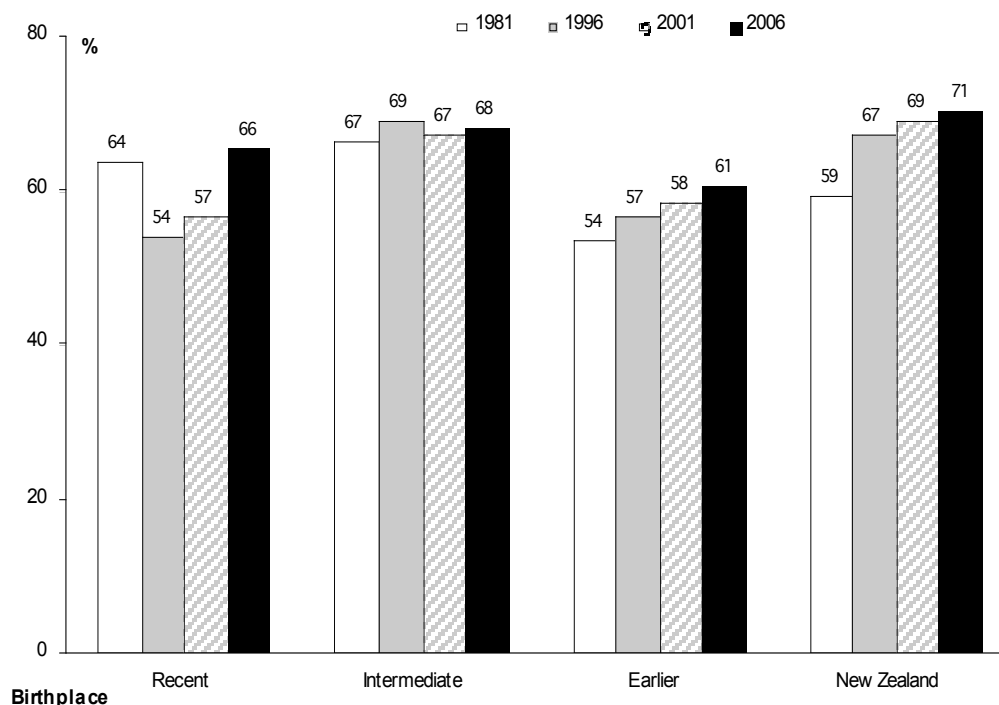
Taken together with the earlier analysis, these observations of labour force participation suggest differences in labour market outcomes between migrant and New Zealand born groups are not fully explained by length of residence characteristics. This is confirmed by the analysis in sub-section 10.2.1 below, suggesting qualifications, age and birthplace dimensions being significant factors in labour force participation.

7.1.1 Participation rates for 25–54 year old age groups

Of course, participation rates for the 25–54 year old age group are noticeably higher than for the overall population. In particular, for the New Zealand born population, 85% of 25–54 year olds were in the labour force in 2006.

Figure 7.3 indicates that participation rates amongst the migrants aged 25–54 are broadly comparable with this figure, the exceptions being the lower participation of migrants born in the Pacific Islands and Asia. Also noticeable is the relatively little difference in this measure between recent migrants and the total 25–54 year old migrant group.

Figure 7.3 Labour force participation rate for 25–54 year olds
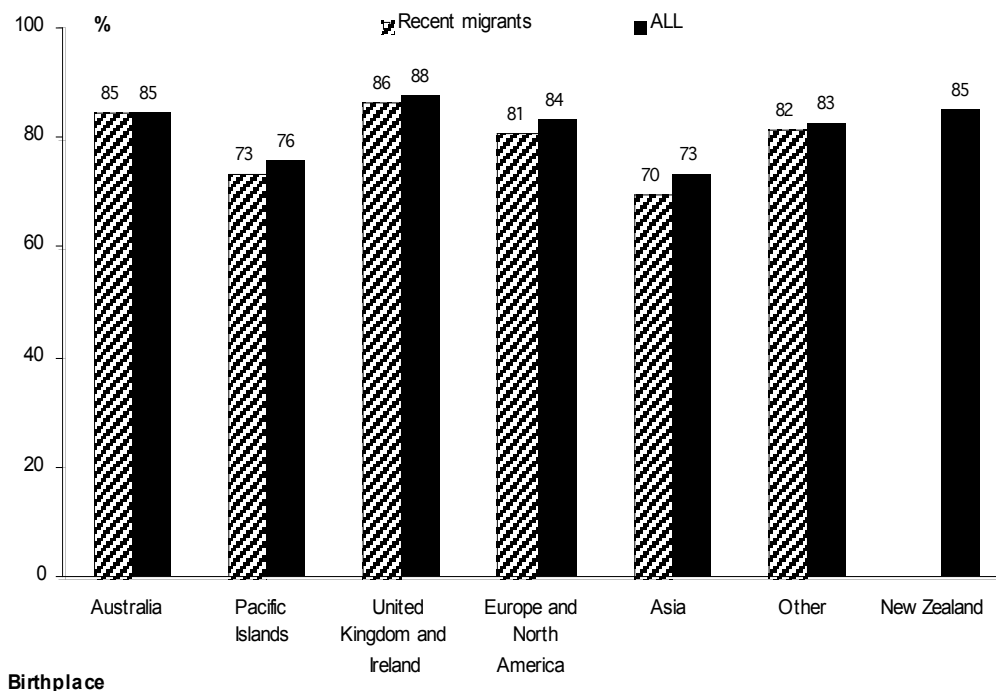
7.2 Prevalence of self-employed

Of those employed in 2006, 11.7% of the New Zealand born group were self-employed. This proportion had risen from 11.2% in 1996 and 7.3% in 1981, although it is lower than the 12.1% recorded in 2001. As depicted in Figure 7.4, this pattern of increase in self-employment over the 1981–2001 period followed by a decline in 2006 is mirrored across migration birthplace groups. The exception is the slight fall in proportion recorded between 1996 and 2001 in the Asian born group.

Figure 7.4 Proportion of employed in population group who are self-employed
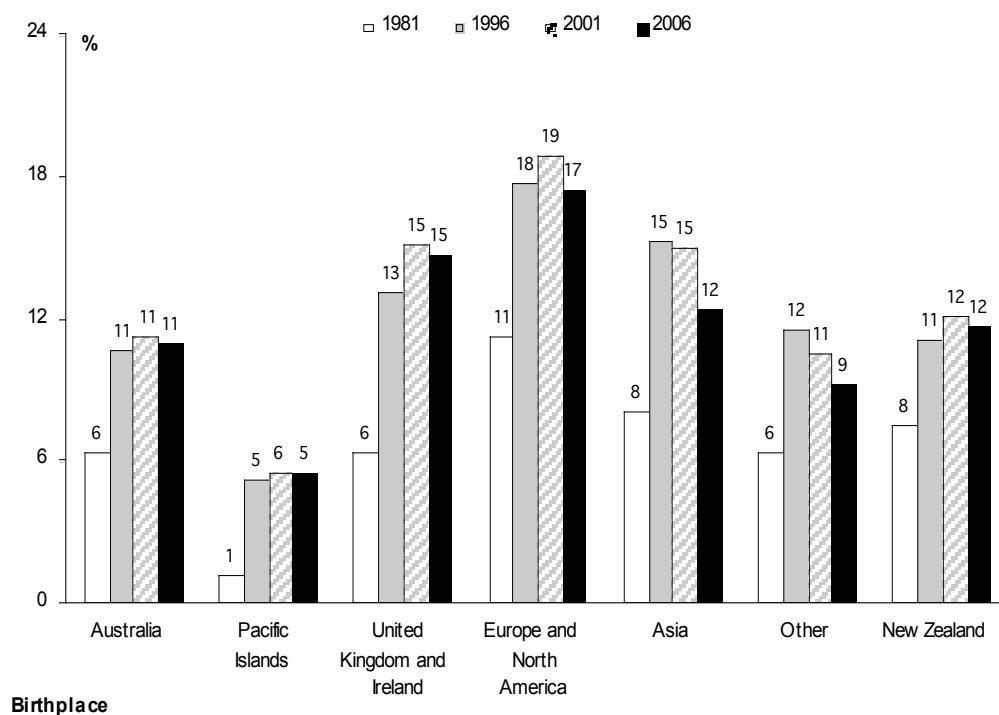
An additional observation is that, for all birthplace groups except the Pacific Islands born population, the overall rate of self-employment is at least on a par, if not above, the relevant New Zealand born figure.

