

NEW ZEALAND POPULATION REVIEW

Volume 36
2010

Editors

W. Friesen
A. Zodgekar
A. Reid



PANZ

Population Association of
New Zealand

Population Association of New Zealand
Te Roopu Waihanga Iwi o Aotearoa

A forum for the discussion, study and promotion of
population issues in New Zealand

2010/11 Council

President:	Alison Reid
Vice President:	Natalie Jackson
Hon. Secretary:	Adele Quinn
Hon. Treasurer:	Anne Henderson

Mike Berry	Cyril Mako
Kim Dunstan	James Newell
Ward Friesen	Arvind Zodgekar
Tahu Kukutai	Martin Tobias

Membership Provides

access to a **network** of individuals and organisations
interested and active in population matters

opportunity to contribute and **participate** in the Association's
activities, including a biennial conference

access to information through the Association's publications,
including the *Population Review*

New Members are Welcome

For further details go to our website: www.population.org.nz

Membership Fees for the 2011/2012 Year:

Ordinary Member:	\$45.00
Associate Member (students and unwaged):	\$20.00
Publication Member (libraries & other organisations within NZ):	\$65.00
Publication Member (libraries & other organisations Overseas):	\$100.00
Corporate Subscriptions	\$100.00

NEW ZEALAND POPULATION REVIEW

Vol 36

2010

ARTICLES

- Missing Men and Unacknowledged Women: Explaining 1
Gender Disparities in New Zealand's Prime Adult Age
groups 1986 – 2006

RICHARD BEDFORD, PAUL CALLISTER, ROBERT DIDHAM

- Projections of New Zealand Mortality Using the Lee- 27
Carter Model and its Augmented Common Factor
Extension

JACKIE LI

- Moving In and Out of Areas of Deprivation: Evidence from 55
the New Zealand Census

PHILIP S. MORRISON AND KIRSTEN NISSEN

- Migration, Home and Belonging: South African Migrant 81
Women in Hamilton, New Zealand

ANNIKA PHILIPP AND ELSIE HO

RESEARCH NOTES

- The 'Meet Market': A Research Update 103

PAUL CALLISTER AND ROBERT DIDHAM

- Informing the Debate on Population Ageing in New 117
Zealand: the role of Statistics New Zealand

MANSOOR KHAWAJA AND BILL BODDINGTON

POLICY NOTE

- Demography, Diaspora and Diplomacy: New Zealand's 137
Asian Challenges

ANDREW BUTCHER

Editors

Wardlow Friesen

Alison Reid

Arvind Zodgekar

Contact Address:

Dr. Wardlow Friesen

School of Environment

The University of Auckland

Private Bag 92019

Auckland

Email: w.friesen@auckland.ac.nz

Production and editing

Alison Reid

Email: Alison.reid@arc.govt.nz

© 2010 Population Association of New Zealand

ISSN 0111-199X (Print)

ISSN 1179-8149 (Online)

Missing Men and Unacknowledged Women: Explaining Gender Disparities in New Zealand's Prime Adult Age Groups, 1986- 2006

RICHARD BEDFORD *

PAUL CALLISTER †

ROBERT DIDHAM ‡

Abstract

Questions concerning the widening disparity in numbers of males and females in the prime working age groups in New Zealand's population have attracted attention from researchers and the media in recent years. This paper reviews some of the findings from research for a FRST-funded programme that has been investigating several inequalities based on gender and ethnicity in New Zealand's population. The analysis here complements and extends that in our paper published in the *New Zealand Population Review* in May 2006. Our main finding is that a complex combination of issues related to the way our stock (census) and flow (arrival/departure) data are used to compile population estimates (the base for population projections), have contributed to exaggerating apparent gender disparities in the 20-49 year age groups at successive censuses. There is no single explanation for this, and the main new finding from our analysis is that gender disparities in the prime adult age groups in New Zealand's population are as much a function of 'unacknowledged women' as of 'missing men'.

A n apparent deficit of men aged 20-49 years in New Zealand's population, or a 'man drought' as the media like to term this situation, became the subject of considerable public comment and speculation in the mid-2000s (Callister et al., 2006a, 2006b; Laugesen and

* Professor of Population Geography in the National Institute of Demographic and Economic Analysis (NIDEA) at the University of Waikato and Pro Vice-Chancellor (Research) at AUT University, Auckland.
E-mail: rdb@waikato.ac.nz.

† Institute of Policy Studies, Victoria University of Wellington

‡ Statistics New Zealand

Courtney, 2005; Salt, 2005). The phenomenon attracted attention because in national populations it is usual for the number of men to exceed the number of women at all ages from birth to around 50 years - unless a process is removing unusually large numbers of men, or adding more females, to the adult population. Significant gender disparities in the prime working ages can be found in populations heavily impacted by sex-selective international migration. Examples include male deficits in populations where there is extensive overseas labour migration of men (for example, Cook Islands and Niue in the 1970s and 1980s), or surpluses of working age men or women in countries seeking extensive immigrant labour (for example, several of the Middle East oil exporting countries).

In New Zealand, the puzzle about 'missing men' in age groups where it is normal for males to exceed the numbers of females has not been resolved by reference to sex-selective permanent and long-term net migration (Callister et al., 2006a, 2006b, 2007), or to sex-selective under-enumeration in the census (Bycroft, 2006), nor to unusually high sex-selective mortality (Callister et al., 2006a; Callister & Didham, 2009). These make contributions to the disparities, but cannot solely account for it.

The deficit of men aged 20-49 years is not unique to New Zealand's population. It is apparent in Australia's 2006 census, although not nearly as pronounced as it is in recent New Zealand census data (Salt, 2008). It is also found in some Pacific Island countries where there is a long history of extensive emigration, especially of young adult men (Haberkorn, 2007/08). In New Zealand's case, the male deficit is significantly larger in proportional terms than that found in recent Australian censuses (Callister et al., 2006b). This is despite the fact that for much of the period over which the gender gap has been widening in New Zealand the country has been experiencing net migration gains rather than losses. Indeed, between 1 April 1986 and 31 March 2010 New Zealand had an aggregate net gain of almost 183,300 through permanent and long-term (PLT) migration.

While this overall PLT net migration gain cannot provide a convenient, simple answer to the puzzle, we need to keep in mind that the 183,300 surplus of PLT arrivals over PLT departures is the balance of a sizeable net loss of New Zealand citizens (-513,200) that is more than offset by the net gain of 696,500 citizens of other countries during the 24 years. The question that then arises concerns the gender balance in the net gains and losses in

these two populations – the New Zealanders travelling overseas and the immigrants and visitors who are not travelling on New Zealand passports.

The results presented in this paper have emerged from an extensive examination of the ‘missing men’ puzzle that has been undertaken as part of a FRST-funded research programme examining a range of disparities and inequalities, as can be identified by gender and ethnicity in New Zealand’s extant population, education and employment data bases (Callister, 2007). The discussion focuses on the migration dimension of the puzzle, including an analysis of the complications caused by ‘category jumping’ in reconciling net migration gains and losses, by gender, for PLT and total migration flows in New Zealand. This reconciliation is important because it impacts on the assumptions made about net migration by age and sex that influence both the mid-year estimates of the resident population (ERP) each year, and the projections of future population change that draw on the ERP for their base populations.

The first part of the paper revisits the gender balance in the 20-49 year age group in New Zealand’s censuses since 1901. The gender balance in recent projections of the population in this age group is also examined briefly with reference to three broad age groups: 20-29, 30-39 and 40-49 years. The analysis then shifts from the census data to the permanent and long-term (PLT) arrival and departure data, firstly with reference to the net gains and losses to 10 cohorts since the early 1960s, and secondly with reference to net migration gains and losses for the age group as a whole between January 1986 and December 2005. The final section examines the differences between the PLT and total net migration estimates by age group and gender since the late 1990s drawing on the ‘head count’ data as well as the readily available sample data for total arrivals and departures that have been produced since 1998.

A recurring theme through the analysis is the tension between an explanation for the growing deficits of males in the prime working ages that highlights greater net migration losses of men than women (the ‘missing men’ explanation) and an explanation which has become particularly evident in the arrival departure statistics in recent years that places more emphasis on ‘unacknowledged women’ in the estimates of net migration gains and losses that are based on the PLT data. There is no single explanation for the ‘missing men’, and the often-cited ‘exodus’ of New Zealanders to

Australia, especially since the late 1970s, is certainly not an adequate simple answer (Callister et al., 2006a). Rather the explanation for the male deficits lies in a complex mix of three major interacting factors – net migration losses of men, category-jumping by women, and differential census undercount for males and females.

Therefore, the search is not so much for ‘missing men’, but rather to establish whether there are an unexpectedly large number of women in the census population of 20-49 year olds.

This somewhat belated focus on unacknowledged women, after an extensive search for an explanation for an unanticipated short-fall in numbers of men would not have surprised some analysts such as Marilyn Waring. She has been arguing for many years that women tend to be rendered invisible in social and economic analysis (refer to Waring, 1988).

Situating the Missing Men Puzzle: the Censuses 1901-2006

Between 1986 and 2006 sex ratios amongst the resident population aged between 20 and 49 years in New Zealand’s Census of Population and Dwellings dropped from 1.001 males per female to 0.934 males per female – the lowest for this age group at any census in the 20th century other than in 1945 (0.886) when troops were still returning from war overseas (Table 1). The only other census year between 1901 and 2006 when the sex ratio was below 1.000 for the age group 20-49 years was in 1916 (0.935) when thousands of New Zealanders, especially men, were overseas fighting in Europe.

Table 1: Sex ratios, population aged 20-49 years, 1901-2006

Year	20-29	30-39	Sex ratio 40-49		
				20-49	All ages
1901	1.021	1.114	1.293	1.105	1.107
1906	1.117	1.161	1.209	1.150	1.127
1911	1.115	1.167	1.155	1.142	1.116
1916	0.739	1.006	1.132	0.935	1.007
1921	<i>0.941</i>	1.023	1.116	1.019	1.046
1926	1.029	<i>0.951</i>	1.075	1.017	1.044
1936	1.034	1.021	<i>0.952</i>	1.006	1.028
1945	0.748	0.938	1.001	0.886	0.954
1951	1.034	<i>0.986</i>	1.053	1.023	1.009
1956	1.062	1.010	1.027	1.033	1.012
1961	1.037	1.059	0.996	1.031	1.010
1966	1.038	1.063	1.009	1.037	1.008
1971	1.028	1.029	1.046	1.034	<i>0.999</i>
1976	1.024	1.024	1.056	1.032	<i>0.997</i>
1981	1.015	1.002	1.025	1.013	<i>0.988</i>
1986	1.007	0.989	1.008	1.001	0.982
1991	0.981	0.970	0.999	0.982	0.971
1996	0.962	0.949	0.981	0.963	0.966
2001	0.948	0.911	0.952	0.935	0.952
2006	0.966	0.900	0.939	0.934	0.953

Source: Unpublished time series, censuses 1901-2006, Statistics New Zealand

The twenty years between 1986 and 2006 thus stand out as something of an anomaly in the historical record of New Zealand's 20th century censuses, with respect to the balance between males and females aged between 20 and 49 years. Unlike the other two occasions during the century when sex ratios for this age group fell below unity, war cannot be cited as an explanation for the absence of men in the prime working and family development age groups. The two decades between 1986 and 2006 were ones of significant economic change in New Zealand, but it was not change that had an obvious gender bias, at least not to the extent of being responsible for a growing depletion in numbers of men in this age group. The extent of the male deficit in the 20-49 year age group can be seen in Table 2.

Table 2: Male surplus/deficit, population aged 20-49, 1901-2006

Year	Male surplus/ deficit			20-49	All ages
	20-29	30-39	40-49		
1901	1585	5517	9219	16321	39041
1906	10300	9712	7942	27954	53177
1911	10742	12717	7457	30916	55036
1916	-24879	578	8140	-16161	3985
1921	-5821	2156	8638	4973	27457
1926	3108	-4866	6619	4861	28939
1936	4280	2204	-4569	1915	20751
1945	-39052	-7723	64	-40711	-37574
1951	4745	-1923	6205	9027	8410
1956	8710	1540	3558	13808	12604
1961	5450	9125	-619	13956	11768
1966	6744	9595	1346	17685	10567
1971	5867	4477	7197	17541	-919
1976	5909	4533	8611	19053	-5299
1981	3786	423	3903	8112	-18213
1986	1950	-2601	1419	768	-29916
1991	-5318	-7882	-202	-13402	-48819
1996	-10489	-15209	-4852	-30550	-63378
2001	-13081	-26988	-13346	-53415	-91266
2006	-8808	-30339	-19218	-58365	-96717

Source: Unpublished time series, censuses 1901-2006, Statistics New Zealand

In all years except 1916 and 1945 and the period between 1991 and 2006 there were overall male surpluses in the age group 20-49 years with a high degree of consistency in these from the mid-1950s to the mid-1970s. There was some variability across the three ten year age groups shown in Table 2 reflecting, in the main, the ageing of those who returned from the Second World War. Thus in 1951 there was a deficit of males in the age group 30-39 years (-1,923), which was reflected 10 years later in the deficit in the 40-49 age group (-619). However, recovery in the adult male population after the war, largely as a result of extensive immigration, was quickly masking the effect of war-time fatalities on New Zealand's gender balance at working ages. In the case of the aftermath of the First World War, the recovery was much slower – the 1926 deficit in males aged 30-39 years (-4,866) is followed by a deficit of -4,569 ten years later in the age group 40-49 years. There was much less migration-led recovery in the male

population after WWI, largely because of the impact of the Great Depression.