Incorporating the years in New Zealand dimension into this analysis suggests the earlier migrant group have notably higher prevalence of self-employment than the New Zealand born group. In 2006, for example, the 15.0% of employed earlier migrants were self-employed, compared with the 11.7% figure for those born in New Zealand. Except for the Pacific Islands born group,[13] this proportion ranged from 12.8% for the Australian born to 22.0% for earlier migrants born in Europe and North America.

Conversely, the prevalence of self-employment amongst recent migrants is lower than the New Zealand-figure. Here, the lower incidence holds for all birthplace groups.

7.3   Prevalence of employers

In contrast to the relatively high incidence of self-employed among migrant groups, the incidence of employers among migrant groups is less.

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[13] Which registered a low 6.4% figure.

Figure 7.5 Proportion of employed in population groups who are employers
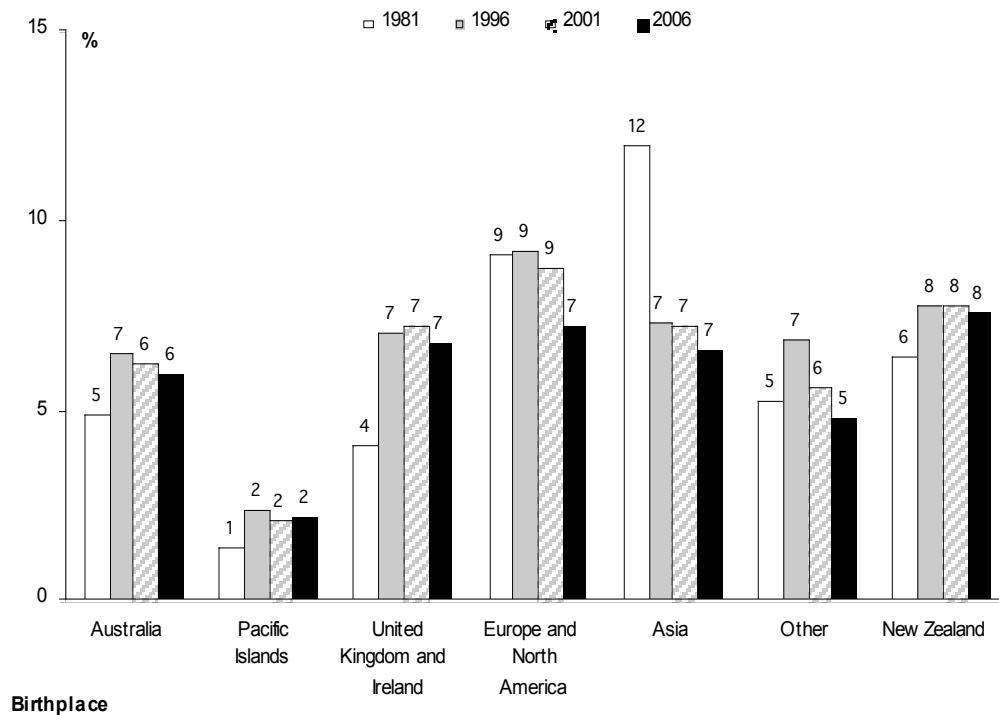
As depicted in Figure 7.5, of those employed in 2006, 7.6% of the New Zealand born population were employers. This is slightly down from the 7.8% recorded in both 1996 and 2001, but higher than the 6.2% recorded in 1981.

In 2006, no migrant birthplace group's proportion of employers exceeded that of the New Zealand born proportion. In 2001, there was one exception, with the Europe and North American born group recording a rate higher than that for the New Zealand born. There is an identical conclusion for 1996. In 1981, this migrant group was joined by the Asian born group recording a proportion of employers higher than the comparable New Zealand born figure.

Incorporating the years in New Zealand dimension here shows that only a small proportion (2.8%) of employed recent migrants in 2006 were employers. Across the birthplace categories here, the highest proportion is the 3.6% recorded for the born in Asia group.

Moving to the earlier group of migrants, the proportion of employers is noticeably higher for the Asian, Europe and North American, and United Kingdom and Ireland born populations. However, for earlier migrants born in Australia and the Pacific Islands, the proportions who are employers remains below that of the New Zealand born group.

7.4   Labour force status summary

Participation rate outcomes for migrant groups appear to be noticeably lower than those for the New Zealand born population. While this difference is not apparent for the intermediate migrant population group, the difference does reappear for

the earlier migrant group. It is possible that the difference for earlier migrants is due to differences in retirement.

The prevalence of self-employed is relatively high for migrant groups, compared to the New Zealand born population. The Europe and North American migrant group is a particularly noticeable feature in this observation.

Furthermore, this migrant group also leads in the prevalence of employers. Other migrant groups, however, feature less so in this measure.

8   MIGRANT OCCUPATIONS

The final aspect of labour market outcomes of migrants that we investigate is their occupations. We observe proportions employed in professional and managerial occupations, technicians and trades. Again, we distinguish between migrant groups by birthplace, their years of residence in New Zealand and their qualifications, as noted in Table 8.1.

Table 8.1 Occupation outcomes investigated for migrant groups

Outcome	Variable	Migrant characteristic(s)	Measure
Occupation	Professionals and managers	Where born	% of group profs/% of New Zealand born profs
	Technicians		% of group techs/% of New Zealand born techs
	Trades		% of group trades/% of New Zealand born trades
Occupation	Professionals and managers	Where born by years in New Zealand	% of group profs/% of New Zealand born profs
	Technicians		% of group techs/% of New Zealand born techs
	Trades		% of group trades/% of New Zealand born trades
Occupation	Professionals and managers	Where born by qualification	% of group profs/% of New Zealand born profs
	Technicians		% of group techs/% of New Zealand born techs
	Trades		% of group trades/% of New Zealand born trades

It should be noted that the occupation groupings for 1981 data were not comparable with those from later censuses, due to classification changes. In particular, proportions in trades occupations were not easily identifiable from the 1981 data. Additional investigation here would require further, more detailed, data.[14]

8.1   Professionals and managerial occupations

The 1996–2006 period has seen an across-the-board increase in the proportion of the employed occupying professional and managerial positions. Figure 8.1 illustrates the increases in proportions for the population groups by their birthplace.

In particular, in 2006, 18.8% of the New Zealand born employed were in professional and managerial occupations, up from 16.3% in 2001 and 14.0% in 1996. For migrant groups, the increase has been more pronounced. From a proportion of 12.4% in 1996, 19.6% of employed migrants in 2006 are in this category. That is, from a percentage noticeably below the New Zealand born figure, the proportion of employed migrants now in professional and managerial positions is higher than the New Zealand born equivalent.

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[14] That is, at a disaggregation below the 1-digit New Zealand SCO initially obtained.

Figure 8.1 Proportion of employed groups in professional occupations
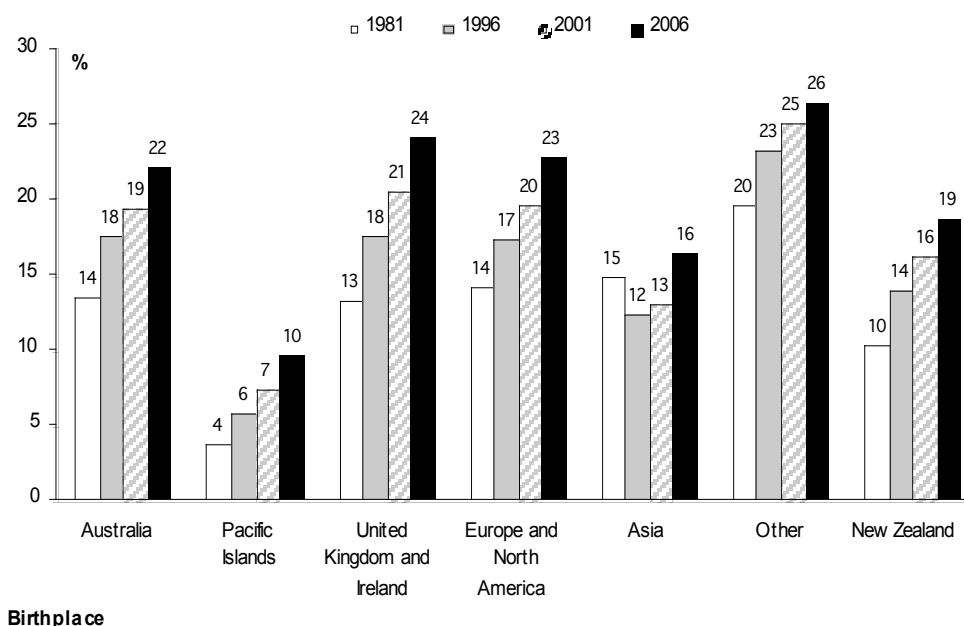
Across the various sub-groups of the migrant population, the proportions are broadly comparable with New Zealand born. The exception to this observation is the Pacific Islands born migrant group.

As for length of residence, there are noticeably higher proportions of professionals for earlier migrants, i.e. 19.7% in 2006, with 23.7% for Asian born, 21.3% for those born in Australia, 20.8% for United Kingdom and Ireland born and 20.2% for Europe and North American born. Again, however, the Pacific Islands born earlier migrant group remains well below the New Zealand born proportion at 11.2%.

Not surprisingly, a majority of the difference for the Pacific Islands born can be explained by the different qualification levels of the groups, so adjusting for qualifications reveals a more comparable outcome for the Pacific Islands born group. For example, 51.7% of Pacific Islands migrants with degree qualifications have professional occupations, compared with 56.3% for the New Zealand born population with degree qualifications.

Further adjusting for years of residence in New Zealand moves this proportion above the New Zealand born figure, that is, 58.9% of Pacific Islands earlier migrants with degree qualifications report professional and managerial occupations.

8.2   Trades and technical occupations

There appears to have been negligible difference between 1996 and 2006 in the proportion of New Zealand born employed in trades occupations. The percentage in 2006 was 5.9% compared to 5.8% in 1996.

While there appear to be large changes for the migrant groups, the comparable proportions for all migrant groups by birthplace were below the New Zealand born

figures for all three census years. This conclusion holds for all earlier migrant groups as well.

Figure 8.2 Proportion of earlier migrants in trades occupations
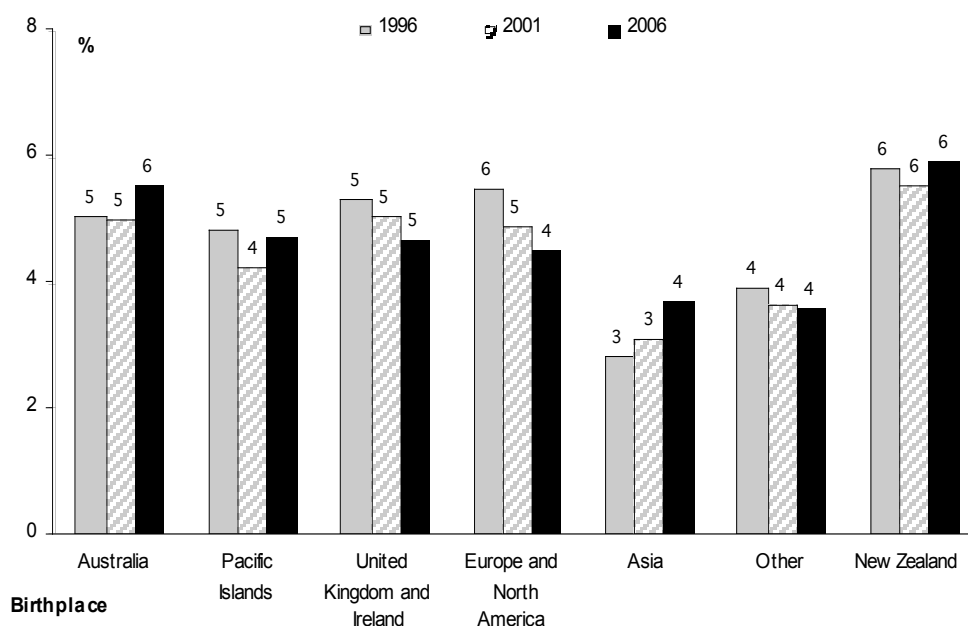
Noticeably, this observation continues to hold for migrant groups after adjusting for qualifications. For example, 8.3% of migrants with vocational qualifications reported a trades occupation in 2006, compared to 10.7% for the New Zealand born population with vocational qualifications. Further, for all migrant groups distinguished by birthplace (except for the Other region), the proportion of those with vocational qualifications in trades occupations are below the 10.7% figure for the New Zealand born. Adjusting for length of residence in New Zealand does not alter this observation.

We report similar observations for proportions of the employed in technical occupations. In particular, proportions in technical occupations across all migrant groups by birthplace were below the comparable figure for New Zealand born for all three census years.

Again, this holds for earlier migrant groups by birthplace.

Adjusting for qualification, in general, does not alter this observation. However, some exceptions are noted. In particular, migrants born in Europe and North America and Australia with degree qualifications report slightly higher proportions in technical occupations than the comparable New Zealand born figure.