Between the censuses in 1976 and 1981 the surplus of males over females aged 20-29 years more than halved from just over 19,000 (1976) to just over 8,000 (1981). During this period New Zealand experienced the economic impact of the second major oil price rise, and the largest net out-migration of New Zealanders ever recorded. However, this net out-migration, which was male-dominated (see below), did not result in any deficits in the 20-49 year age group, although the surpluses in the three 10 year age groups shown in Table 2 fell markedly. By 1986 the overall surplus of males aged between 20 and 49 years had dropped to 768, with a reasonably large deficit (-2,601) appearing in the age group 30-39 years for the first time since 1951. There were still male surpluses for those aged in their 20s and 40s in 1986 but these were much lower than they had been five years earlier (Table 2).

Over the next 20 years New Zealand's population aged between 20 and 49 years experienced a very rapid gender transformation with male deficits increasing between censuses at an unprecedented rate, especially in the age group 30-39 years. In the 1986 census there were 2,601 fewer males than females in the resident population. This deficit had trebled by 1991 (-7,900), more than doubled by 1996 (-15,209), and had doubled again by 2006 (-30,339). In the most mobile age group for New Zealanders, people aged 20-29 years, the deficits were much smaller at every census than they were for the 30-39 year population. The biggest contributions to the disparities in each census year are found in the age group 30-39 years, perhaps reflecting a mix of immigration of women, as well as emigration of men. We return to the evidence from migration data shortly.

Looking ahead to the mid-21st century, projections prepared by Statistics New Zealand in 2008 suggested that the sex ratio for the age group 20-49 years was unlikely to fall below 0.950, assuming there were no major wars or marked shifts in patterns of mortality, in any of the five year periods between 2006 and 2051 (Table 3). It is evident from the figures produced by the medium projection variant for the national population that the sex ratios start to converge again for the three age groups (Table 3).¹ This convergence is already beginning to occur in the sex ratios for those aged 20-29 years by 2006 and by 2011 the sex ratio for this age group had

regained a male dominance in the projected population. For the 30-39 year age group, the male dominance does not return until 2026 according to the projected population structures, and 2036 for the 40-49 year age group (Table 3). For the 20-49 year age group as a whole, the projections forecast a return to male dominance in the prime adult population by 2031. According to the projections, this would be the first time the 20-49 year population had more males than females since 1986 (Table 3).

Table 3: Projected sex ratios, population aged 20-49 years, 1986-2051

Year	Sex ratio			20-49	All ages
	20-29	30-39	40-49		
<i>Census</i>					
1986	1.007	0.989	1.008	1.001	0.982
1991	0.981	0.970	0.999	0.982	0.971
1996	0.962	0.949	0.981	0.963	0.966
2001	0.948	0.911	0.952	0.935	0.952
2006	0.966	0.900	0.939	0.934	0.953
<i>Projected</i>					
2011	1.013	0.915	0.925	0.950	0.963
2016	1.045	0.937	0.911	0.963	0.966
2021	1.052	0.972	0.916	0.979	0.967
2026	1.051	1.003	0.936	0.996	0.968
2031	1.058	1.009	0.970	1.011	0.968
2036	1.064	1.007	1.000	1.023	0.969
2041	1.065	1.015	1.006	1.028	0.970
2046	1.064	1.021	1.004	1.029	0.972
2051	1.065	1.021	1.012	1.032	0.975

Source: Statistics New Zealand Unpublished time series, censuses 1901-2006, projections 2011-2101

According to the 2008 national population projections, there may be more males than females in the age group 20-49 years by 2031. The projected sex ratios between 2036 and 2051 are very similar to those that were found in the period 1951-1971 (Tables 1 and 3). However, this convergence is a function of the assumptions in the projections about the age-sex characteristics of fertility, mortality and migration. It could be that these assumptions, especially as they relate to migration, are only capturing part of the story.

Net Migration Gains and Losses

This section examines the extent of male surpluses or deficits in the permanent and long-term (PLT) net migration data for 5-year age groups between 20 and 49 years for successive birth cohorts.

At any census, the age group 20-49 years includes survivors of six five-year birth cohorts (Table 4). For the five censuses between 1986 and 2006 the birth cohorts represented span a total of 50 years – from the mid-1930s until the mid-1980s. The oldest of the cohorts represented is the survivors of those born between March 1937 and March 1941, and they were aged 45-49 years in 1986. The youngest cohort represented is the survivors of those born between 1982 and 1986 who were aged 20-24 in 2006. They would reach 45-49 years in 2031. (A detailed analysis of the changing gender composition of these cohorts, and the PLT net gains and losses by sex at different ages between 20-49 years at successive censuses between 1986 and 2006 can be found in Bedford et al. (2011)).

Table 4: Five year birth cohorts in the population aged 20-49 years at censuses between 1986 and 2006

Census	Age-group and birth cohort					
	20-24	25-29	30-34	35-39	40-44	45-49
1986	1962-66	1957-61	1952-56	1947-51	1942-46	1937-41
1991	1967-71	1962-66	1957-61	1952-56	1947-51	1942-46
1996	1972-76	1967-71	1962-66	1957-61	1952-56	1947-51
2001	1977-81	1972-76	1967-71	1962-66	1957-61	1952-56
2006	1982-86	1977-81	1972-76	1967-71	1962-66	1957-61

The cohort analysis allowed us to situate the missing men issue in the context of the changing dynamics of birth cohorts between the late 1930s and the mid-1980s. It is evident in the record of the sex ratios and male surpluses/deficits for the different cohort populations that short-falls in numbers of males compared with females occurred first when they were in their 40s and late 30s, later in their early 30s and late 20s, and then most recently in their early 20s (Table 5). The PLT net migration losses worked in the opposite direction – they occurred first, and most frequently when the cohorts were in their early 20s, and then less frequently at older ages where

there were often larger numbers of females in the net gains or net losses (Table 6).