8.3 Migrant occupations summary

The increase in proportions in professional occupations over the past ten years has been experienced across all sub-groups of the populations investigated. The majority of the differences between the New Zealand born and migrant population groups employed in professional occupations can be explained by qualification levels and length of residence.

The prevalence of migrants in trades or technical occupations are lower than New Zealand born equivalents. In this case, however, qualification levels and length of residence do not fully explain these differences.

9 CONCLUSIONS

It is clear that migrant-related characteristics provide, at best, a relatively small reason for the differing labour market outcomes for migrants.

The large majority of the differences in labour market outcomes across the various sub-groups of the population can be attributed to non-migrant-related characteristics. In particular, differences in age composition and highest qualifications possessed are most important.

The migrant-related factor that remains important is the number of years in New Zealand. It is clear that there is a selection of inferior labour market outcomes for migrants with less than five years in New Zealand.

However, once migrants have resided in New Zealand for more than 15 years, their labour market outcomes, after controlling for qualifications and age, become almost indistinguishable from New Zealand born.

Conversely, birthplace is an insignificant[15] factor across most of the measures of labour market outcomes investigated. Consequently, we would conclude by arguing the most appropriate of the alternative propositions suggested is that labelled C:

> Labour market outcomes in New Zealand for some migrant groups, according to their place of birth, are significantly different from the New Zealand born population, but these differences become less significant the longer the migrants remain in New Zealand.

The policy implications of these findings suggest a focus should be on the qualifications of migrants and their retention (i.e. ensuring they stay in New Zealand). In this context, the reduction in outmigration, from 42 per 100 arrivals over 1996–2001 to 24 per 100 arrivals over the latest five years, is indeed a promising change. Of course, this also suggests the importance of further study to establish and understand the determinants of outmigration such as policy, migrant characteristics or the buoyant economy.

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[15] Or has relatively weak explanatory power.

10 APPENDIX: MULTIVARIATE ANALYSIS

10.1 Relationships determining income

As noted earlier, we use the term 'high-income' for short-hand purposes as a label representing income above the 70th percentile of the national income distribution. Similarly, we use the label 'low-income' for income below the 30th percentile of the national income distribution.

10.1.1 Determining high-income earners

Table 10.1 lists the proportion of each of the 19 sub-groups that were high-income earners. This proportion ranges from a high of 47.6% for recent migrants born in the United Kingdom and Ireland to a low of 11.2% for recent migrants born in Asia. The proportion across all recent migrants was 24.2%, while the figure for all migrants (i.e. the total overseas born population) was 27.4%. The comparable number for the New Zealand born sub-group in 2006 was 31.0%.

Table 10.1 Percentage of high-income earners in each sub-group 2006

		Years in New Zealand			
		<5	5 to 15	>=15	Total
Birthplace	Australia	39.1	27.5	31.1	31.6
	Pacific Islands	12.1	16.9	22.6	19.0
	UK & Ireland	47.6	46.3	31.9	36.2
	Europe & N. America	31.5	35.8	30.0	31.6
	Asia	11.2	17.9	28.7	17.0
	Other	32.7	37.1	40.9	35.7
	Total overseas born	*24.2*	*27.1*	*29.9*	*27.4*
	New Zealand				31.0
	Total population				30.0

In explaining these variances, together with those in the 1996 and 2001 years, we found only one significant migrant-related characteristic.

Conversely, of most significance in determining the proportion of high-income earners was the highest qualification held within each population group. In particular, the proportions with a vocational or degree qualification as their highest qualification were most significant in this determination. As expected, both were positively related to the proportion of high-income earners. Figure 10.1 illustrates one of these relationships – that between high-income earners and the proportion with their highest qualification being a vocational qualification.

Figure 10.1 High-income earners and vocational qualifications
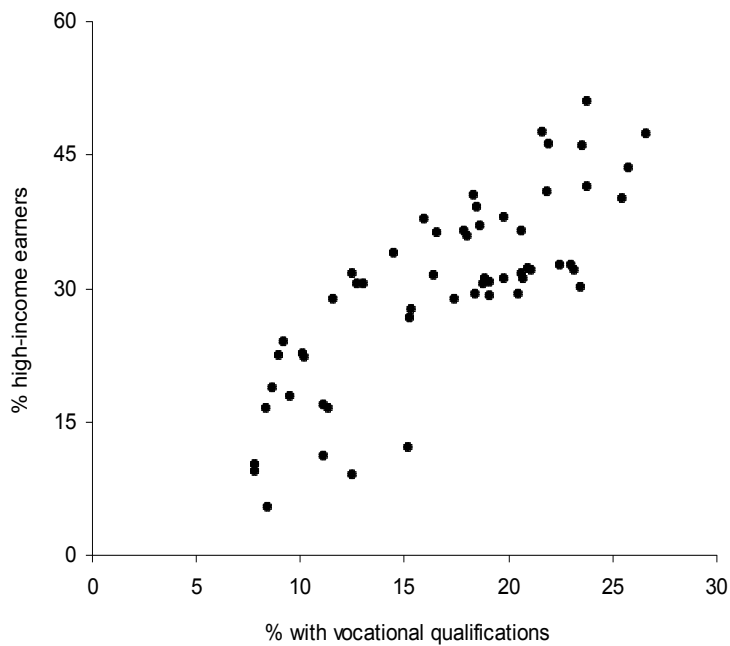
We report that estimated relationships including age-group variables were inferior to the qualification variables in determining the proportion of high-income earners. Including both qualification and age-group variables together also resulted in inferior relationships.

The two qualification variables (degree and vocational) together explained nearly 75% of the variation in the proportion of high-income earners.

In addition, the insignificance of the census year identifiers, when introduced, confirmed that the relationship determining high-income earners has not significantly altered over the 1996–2006 period.

The one migrant-related characteristic that did enter the equation was the identifier for recent migrants. We found that this group had a significantly lower proportion of high-income earners than for other groups. This conclusion held after controlling for the different qualifications. While significant, though, this variable contributed only another 3 percentage points to the power of the explanation.

On the other hand, both intermediate and earlier migrants had no significantly different proportions of high-income earners than the overall population. Furthermore, introducing specific places of birth also had no significant impact on the estimation of high-income earners in the population. This included the New Zealand born identifier. Hence, we conclude that the determination of high-income earners was not significantly related to birthplace over the 1996–2006 period.

Equation

$$YH_{ijt} = \quad 1.37\ QV_{ijt} + \quad 0.41\ QD_{ijt} + -4.52\ Rrec \qquad\qquad adj\ R^2 = 0.78$$
$$(17.96) \qquad (6.14) \qquad (-2.99)$$

where YH_{ijt} = percentage of group *ijt* that has income above the 70th percentile of national income distribution

        noting that *ijt* = group with birthplace i, years in New Zealand j for census year t

    QV_{ijt} = percentage of group *ijt* with vocational qualifications as their highest qualification

    QD_{ijt} = percentage of group *ijt* that have a degree qualification

    Rrec = identifier for recent migrants

10.1.2 Determining low-income earners

Table 10.2 lists the proportion of each of the 19 sub-groups in 2006 that were low-income earners. This proportion ranges from a low of 22.7% for earlier migrants born in the Other region to a high of 59.3% for recent migrants born in Asia. The proportion across all recent migrants was 44.7%, while the figure for all migrants (i.e. the total overseas born population) was 35.5%. The comparable number for the New Zealand born sub-group in 2006 was 28.0%.