Table 5: Male surpluses/deficits for age groups 20-24 to 45-49 in 10 birth cohorts

Census	Age-group and male surplus/deficit					
	20-24	25-29	30-34	35-39	40-44	45-49
1937-41	2023	2608	1672	2337	1101	789
1942-46	4136	1932	2196	417	633	515
1947-51	3935	2196	6	-372	-717	-692
1952-56	3713	-1425	-2229	-2986	-4160	-4729
1957-61	5211	-1263	-4896	-6629	-8617	-7320
1962-66	3213	-6179	-8580	-12105	-11898	
1967-71	861	-8397	-14883	-15552		
1972-76	-2092	-10883	-14787			
1977-81	-2198	-8007				
1982-86	-801					

Source: Statistics New Zealand

Table 6: PLT net migration gains and losses to the age groups 20-24 and 45-49 years in the 10 birth cohorts

Census	Age-group and PLT net gains / losses					
	20-24	25-29	30-34	35-39	40-44	45-49
1937-41	8914	12608	2973	7062	-4873	-529
1942-46	13584	2654	10812	-7239	-85	-1129
1947-51	-10588	14934	-10092	1238	-250	4812
1952-56	-3568	-17740	2780	973	9489	-25
1957-61	-52475	2102	1945	12072	2068	3924
1962-66	-31863	-36	15945	2541	8772	
1967-71	-36751	13142	4516	13049		
1972-76	-15517	-3344	19579			
1977-81	-26980	15717				
1982-86	954					

Source: Statistics New Zealand

There seems to be an inherent contradiction here, but in fact the two patterns are logical. Sex ratios and male surpluses are highest among younger age groups and diminish with age. The high net losses in most cohorts when they were 20-24 do not necessarily result in the removal of all the surplus of males in the age group's total population. Progressive attrition of male surpluses as the cohorts age through sex-selective

emigration (more men leaving than women) or sex-selective immigration (more women than men arriving) will lead, over time, to sex ratios in the 40s and late 30s falling and eventually reaching a situation where there are more women than men in the age group population.

The PLT Migration System, 1986-2006

New Zealand's international migration system can be described with reference to two major components: trans-Tasman flows of people, and flows of people between New Zealand and other countries in the world. These two components are defined on the basis of responses given by those arriving in, or leaving from, New Zealand for periods of 12 months or more – the permanent and long-term (PLT) migrants. In these statistics there is a residual category for people who did not state a country of last or next permanent residence (CL/NPR) as well as for some New Zealanders who recorded that New Zealand was their country of next residence even though they were leaving for 12 months or more. (The latter disappeared from the statistics from 2000 – the relevant question on the arrival and departure cards was changed to remove any ambiguity with regard to residence of New Zealanders departing for or returning from an overseas stay of 12 months or more.)

Table 7 summarises the PLT arrival, departure and net migration statistics for the period 1 January 1986 to 31 December 2005 – the 20 December years between the 1986 and 2006 population censuses.² Between January 1986 and December 2005 there were 1.25 million PLT arrivals in and 1.13 million PLT departures from New Zealand resulting in an accumulated net gain of just under 121,000. Those aged between 20 and 49 years comprised 63 percent of the arrivals and 66 percent of the departures. The accumulated net gain of people in the prime working ages was 40,498, (the balance between a net loss of 167,201 to Australia, a net gain of 218,151 from other countries, and a net loss of 10,452 amongst those who did not state a CL/NPR or gave New Zealand as their CL/NPR (Table 13)) - a third of the total net gain of 120,862. The major net gain to New Zealand's population over this period was in the age group 0-19 years (75,717 or 62 percent) with a small net gain to those aged 50 and over (4,647 or 4 percent).

Table 7: The PLT migration system, 1986–2005 (December years)

CL/NPR ¹	PLT migration 1986–2005			Percentage	
	Arrivals	Departures	CL/NPR ¹	Arrivals	Departures
20-49 years					
Australia	163,747	330,948	-167,201	20.7	44.2
Other countries	620,781	402,630	218,151	78.6	53.8
NZ and NS	4806	15,258	-10,452	0.6	2.0
Total	789,334	748,836	40,498	100.0	100.0
All ages					
Australia	260,368	556,824	-296,456	20.8	49.3
Other countries	982,876	551,397	431,479	78.7	48.9
NZ and NS	6242	20,403	-14,161	0.5	1.8
Total Dec yrs	1,249,486	1,128,624	120,862	100.0	100.0

1. Country of last/next permanent residence

Source: Unpublished arrival and departure tables, Statistics New Zealand

The gender mix amongst the arrivals, departures and net migration gains and losses in the movers aged 20–49 years, as well as the total PLT flows (all ages), are shown in Table 8. There were heavier net losses of males to Australia than females aged 20–49 years and at all ages. In the case of net migration gains from other countries, women (111,402) outnumbered men (106,749) in the flows of 20–49 year olds while the reverse applied in the total PLT net gain (males exceeded females at all ages) (Table 8). Men aged 20–49 comprised just over a quarter of the total net gain of 40,498 for this age group – PLT migration between 1986 and 2005 generated a much larger net gain of women rather than men to the working age population. The difference between males and females in their shares of the net gain is much smaller for the population at all ages – males comprised 46 percent and females 54 percent of the 120,862 net gain over the 20 years.

Table 8: PLT migration by CL/NPR and sex, 1986–2005

CL/NPR	Arrivals		Departures		Net migration	
	Males	Females	Males	Females	Males	Females
20-49 years						
Australia	84,941	78,806	175,422	155,526	-90481	-76720
Other countries	308,327	312,454	201,578	201,052	106,749	111,402
NZ and NS	2610	2196	8486	6772	-5876	-4576
Total	395,878	393,456	385,486	363,350	10,392	30,106
All ages						
Australia	133,966	126,402	288,891	267,933	-154,925	-141,531
Other countries	493,947	488,929	271,124	278,273	220,823	210,656
NZ and NS	3344	2898	10,977	9426	-7633	-6528
Total	631,257	618,229	570,992	555,632	58,265	62,597
% 20-49 yrs						
Australia	63.4	62.3	60.7	58.0	58.4	54.2
Other countries	62.4	63.9	74.3	72.2	48.3	52.9
NZ and NS	78.1	75.8	77.3	71.8	77.0	70.1
Total	62.7	63.6	67.5	65.4	17.8	48.1

Source: Unpublished arrival and departure tables, Statistics New Zealand

The annual net migration gains and losses of males and females aged 20-49 years for the December years between 1986 and 2005 are shown in Table 9. It is clear from this table that there have been two periods of high net losses for both men and women between 1986 and 1989 and between 1998 and 2000. In both periods the net losses were higher for men than women. The major periods of net gains were between 1994 and 1996 and during 2002 and 2003 (Table 9). In these periods women tended to outnumber men in the net gains. In half of the years during the period the sex ratio of the net loss/gain favoured males (mainly the net losses) while in the other 10 cases the sex ratios favoured women (mainly net gains).