Table 10.2 Percentage of low-income earners in each sub-group 2006

		Years in New Zealand			
		<5	5 to 15	>=15	Total
Birthplace	Australia	28.4	42.1	26.6	30.2
	Pacific Islands	48.1	39.6	28.9	35.1
	UK & Ireland	23.5	24.7	25.9	25.5
	Europe & N. America	34.5	33.2	28.0	31.0
	Asia	59.3	49.2	30.7	50.1
	Other	35.9	35.0	22.7	33.5
	Total overseas born	***44.7***	***40.2***	***27.2***	***35.5***
	New Zealand				28.0
	Total population				30.0

Similar to the findings for high-income earners, we found few significant migrant-related determining factors for low-income earners. In this case, the primary determining factors were those with only school qualifications and the proportion of the group aged 15–24 years old.

As expected, the signs on each of these coefficients were positive. This indicates that groups with only school qualifications would have a larger proportion of low-income earners in their population. In addition, groups with a larger proportion of youth (15–24 years old) will also have a larger proportion of low-income earners. This latter relationship is illustrated in Figure 10.2.

We note that the 15–24 year old age-group variable was a better predictor than the proportion with no qualifications in this relationship.

Figure 10.2 Low-income earners and those aged 15–24 years old
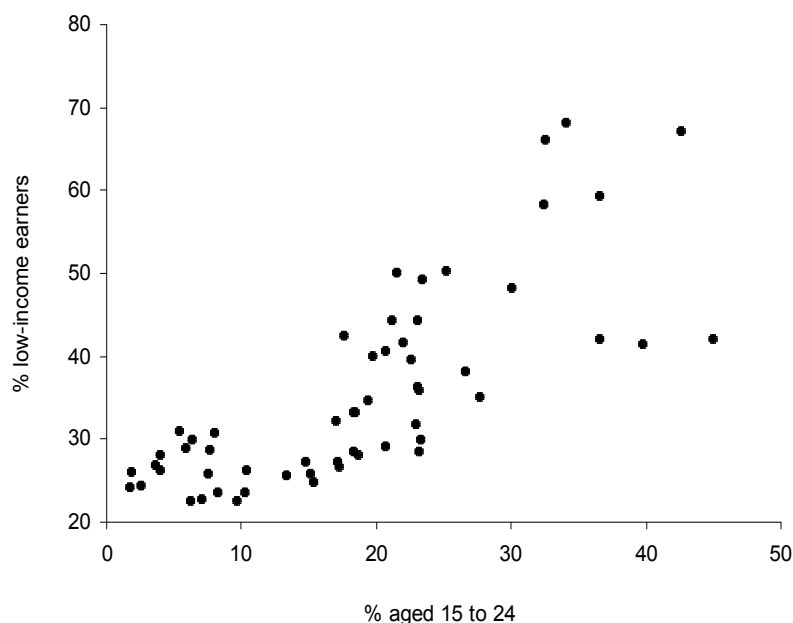
Notably, again, the insignificance of census year identifiers, when introduced, suggested that the determination of the proportion of low-income earners in a group has not altered over the 1996–2006 period.

The proportion of low-income earners can be nearly 58% explained by the qualification and age-related variables.

Moving to migrant-related characteristics, the identifiers that were significant when introduced individually were:
• recent migrants (with a positive coefficient)
• intermediate migrants (with a negative coefficient)
• Australia birthplace (with a negative coefficient)
• Pacific Islands birthplace (with a positive coefficient)
• Asia birthplace (with a positive coefficient).

However, when introduced together, the association between some of these factors led to inferior or insignificant estimates for some of the variables. We also further note that the New Zealand born identifier was insignificant in determining low-income earners.

Of the above list, only the identifiers for recent migrants and those born in Asia remained significant in the combined equation. Both the coefficients in this case were positive. This suggests that the higher the proportion of recent migrants, the higher the proportion of low-income earners in that group. Similarly, the higher the proportion of those born in Asia, the higher the proportion of low-income earners in that group.

Equation		
YL_{ijt} =	0.51 QS_{ijt} + 0.59 $A15t24_{ijt}$ + 6.10 Rrec + 10.17 Basia	adj R^2 = 0.71
	(11.08) (6.23) (3.18) (4.39)	
where	YL_{ijt} = percentage of group *ijt* that has income below the 30th percentile of national income distribution	
	noting that *ijt* = group with birthplace i, years in New Zealand j for census year t	
	QS_{ijt} = percentage of group *ijt* with a school qualification as their highest qualification	
	$A15t24_{ijt}$ = percentage of population group *ijt* that are aged 15–24 years old	
	Rrec = identifier recent migrants	
	Basia = identifier for migrants born in Asia	

Again, though, the significance of the migrant-specific characteristics is relatively low. These add 13 percentage points to the explanation of low-income earners – resulting in an overall explanation of 71%.

Hence, we conclude that the determination of low-income earners was predominantly related to age composition and qualifications over the 1996–2006 period. However, there were relatively small but significant differences associated with recent migrants and migrants born in Asia.

10.2 Relationships determining workforce status

The determinants of labour force participation and unemployment rates were investigated. We report that efforts to explain proportions in each group that are employers and proportions that are self-employed were unsuccessful.

10.2.1 Determining labour force participation

Table 10.3 lists the labour force participation rate in 2006 of each of the 19 sub-groups. We note the highest participation rate was the 79.3% for recent migrants born in the United Kingdom and Ireland, while the lowest was the 56.3% for recent migrants born in Asia. Across all recent migrants the participation rate was 65.7%, while the figure for all migrants (i.e. the total overseas born population) was 63.6%. The comparable number for the New Zealand born sub-group in 2006 was 70.6%.

Table 10.3 Labour force participation rate (%) for each sub-group 2006

		Years in New Zealand			
		<5	5 to 15	>=15	Total
Birthplace	Australia	78.8	74.6	68.7	71.3
	Pacific Islands	62.6	65.0	66.5	64.9
	UK & Ireland	79.3	79.0	55.8	62.2
	Europe & N. America	72.9	75.3	55.5	63.9
	Asia	56.3	60.8	67.1	59.6
	Other	73.1	74.7	72.5	73.2
	Total overseas born	*65.7*	*68.2*	*60.6*	*63.6*
	New Zealand				70.6
	Total population				68.5

As for the income determination exercise reported in the previous section, a majority of the variation in the labour force participation rate across different groups can be explained by qualification and age-related variables.

In particular, the proportion of the population group in the 25–54 year old age group has a positive impact on the labour force participation rate of that group. Similarly, there is a positive impact from the proportion possessing vocational qualifications as their highest qualification. Together, these two variables explain 53%.

Unsurprisingly, noting the economy-wide surge in participation rates over the last few years, the census year identifier for 2006, when introduced, was a significant factor. Including this variable enabled 59% of the variation in participation rates across the different groups to be explained.

The migrant-related characteristics that were also significant when introduced individually were:
- recent migrants (with a negative coefficient)
- intermediate migrants (with a positive coefficient)
- Australia birthplace (with a positive coefficient)
- United Kingdom and Ireland birthplace (with a negative coefficient).