Table 9: PLT net migration gains/losses by year, population aged 20-49 years

December	PLT net migration			Surplus M over F ¹	Sex ratio (M/F)
	Males	Females	Total		
1986	-7436	-4961	-12,397	<i>-2475</i>	1.499
1987	<i>-4213</i>	-2791	-7004	<i>-1422</i>	1.509
1988	<i>-8302</i>	-6199	-14,501	<i>-2103</i>	1.339
1989	<i>-5245</i>	-3426	-8671	<i>-1819</i>	1.531
1990	2117	2544	4661	-427	0.832
1991	1788	1633	3421	155	1.095
1992	1763	665	2428	1098	2.651
1993	2943	3256	6199	-313	0.904
1994	4505	5607	10,112	-1102	0.803
1995	7216	7745	14,961	-529	0.932
1996	5983	6958	12,941	-975	0.860
1997	-91	1417	1326	-1508	<i>-0.064</i>
1998	<i>-4929</i>	-2191	-7120	<i>-2738</i>	2.250
1999	<i>-5162</i>	-2951	-8113	<i>-2211</i>	1.749
2000	-6190	-4859	-11,049	<i>-1331</i>	1.274
2001	615	1011	1626	-396	0.608
2002	10,289	9476	19,765	813	1.086
2003	10,291	10,406	20,697	-115	0.989
2004	3220	4598	7818	-1378	0.700
2005	1230	2168	3398	-938	0.567
Total 20 years	10,392	30,106	40,498	-19,714	0.345

Source: Unpublished arrival and departure tables, Statistics New Zealand

Figures in italics refer to greater net losses of males in situations where there are net losses to both males and females. Other figures with - signs refer to situations where there are fewer males than females in the net migration gains. Overall there were 19,714 fewer males than females in the aggregate net migration gain to New Zealand from PLT migration between 1 January 1986 and 31 December 2005.

The shortfall of males over females in the net gain was 19,714 – the equivalent of a third of the deficit of males aged 20-49 years at the time of the 2006 census. This suggests that a smaller overall contribution to New Zealand's prime working age male population has been made by PLT net migration during the 20 years than is the case for the equivalent female population. It is not necessarily a case of emigration being the main driver of the deficit in working age men even though net losses of men to Australia are higher than those for females (Table 7). There is evidence in the aggregated PLT migration data that the larger net gains of women may not

be being acknowledged sufficiently as a contributor to the ‘man drought’. It could be as much a case of an abundance of women as a shortage of men.

The other useful discriminating variable in this overview of the migration system is citizenship status, which allows the people travelling on New Zealand passports with free access to Australia to be differentiated from those travelling on other passports. Almost 73 percent of the net loss of over 245,000 New Zealand citizens aged between 20 and 49 was to Australia (Table 10). The share of the net gain of 285,835 citizens of countries other than New Zealand, who had come from Australia, was very small by comparison – just 4 percent. Over 96 percent of the net gain of people who were not New Zealand citizens had come from countries other than Australia (Table 10).

Table 10: PLT migration by citizenship, sex and CL/NPR, 1986-2005

CL/NPR	NZ Citizens			Citizens of other countries		
	Arrivals	Departs	Net mig.	Arrivals	Departs	Net mig.
20-49 years						
Australia	112,873	291,511	-178,638	50,874	39,437	11,437
Other countries	207,302	264,158	-56,856	413,479	138,472	275,007
NZ and NS	3487	13,330	-9843	1319	1928	-609
Total	323,662	568,999	-245,337	465,672	179,837	285,835
All ages						
Australia	172,483	492,210	-319,727	87,885	64,614	23,271
Other countries	284,506	344,103	-59,597	698,370	207,294	491,076
NZ and NS	4348	17,429	-13,081	1894	2974	-1080
Total	461,337	853,742	-392,405	788,149	274,882	513,267
% 20-49 yrs						
Australia	65.4	59.2	55.9	57.9	61.0	49.1
Other countries	72.9	76.8	95.4	59.2	66.8	56.0
NZ and NS	80.2	76.5	75.2	69.6	64.8	56.4
Total	70.2	66.6	62.5	59.1	65.4	55.7

Source: Unpublished arrival and departure tables, Statistics New Zealand

When a gender dimension is included in the analysis by CL/NPR and citizenship, it can be seen from the sex ratios that males were more numerous in almost all of the flows, both those to New Zealand as well as those from New Zealand (Table 11). There are a few exceptions to this – the PLT arrival and departure flows of female New Zealand citizens into

and out of countries other than Australia were larger than the corresponding flows for males. There was also a marginally larger number of females travelling on passports of other countries heading for Australia (20,190) than was the case for males (19,247) – the sex ratio for this flow is 0.953 (Table 11). The main explanation for the much smaller overall net gain of males aged 20–49 years (10,392) in the PLT flows between 1986 and 2005 than the net gain for females (30,106) (Table 8) lies in the smaller loss of female New Zealand citizens to Australia (-81,881) than was the case for male New Zealand citizens (-96,707) (Table 11). It is the New Zealand citizen flow to Australia, rather than the flows of citizens of other countries, that is responsible for most of the male deficit in the overall net migration gain of 40,498 during the 20 years, and an aggregate shortfall of -19,714 males (Table 9).

Table 11: PLT migration by citizenship, sex and CL/NPR, 1986–2005

CL/NPR	NZ Citizens			Citizens of other countries		
	Arrivals	Departs	Net mig.	Arrivals	Departs	Net mig.
Males 20-49 years						
Australia	59,418	156,125	-96,707	25,523	19,247	6276
Other countries	100,246	131,149	-30,903	208,081	70,429	137,652
NZ and NS	1889	7457	-5568	721	1029	-308
Total	161,553	294,731	-133,178	234,325	90,705	143,620
Females 20-49 years						
Australia	53,455	135,336	-81,881	25,351	20,190	5161
Other countries	107,056	133,009	-25,953	205,398	68,043	137,355
NZ and NS	1598	5873	-4275	598	899	-301
Total	162,109	274,218	-112,109	231347	89,132	142,215
Male surplus/deficit						
Australia	5963	20,789	-14,826	172	-943	1115
Other countries	-6810	-1860	-4950	2683	2386	297
NZ and NS	291	1584	-1293	123	130	-7
Total	-556	20,513	-21,069	2978	1573	1405
Sex ratio						
Australia	1.112	1.154	1.181	1.007	0.953	1.216
Other countries	0.936	0.986	1.191	1.013	1.035	1.002
NZ and NS	1.182	1.270	1.302	1.206	1.145	1.023
Total	0.997	1.075	1.188	1.013	1.018	1.010

Source: Unpublished arrival and departure tables, Statistics New Zealand

The male surplus/deficits in the arrival, departure and net migration statistics by CL/NPR for both the population aged 20-49 years and the total population show that sex-selective migration to Australia generates the only sizeable male surpluses in the departure flows (Table 12). Other parts of the migration system have much smaller male surpluses, especially for the population aged 20-49 years. Most of the flows have male surpluses (a net loss in italics with a ‘-’ sign indicates a larger net loss of males than females while a number not in italics with a ‘-’ sign indicates a smaller number of males than females in an overall net gain). The magnitude of the male surpluses in the arrival, departure and net migration flows for the total (all ages) and 20-49 year group are very similar and consistent (Table 12). In the case of the flows from other countries there are some differences.