However, when introduced together, the association between some of these factors led to inferior or insignificant estimates for some of the variables. Consequently, retaining the recent migrant and Australia birthplace identifiers (as they remained significant and together produced a superior estimate) resulted in some 81% of the variation in labour force participation rates to be explained, that is, an additional 22 percentage points is explained by the introduction of the migrant-related characteristics.

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Equation

$LFPR_{ijt} = 0.96\ QV_{ijt} + 0.81\ A25t54_{ijt} + -7.58\ Rrec + 8.52\ Baustralia + 5.15\ T2006 + 5.64\ Bnzl$ adj $R^2 = 0.83$

(10.58) (30.04) (-6.10) (5.65) (4.52) (2.38)

where $LFPR_{ijt}$ = labour force participation rate (%) of group ijt

noting that ijt = group with birthplace i, years in New Zealand j for census year t

QV_{ijt} = percentage of group ijt that have vocational qualifications

$A25t54_{ijt}$ = percentage of group ijt that are aged 25–54 years old

T2006 = identifier for 2006 census year

Rrec = identifier for recent migrants

Baustralia = identifier for migrants born in Australia

Bnzl = identifier for New Zealand born

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At this stage, adding the New Zealand born identifier is also appropriate, with a significant positive coefficient. However, its significance is marginal, adding another 2 percentage points to the overall explanation.

Hence, we conclude that, after controlling for qualifications and age, certain migrant-related characteristics are significant in the determination of labour force participation rates. In particular, both Australia and New Zealand born sub-groups have significantly higher participation rates than other sub-groups. In contrast, recent migrants have significantly lower participation rates.

However, these migrant-related factors account for less than a quarter of the overall variation in participation rates over the 1996–2006 period. On the other hand, nearly 60% can be explained by the combination of qualification and age-related variables and the fact that 2006 participation rates are higher than in previous years across all groups.

10.2.2 Determining the unemployment rate

Table 10.4 lists the unemployment rate in 2006 of each of the 19 sub-groups. We note the lowest rate was the 2.3% for earlier migrants born in the United Kingdom and Ireland, while the highest was the 11.6% for recent migrants born in Asia. Across all recent migrants, the unemployment rate was 8.6%, while the figure for all migrants (i.e. the total overseas born population) was 6.0%. The comparable number for the New Zealand born sub-group in 2006 was 4.8%.

Table 10.4 Unemployment rate (%) for each sub-group 2006

		Years in New Zealand			
		<5	5 to 15	>=15	Total
Birthplace	Australia	5.2	7.5	4.4	5.3
	Pacific Islands	10.9	8.8	6.1	7.8
	UK & Ireland	4.5	3.2	2.3	3.0
	Europe & N. America	7.0	5.1	2.7	4.7
	Asia	11.6	8.2	4.1	8.9
	Other	7.4	6.6	3.3	6.5
	Total overseas born	*8.6*	*6.8*	*3.6*	*6.0*
	New Zealand				4.8
	Total population				5.1

The non-migrant-related variables successful in explaining the rate of unemployment within each population group were age-related, along with the identifier for the 2006 census year. The two age-related variables were the proportion aged 15–24 and the proportion aged 24–54. Both of these have positive coefficients. This reflects the fact that these age groups are more likely to be participating in the labour force and, so, more likely to be unemployed. The 2006 census year identifier has a negative coefficient. The significance of this variable and its sign is unsurprising given the reduction in the economy-wide unemployment rate over the latter-half of the 1996–2006 period.

These three variables together explain 45% of the variation in unemployment rates across the different groups.

As for the migrant-related variables, when introduced individually, we particularly note that New Zealand born identifier was insignificant in determining the unemployment rate. Further, the identifiers for intermediate and earlier migrants were also insignificant. Of the other migrant-related variables, those found to be significant were:

- recent migrants (with a positive coefficient)
- intermediate migrants (with a negative coefficient)
- Australia birthplace* (with a negative coefficient, but see note below)
- Pacific Islands birthplace* (with a positive coefficient, but see note below).

(* It should be noted that the introduction of the identifiers marked with an asterisk did significantly erode the robustness of the equation to make it unsatisfactory.)

Each of these variables added in the range of 7–11 percentage points to the explanatory power of the estimated equation. This took the total explained by the equations to 52% to 56%.

However, attempts to include all these variables (or sub-sets thereof) together into one equation were not successful, that is, this process resulted in the relationships between the variables being too difficult to separately identify. Consequently, the robustness of the estimated equation including these migrant-related variables was significantly eroded.[16]

Thus, we conclude that there remain many factors that determine the rate of unemployment across various sub-groups of a population. It is clear that the relative age composition of a group is a significant factor in its unemployment rate. In addition, unemployment rates within the groups in 2006 are significantly different to those in earlier census years. Of the many other variables likely to influence groups' unemployment rates, there is a selection of migrant-related factors. However, the determination of unemployment rates appears complex, and isolating the effects of individual migrant factors (and other influences) was not successful with the limited range of variables investigated by this study.

Equation

$UNEM_{ijt} = 0.31\ A15to24_{ijt} + \quad\quad 0.07\ A25to54_{ijt} + \quad\quad -3.96\ T2006$ adj $R^2 = 0.45$

$\quad\quad\quad\quad (6.09) \quad\quad (3.85) \quad\quad (-3.50)$

where $UNEM_{ijt}$ = unemployment rate (%) of group *ijt*

noting that *ijt* = group with birthplace i, years in New Zealand j for census year t

$A15to24_{ijt}$ = percentage of group *ijt* that are aged 15–24 years old

$A25to54_{ijt}$ = percentage of group *ijt* that are aged 25–54 years old

T2006 = identifier for 2006 census year = 2006

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[16] That is, the residuals did not pass the test of independence.

10.3 Relationships determining occupations of sub-groups

The determinants of the proportions of each group employed as professionals, and associate professionals and technicians were investigated. However, we report that efforts to explain proportions in each group that are employed in trades occupations were unsuccessful.

Employment in professional, and associate professional and technician occupations recorded large changes over recent years. Indeed, Table 10.55 confirms that the number of migrants in professional occupations grew by more than 50,000 over the past five years. That is, migrants accounted for more than 40% of the total change in this occupation group between 2001 and 2006.

Table 10.5 Persons employed in professional occupations in New Zealand

	Number			change	
	1996	2001	2006	96-01	01-06
Australia	6,942	8,193	10,821	1,251	2,628
Pacific Islands	5,166	7,950	11,739	2,784	3,789
UK & Ireland	38,697	44,244	56,199	5,547	11,955
Europe & N. America	11,808	14,373	19,665	2,565	5,292
Asia	12,306	18,894	36,969	6,588	18,075
Other	5,205	10,461	18,348	5,256	7,887
Unspecified overseas	573	189	600	-384	411
Total overseas born	*80,697*	*104,304*	*154,341*	*23,607*	*50,037*
New Zealand	297,027	350,340	418,578	53,313	68,238
Unknown birthplace	2,721	1,338	2,445	-1,383	1,107
Total population	**380,445**	**455,982**	**575,364**	**75,537**	**119,382**

This observation is even more striking when looking at the associate professional and technician category. As listed in Table 10.6, the number of migrants employed in these occupations rose by more than 22,600 in the last five years. As a result, migrants accounted for more than half of the total expansion in employment in this category over the 2001–2006 period.