Table 12: Male surpluses/deficits, sex ratios in PLT migration flows, 1986-2005

CL/NPR	Male surpluses/deficits			Sex ratios		
	Arrivals	Departs	Net mig.	Arrivals	Departs	Net mig.
20-49 years						
Australia	6135	19,896	-13,761	1.078	1.128	1.179
Other countries	-4127	526	-4653	0.987	1.003	0.958
NZ and NS	414	1714	-1300	1.189	1.253	1.284
Total	2422	22,136	-19,714	1.006	1.061	0.347
All ages						
Australia	7564	20,958	-13,394	1.060	1.078	-1.565
Other countries	5018	-5149	10,167	1.010	0.981	1.048
NZ and NS	446	1551	-1105	1.154	1.165	1.169
Total	13,028	17,360	-4332	1.021	1.031	0.931

Source: Unpublished arrival and departure tables, Statistics New Zealand

In the prime working age group there was a deficit of males in the arrivals in New Zealand (-4,127) compared with a male surplus in the all ages population (5,018) (Table 12). The converse applies in the case of departure flows – there was a small male surplus in the departures of men aged 20-49 (526) compared with a male deficit of -5,149 in the departures of those at all ages. It is this variation in gender mix in the PLT arrivals and departures from countries other than Australia that accounts for the major difference in the deficits of males in the net losses for the two age groups –

-19,714 for those aged 20-49 years and -4,332 for the total age range (Table 12).

The analysis in this section has focussed on an examination of the extent to which patterns of PLT migration out of and into New Zealand might have impacted on the resident population aged between 20 and 49 years at the time of five censuses between 1986 and 2006. Extensive use has been made of data on the gender and age compositions of permanent and long-term migration flows in and out of the country over the 20 years. The primary concern has been to see if there are significant gender biases in permanent and long-term migration flows and, if there are biases, are they of sufficient magnitude to account for the shortfalls in males in the population aged between 20 and 49 years that are shown in Table 2. We have established that the shortfall of 19,714 males compared with females in the accumulated PLT net migration gain of 40,498 in this age group during the years between 1 January 1986 and 30 December 2005 is the equivalent of 34 percent of the 58,365 ‘missing men’ in the 2006 census population.

Unexpected Net Gains of Women?

In this final section we summarise some of the key findings from a comparison of the net gains and losses from the PLT flows and those from the total flows (including short-term migration) into and out of New Zealand. The purpose of this analysis is to get a sense of the potential contribution that category jumping in the migration flows might be making to the missing men puzzle.

Category jumping occurs when arrivals and departures in one migration category (either PLT or short-term) end up in the other migration category, either because the mover stayed away for a longer (or shorter) than expected stay, or the people coming into New Zealand stayed longer (or for a shorter period) than intended. Category jumping has long been recognised as a process that affects estimates of net migration and it is taken into consideration in the preparation of population estimates and projections (see Bedford et al., 2010 (102-103) for further information).

Statistics New Zealand has estimated the net effects of category jumping between short-term and long-term categories of movement to total around 92,400 between 1986 and 2006, with 58,400 (63 percent) of this additional contribution to New Zealand’s population occurring between the censuses in

2001 and 2006 (Bedford et al., 2010, p. 102). This represents a substantial contribution from net migration to New Zealand's population during the 20 years between April 1986 and March 2006. Over the same period PLT net migration added 138,100, and total net migration added 250,000 (see Table 13). The difference between PLT and total net migration was 111,900, and this can be interpreted as the estimate of category jumping that is gained from a simple comparison of the aggregated annual net migration gains and losses between 1 April 1987 and 31 March 2006.

Table 13: Net migration gains and losses, PLT and total flows, 1987-2006 (March years)

YE 31 Mar	Males		Females		Total	
	PLT NM	Tot NM	PLT NM	Tot NM	PLT NM	Tot NM
1987	-8028	964	-6241	3393	-14,269	4357
1988	-8304	-1720	-7321	763	-15,625	-957
1989	-13,471	-10,289	-11,237	-8009	-24,708	-18,298
1990	-2079	-1825	-1939	192	-4018	-1633
1991	6072	11,222	5544	3354	11,616	14,576
1992	2980	2016	1307	922	4287	2938
1993	3868	2852	2980	5228	6848	8080
1994	7956	8427	7631	7366	15,587	15,793
1995	10,718	7236	10,979	13,165	21,697	20,401
1996	15,495	16,601	14,337	12,025	29,832	28,626
1997	10,421	18,557	10,527	19,222	20,948	37,779
1998	443	-7579	2264	9502	2707	1923
1999	-6498	-8804	-3701	-5148	-10,199	-13,952
2000	-5306	-1465	-3681	3614	-8987	2149
2001	-6666	3097	-5934	1861	-12,600	4958
2002	13,702	29,476	11,933	38,345	25,635	67,821
2003	22,219	29,322	19,373	34,882	41,592	64,204
2004	13,989	14,744	13,989	18,220	27,978	32,964
2005	4714	-11861	5299	1218	10,013	-10,643
2006	4374	2869	5365	-13947	9739	-11,078
Total 20 years	66,599	103,840	71,474	146,168	138,073	250,008

Source: Unpublished arrival and departure tables, Statistics New Zealand

There are several problems with simple aggregations of total net migration figures, including the fact that they are drawn from a sample of arrival and departure cards, not the full count of people entering and leaving New Zealand. Sampling error, while relatively small when estimates of total arrivals and departures are being used, is there nevertheless, and its

effects are compounded through addition of annual estimates of net migration as has been done in Table 13. This is not a problem with the PLT data – all of the arrival and departure cards for people entering or leaving the country for 12 months or more are processed so there is no sampling error. A simple test of the possible impact of sampling on the estimates of total arrivals, departures and net migration gains/losses for the total population was done by comparing the figures obtained from the sample of arrival/departure cards with a set of head-count data collected at the border for the period 1 April 1999–31 March 2006 (Table 14). The head count data come from Statistics New Zealand's monthly Hot off the Press releases on international migration, and the weighted sample totals come from the database containing coded data from arrival and departure cards maintained by Statistics New Zealand and used for analysis of characteristics of arrivals in and departures from New Zealand.

Table 14: Head count and sample total migration data, March years 2000–2006

Data category	Arrivals	Departures	Net migration
Total (both sexes)			
Head count data	25,265,483	25,071,428	194,055
Sample data	25,205,823	25,055,448	150,375
Difference (H-S)	59,660	15980	43,680
% of total H	0.24	0.06	22.51
Sample data			
Males	13,084,402	13,015,030	69,373
Females	12,121,421	12,040,418	81,002
Sex ratio	1.079	1.081	0.856
Male surp/def.	962,981	974611	-11,630
Head count data			
Est males	13,115,185	13,023,325	91,860
Est females	12,150,298	12,048,103	102,195
Sex ratio	1.079	1.081	0.899
Male surp/def.	964,888	975,222	-10,334
Difference (H-S)			
Males	30,783	8295	22,488
Females	28,877	7685	21,192
Total	59,660	15,980	43,680

Source: Unpublished arrival and departure tables, Statistics New Zealand

It can be seen from Table 14 that the sample data under-estimate both arrivals and departures, with a greater problem of under-estimation appearing for the arrivals. This applies especially to the March years since 2005 when the gap between estimates based on the sample data and the head count data began to deviate significantly. Based on the total estimates for the seven March years between 2000 and 2006, it appears that the sample data under-estimated the total net gain to New Zealand's population by 43,680. Data on the gender balance in the head count data are not available, but if we assume that the sex ratios for the arrivals and departures in the sample data applied to the head count data then the additional 43,680 would have included 22,488 males and 21,192 females. The total net gain in the head count data over the seven years (194,055) comprised more women (102,195) than men (91,860), however, with a short-fall in males by 10,334 (Table 14). This was marginally smaller than the deficit for males in the sample net migration data (11,630). In summary, the overall estimate of category jumping in the head count data is greater than that in the sample data, but the impact of this difference on the estimates of missing men or unacknowledged women in the total population (all ages) is negligible.

A second problem associated with aggregation of total arrival and departure cards, which can overlap with category jumping, is the problem of 'end-point effects'. The great majority of border crossings are by short-term travellers, either visiting New Zealand or heading overseas for trips of less than 12 months. If short-term visitors arrive and leave in the same reference period (say, a year ended March), the movements in and out of the country are cancelled out – there is no net gain or loss recorded. If, however, the short-term arrivals and departures overlap two reference periods (two years ended March) then there will be surplus arrivals or departures recorded from short-term migration in each reference period. These are the 'end point effects'. For a more comprehensive review of the difficulties of calculating end-point effects and taking them into account in aggregations of arrival and departure statistics see Bedford et al. (2010: 102-03).

Adjustments for sampling error and end-point effects have been made in the Statistics New Zealand estimates of category jumping between 1986 and 2006, and have resulted in a reduction to 92,400 in the overall estimate for the additional net migration gain that might be due to category jumping rather than the 111,900 that can be derived from the sample migration data

(Table 15). Females (74,700) accounted for two thirds of the difference between the total and PLT net migration gains. If this share held for the 92,400 estimate for category jumping then an additional 61,600 females, not accounted for in the PLT net migration figures, would have been added to the population through net migration gains between April 1987 and March 2006. The corresponding number of unaccounted for males added to the population would have been 30,800.

Table 15: Differences between PLT and total (sample) net migration gains, 20-49 years and all ages, 1987-2006

Sex	Net migration			% difference
	Total	PLT	Difference	
20-49 years				
Males	16,376	12,475	3901	9.8
Females	69,112	32,991	36,121	90.3
Total	85,448	45,466	39,982	100.1
Sex ratio	0.237	0.378	0.108	
M. surp/def.	-52,736	-20,516	-32,220	
All ages				
Males	103,840	66,600	37,240	33.3
Females	146,160	71,500	74,660	66.7
Total	250,000	138,100	111,900	100.0
Sex ratio	0.710	0.931	0.499	
M. surp/def.	-42,320	-4900	-37,420	

Source: Unpublished arrival and departure tables, Statistics New Zealand

These estimates of category jumping apply to the total population (all ages). When the difference between total and PLT net migration gains between April 1986 and March 2006 is calculated for males and females aged 20-49 years the estimate of category jumping falls to just under 40,000 (39,982). Females account for 90 percent of this estimate (Table 15). If this is adjusted downwards to take account of end-point effects by the same proportion that the estimate for category jumping of 111,900 for people of all ages is adjusted to reach 92,400, then the estimate of category jumping for the 20-49 year age group falls to 33,000. The shares of this total that are males and females, based on the 10/90 percent split shown in Table 15 are 3,300 males and 29,700 females. The estimated deficit of males due to

category jumping is 26,400 – more than the 20,500 deficit of males that is accounted for by PLT net migration between 1 April 1986 and 31 March 2006.³ The combined deficit (46,900) is equivalent to 88 percent of the 58,365 ‘missing men’ aged 20–49 years at the 2006 census (Table 2).

The explanation for most of the short-fall in males aged 20–49 years is not excessive male-dominated net emigration, however. Much more important in the analysis of PLT net migration, and the contribution that might be being made through category jumping, is female-dominated net migration gains. It seems that the missing men puzzle arises from a mix of male-dominated net migration losses, especially in the age group 20–25, coupled with female-dominated net migration gains, especially for age groups in the late 20s, 30s and 40s. It is more a combination of missing men and unacknowledged, or unaccounted for, women.

Conclusion

Unravelling the contribution that international migration makes to the widening disparities in numbers of men and women aged between 20 and 49 years in New Zealand’s population since the early 1980s is not straightforward. Intuitively the answer seems to lie in sex-selective emigration of New Zealand men to Australia, and analysis of the flows of New Zealand citizens across the Tasman does provide support for this argument. There are heavier PLT net losses of men than women aged 20–49 years to Australia. Countering this, however, is the tendency for women to dominate in the PLT net gains of citizens of other countries into New Zealand, and over the period 1986–2006 these net gains have been larger than the net losses to Australia. In the overall PLT net gain to New Zealand’s population aged 20–49 years between 1 January 1986 and 30 December 2005 (40,500) there were 30,100 females and 10,400 males. The surplus of males (19,700 for December-year data and 20,500 for March-year data) accounted for around 34–35 percent of the total male deficit of just less than 58,400 in the 20–49 year age group in the 2006 census.

An examination of the gender composition of the various five year birth cohorts that comprise the age group 20–49 years at different times during the 20 years under review (1986–2006), and the contributions that net migration makes to the numbers in these age groups, demonstrated that while deficits in males in the age group populations began at the older ages

in the 1980s, and gradually progressed over time down through the age groups to those in their 20s, the only time that the birth cohorts were consistently affected by male-dominated net migration losses was when they were in the 20-25 year age group. In all of the other age groups the cohorts had a mix of net losses and net gains, many of which were female rather than male-dominated.

The contribution that female-dominated category-jumping seems to make to helping account for the gap between numbers of males and females in those aged 20-49 years at the time of the 2006 census seems to be quite considerable. On the basis of a Statistics New Zealand estimate of 92,400 net gain of category jumpers at all ages over the period 1 April 1986 and 31 March 2006, it was shown that around 40,000 of this unaccounted for net migration gain was aged between 20-49 years, and that females heavily dominated this group. The deficit of males in the category jumping net gain was larger (26,400) than in the PLT net gain (20,500) for the 20 years between 1 April 1986 and 31 March 2006, and could have accounted for around 45 percent of the 58,400 missing men in 2006.