Table 10.6 Persons employed in associate professional and technician occupations in New Zealand

		Number			change	
		1996	2001	2006	96-01	01-06
Birthplace	Australia	4,815	4,872	5,955	57	1,083
	Pacific Islands	3,762	5,304	7,800	1,542	2,496
	UK & Ireland	23,694	22,209	25,767	-1,485	3,558
	Europe & N. America	8,385	8,232	10,458	-153	2,226
	Asia	5,643	8,055	17,028	2,412	8,973
	Other	2,373	3,873	8,016	1,500	4,143
	Unspecified overseas	387	162	330	-225	168
	Total overseas born	*49,059*	*52,707*	*75,354*	*3,648*	*22,647*
	New Zealand	279,246	273,942	291,870	-5,304	17,928
	Unknown birthplace	2,892	1,503	2,511	-1,389	1,008
	Total population	**331,197**	**328,152**	**369,735**	**-3,045**	**41,583**

For this category, we particularly note the difference between the 1996–2001 experience and that between 2001 and 2006. The contraction over the earlier five-year period resulted in mixed outcomes across the different birthplace groups. However, the dramatic expansion over the latter five-year period appears to have been spread over all sub-groups.

10.3.1 Determining professional occupations

Table 10.7 lists the proportion in 2006 of each of the 19 sub-groups that were employed in professional occupations. This rate was highest for recent migrants born in the United Kingdom and Ireland at 33.9% and lowest for recent migrants born in the Pacific Islands, at 7.4%. Across all recent migrants, 18.5% were employed in professional occupations, while the figure for all migrants (i.e. the total overseas born population) was 19.6%. The comparable number for the New Zealand born sub-group in 2006 was 18.8%.

Table 10.7 Percentage of each sub-group in professional occupations 2006

		Years in New Zealand			
		<5	5 to 15	>=15	Total
Birthplace	Australia	29.4	20.6	21.3	22.1
	Pacific Islands	7.4	9.4	11.2	9.6
	UK & Ireland	33.9	33.6	20.8	24.2
	Europe & N. America	25.0	29.1	20.2	22.8
	Asia	11.9	19.0	23.7	16.4
	Other	21.6	29.9	32.8	26.4
	Total overseas born	*18.5*	*22.4*	*19.7*	*19.6*
	New Zealand				18.8
	Total population				18.2

Of the non-migrant-related variables, the proportion of a group that have vocational or degree qualifications are most significant in determining the proportion of a group that are employed in professional occupations. Indeed, these two variables are successful in explaining nearly 81% of the variation in employment in professional occupations. As expected, both coefficients are positive, indicating the higher the proportion of a group that have such qualifications, then the higher the proportion employed in professional occupations. As an example, the relationship between proportions of a group with degree qualifications and proportions in professional occupations is illustrated in Figure 10.3.

Figure 10.3 Professional occupations and degree qualifications
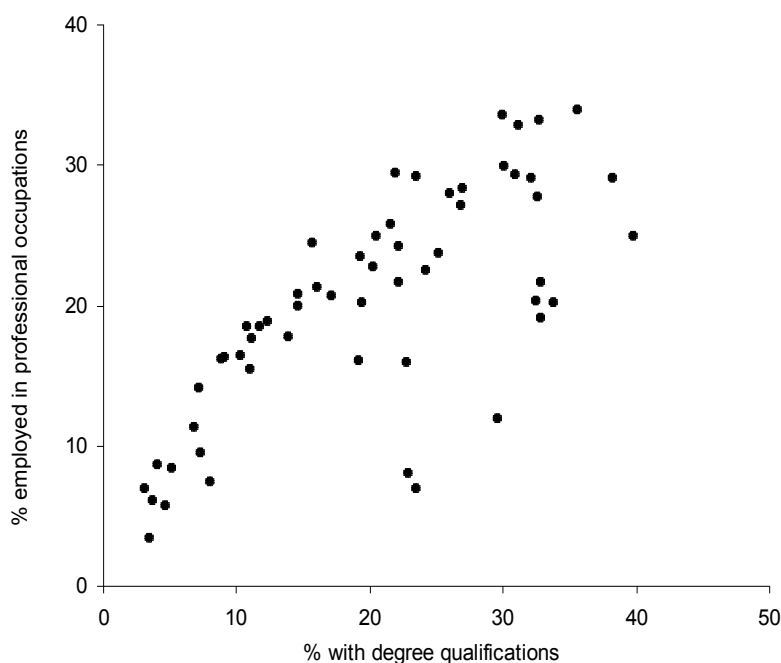
We note that none of the census year identifiers were found to be significant. This implies that the determination of proportions in professional occupations has remained unchanged over the 1996–2006 period. Age-related factors were also not significant here.

As for migrant-related variables, all except one, on introduction, were found to be insignificant in adding further to the explanation. The one exception was, again, the identifier for recent migrants. The negative coefficient here means that, controlled for qualification, recent migrants have a lower proportion employed in professional occupations. The introduction of this variable adds a further 5% to the explanatory power of the equation.

We particularly note the insignificance of all the migrant birthplace identifiers, including New Zealand born, in determining the percentage of those in professional occupations. In addition, the intermediate and earlier migrant identifiers were also insignificant.

Hence, we conclude that the determination of the percentage of those in professional occupations was dominated by qualifications characteristics and not significantly related to birthplace, over the 1996–2006 period. We further note, the similarity of this conclusion (and the explanators included in the associated equation) with that stated earlier for high-income earners.

Equation

$$\text{Oprof}_{ijt} = 0.63\ \text{QV}_{ijt} + 0.55\ \text{QD}_{ijt} + -4.38\ \text{Rrec} \qquad\qquad \text{adj } R^2 = 0.86$$
$$\phantom{\text{Oprof}_{ijt} = }(13.62)\qquad(13.40)\qquad(-4.78)$$

where Oprof_{ijt} = percentage of group *ijt* employed in professional occupations

           noting that *ijt* = group with birthplace i, years in New Zealand j for census year t

      QV_{ijt} = percentage of group *ijt* that have vocational qualifications

      QD_{ijt} = percentage of group *ijt* that have degree qualifications

      Rrec = identifier for recent migrants

10.3.2 Determining associate professional and technicians occupations

Table 10.8 lists the proportion in 2006 of each of the 19 sub-groups that were employed in associate professional and technician occupations. This rate was highest for recent migrants born in Australia at 13.8%, while the lowest was the 6.1% for intermediate migrants born in Pacific Islands. Across all recent migrants, the rate was 9.7%, while the figure for all migrants (i.e. the total overseas born population) was 9.6%. The comparable number for the New Zealand born sub-group in 2006 was 13.1%.

Table 10.8 Percentage of each sub-group in associate professional and technician occupations 2006

		Years in New Zealand			
		<5	5 to 15	>=15	Total
Birthplace	Australia	13.8	12.1	12.0	12.2
	Pacific Islands	6.4	6.1	6.8	6.4
	UK & Ireland	14.3	14.6	9.9	11.1
	Europe & N. America	12.6	14.9	11.3	12.1
	Asia	7.1	8.0	8.7	7.6
	Other	11.9	11.0	12.8	11.5
	Total overseas born	***9.7***	***10.0***	***9.6***	***9.6***
	New Zealand				13.1
	Total population				11.7

Again, the non-migrant-related variables successful in explaining those employed in associate professional or technician occupations were vocational and degree qualifications. In this case, these two variables are successful in explaining nearly 71% of the variation in employment in professional occupations. As with the professional occupations, none of the census data year identifiers was found to be significant. Thus, the determination of proportions in associate professional and technician occupations has remained unchanged over the 1996–2006 period. Age-related factors were also not significant here.

As for the migrant-related variables, we found the New Zealand born identifier to be significant, with a positive coefficient. This implies that New Zealand born groups, after controlling for qualifications, were significantly more likely than other groups to be employed in associate professional and technician occupations. This identifier added 3 percentage points to the determination, taking the total explanatory power of the equation to 74%.

Of other migrant-related variables, when introduced individually, those found to be significant were:
• recent migrants (negative coefficient)
• intermediate migrants (positive coefficient)
• Australia birthplace* (positive coefficient, but see note below)
• Europe and North America birthplace (positive coefficient)
• Other birthplace (negative coefficient)

(* It should be noted that the introduction of the Australia birthplace identifier did significantly erode the robustness of the equation and make it unsatisfactory. Individually, each of these variables added in the range of a further 2–5% to the explanatory power of the estimated equation.)

Attempts to include all these variables (or sub-sets thereof) into the one equation were of varying success, that is, this resulted in the relationship between the variables to be difficult to separately identify. In several cases, the robustness of the estimated equations, including these migrant-related variables, were significantly eroded[17] and thereby rendered unsatisfactory.

However, a satisfactory equation was determined. This retained the identifier for recent migrants, and those born in Europe and North America, as well as the Other birthplace region. Including these three additional migrant-related characteristics added 9 percentage points to the explanatory power of the estimated relationship. Consequently, this equation successfully explained 83% of the variation in the proportion employed in this occupation group.

Despite the relatively low level of significance of the migrant-related factors, the identification of three different birthplace identifiers[18] in this equation suggests their significance should not be understated.

We conclude that, while the determination of those in associate professional and technician occupations was dominated by qualifications characteristics, migrant-related factors played an important role over the 1996–2006 period. After controlling for qualification factors, employment in these occupations is clearly related to birthplace. Those born in New Zealand, and Europe and North America are more likely to be employed in these occupations, while those born in the

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[17] That is, the residuals did not pass the test of independence.

[18] And further noting the significance of the other birthplace identifiers, although their independence could not be established.

Other birthplace region are less likely. In addition, recent migrants are also significantly less likely to be employed in these occupations.

<div style="border:1px solid black; padding:10px;">

<u>Equation</u>

$\text{Oapftec}_{ijt} = \qquad 0.46\ \text{QV}_{ijt} + \qquad 0.15\ \text{QD}_{ijt} + \qquad -1.22\ \text{Rrec} + \quad 1.35\ \text{Ben} +$
$\qquad -2.02\ \text{Bother} + \qquad 2.91\ \text{Bnzl} \qquad \text{adj } R^2 = 0.83$
$\qquad (19.14) \qquad (6.71) \qquad (-2.69) \qquad (2.27) \qquad (-3.38) \qquad (3.20)$

where $\quad \text{Oapftec}_{ijt}$ = percentage of group ijt employed in associate professional and technician occupations

$\quad \text{QV}_{ijt}$ = percentage of group ijt that have vocational qualifications

$\quad \text{QD}_{ijt}$ = percentage of group ijt that have degree qualifications

$\quad \text{Rrec}$ = identifier for recent migrants

$\quad \text{Ben}$ = identifier for migrants born in Europe and North America

$\quad \text{Bother}$ = identifier for migrants born in Other region

$\quad \text{Bnzl}$ = identifier for New Zealand born

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Preceding the above formal multivariate analysis, we provided observations from numerous cross-tabulations of the data (sections 5–8). As noted earlier, not all cross-tabulations can be covered in this report. However, the spreadsheet tool has been developed to enable desired comparisons to be easily generated and depicted. A selection of comparisons regarding income of migrants was provided in section 5. Sections 6–8 provided a selection covering source of income, labour market status and occupation respectively.

10.4 Additional details of multivariate analysis

Each of the estimated relationships took the following form:

$$Y_{ijt} = a^m\, A^m_{ijt} + q^k Q^k_{ijt} + \alpha^o\, T^o + \beta^b\, B^b_{ijt} + \delta^r\, R^r_{ijt}$$

where

$\qquad A^m_{ijt}$ = proportion of group ijt that is in age group m

$\qquad Q^k_{ijt}$ = proportion of group ijt that possess qualifications of type k

$\qquad T^o_{ijt}$ = identifier (dummy) for census year (i.e. T=1 if o=t, T=0 otherwise)

$\qquad B^b_{ijt}$ = identifier (dummy) for birthplace characteristic (i.e. B=1 if b=i, B=0 otherwise)

$\qquad R^r_{ijt}$ = identifier (dummy) for years in New Zealand characteristic (i.e. R=1 if r=j, R=0 otherwise)

$\qquad$ ijt = group with birthplace i and years in New Zealand j for census year t

$\qquad$ i = New Zealand, Australia, Pacific Islands, United Kingdom and Ireland, Europe and North America, Asia, Other

$\qquad$ j = less than 5 years, 5–14 years, 15 or more years, if i≠New Zealand; all if i = New Zealand

$\qquad$ t = 1996, 2001, 2006

and

$\qquad$ a, q, α, β and δ are coefficients

$\qquad Y_{ijt}$ = dependent variable for population group ijt to be explained.

Within this construction, we have 19 different population groups (i.e. six different non-New Zealand birthplaces, each with three sub-groups according to years in New Zealand, and one New Zealand born group). For each of these 19 groups, we have three census year observations, thus making a dataset with 57 observations in all.

Our first step was to investigate the presence, if any, of relationships excluding any of the migrant-specific characteristics. We also exclude the census year dummy variables. In other words, we set $\alpha=\beta=\delta=0$, for all i, j and t.

Next, we introduced each census year dummy identifier to establish their significance.

Thereafter, we progressively introduced each migrant specific identifier individually, testing for their significance as well as the robustness of the equation.

Once the set of significant migrant characteristics were established, they were together introduced into the equation to enable associations and independence to be eliminated. Thus, the final relationship chosen was the one with the highest explanatory power subject to tests of significance and independence of residuals.

The dependent variables investigated within this construction were as follows:

$Ytop3_{ijt}$ percentage of population group ijt that has income above the 70th percentile of the national income distribution

$Ybottom3_{ijt}$ percentage of population group ijt that has income below the 30th percentile of the national income distribution

$LFPR_{ijt}$ labour force participation rate (%) of population group ijt

$UNEM_{ijt}$ unemployment rate (%) of population group ijt

$Oprof_{ijt}$ percentage of population group ijt that are employed in professional occupations

$Oapftec_{ijt}$ percentage of population group ijt that are employed in associate professional or technician occupations.

As noted in the text, attempts to estimate equations for the proportion in each sub-group that are employers and self-employed were unsuccessful. In addition, attempts to estimate an equation to explain the proportion of the population sub-groups employed in trades occupations also proved unsuccessful.