Overall, an explanation for the majority of the deficit in males can be found in the international migration data – a conclusion that is somewhat at variance with that in our initial analysis of the ‘missing men’ puzzle in 2006 where we concluded that sex-selective PLT net migration accounted for only a small part of the accumulating deficit of males in successive censuses since 1981 (Callister et al., 2006a, 2006b). At that time we had not examined the total migration data and the associated gender dimensions of category jumping. More exhaustive analysis of arrival and departure data, in the wider contexts of the changing gender mix within successive birth cohorts as they progress through the prime working ages, the feminisation of migration, the main population exchanges within New Zealand’s international migration system, and the differing contributions that New Zealand citizens and citizens of other countries make to net gains and losses in the country’s population, have provided a firmer evidence base on which to assess the contribution that international migration makes to explaining widening disparities between men and women in the age group 20-49 years.

Acknowledgements

Most of the analysis presented in this paper is also in a background paper published by the Institute for Policy Studies, School of Government at Victoria University of Wellington in April 2011, titled 'Using Census and Migration Data to Explain Gender Disparities in New Zealand's Prime Adult Age Groups, 1986-2006'. This was a background paper to the Foundation for Research, Science and Technology funded 'Missing Men' project.

We acknowledge the support provided by the Foundation for Research, Science and Technology which has funded the research for the 'missing men' project. We are also grateful for the assistance provided by Muriaroha Muntz who contributed to the analysis of the various special-purpose data sets acquired for the project.

Notes

1. Similar patterns can be found in national projections produced in 2007 and 2009.
2. December year data have been used because a series of special-purpose tables had already been generated for another 'missing men' analysis for the period January 1978 to December 2007 (Bedford & Didham, 2009). The December year data, while not as consistent with the 20 year period between the 1986 and 2006 censuses as the March year migration data, are adequate for the purposes of this exploratory analysis.
3. The deficit of males in the PLT net gain for the 20 years ended March 1987-2006 was 20,516 (Table 15). This compares with the 19,714 deficit of males in the PLT net gain for the 20 years ended December 1986-2005 (Table 9).

References

- Badkar, J., Callister, P., Krishnan, V., Didham, R. and Bedford, R.D. (2007). Gender, mobility and migration into New Zealand: a case study of Asian migration. *Social Policy Journal of New Zealand*, 32(Nov): 126-154.
- Bedford, R. and Didham, R. (2009). New Zealand's Migration System 1978-2007: a Progress Report on Gender Dimensions of PLT Flows. Unpublished Report for the 'Missing Men' Project, University of Waikato. Hamilton.
- Bedford, R., Callister, P. and Didham, R. (2010). Arrivals, departures and net migration, 2001/02-2008/09. In A. Trlin, P. Spoonley, and R. Bedford, (Eds) *New Zealand and International Migration. A Digest and Bibliography*, Number 5. Palmerston North: Massey University, pp. 50-103.
-
- (2011). *Using census and migration data to explain gender disparities in New Zealand's prime adult age groups, 1986-2006*. Missing Men Background Paper, April 2011. Wellington: Institute of Policy Studies, Victoria University of Wellington.
- Bycroft, C. (2006). Challenges in estimating populations. *New Zealand Population Review*, 32(2), 21-48.

- Callister, P. (2007). *Education capital formation, employment, migration, gender, work-life balance and missing men*, Project Proposal (PROJ -xxxx-BIS-VIC). Wellington: Foundation for Research, Science and Technology.
- _____ and Didham, R. (2008). Emerging demographic and socio-economic features of the Pacific population in New Zealand. In A. Bisley (ed.) *Pacific Interactions. Pasifika in New Zealand-New Zealand in Pasifika*. Wellington: Institute of Pacific Studies, Victoria University of Wellington (on-line publication, <http://ips.ac.nz>).
- _____, Bedford, R.D. and Didham, R. (2006a). *Globalisation, gendered migration and labour markets*. Wellington: Department of Labour.
- _____, Didham, R. and Bedford, R.D. (2006b). Changing sex ratios in New Zealand: real change or a statistical problem? *New Zealand Population Review*, 32(1): 21-33.
- Haberkorn, G. (2007/08). Pacific Islands population and development: facts, fictions and follies. *New Zealand Population Review*, 33/34, 95-127.
- Laugesen, R. and Courtney, D. (2005). Where have all the Kiwi blokes gone?. *Sunday Star-Times*, 27 March, p. A25.
- Salt, B. (2005). *New Zealand in Grip of Man Drought*. KPMG New Zealand. <http://www.kpmg.co.nz/pages/102743.html>.
- _____ (2008). *Man drought and other social issues of the new century*. Hardie Grant Books, Sydney.
- Waring, M. (1988). *Counting for nothing. What men value and what women are worth*. Toronto: Toronto University Press.

Projections of New Zealand Mortality Using the Lee-Carter Model and its Augmented Common Factor Extension

JACKIE LI *

Abstract

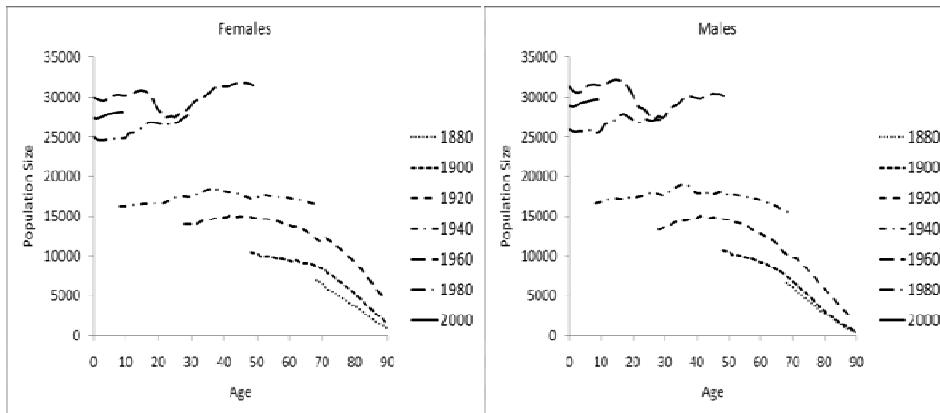
This paper presents the results from an empirical study on projecting New Zealand mortality. First, we analyse mortality data from 1948 to 2009 to obtain background information for the modelling process. In particular, we examine various aspects of mortality patterns by gender such as the differences across age, declining trend over time, old-age mortality rates, movement of the survival curve, modal age at death, and continual increase in life expectancy. We then apply the Lee-Carter model and its augmented common factor extension to the mortality data and project the death rates and life expectancy. We investigate the optimal starting year for fitting the model, and carry out out-of-sample and residual analyses to assess model performance. The fitted models appear to provide further insight into the underlying mortality trends. In addition, we make use of a hypothetical example of a pension to illustrate potential financial impact of longevity risk.

Life expectancy at birth in New Zealand has increased from 69 years in 1948 to 81 in 2009. For the past ten years, life expectancy has risen by 0.3 years per annum on average, and there is no sign of the upward trend ending in the foreseeable future. It is hence important for the government and insurance companies to properly allow for this trend and the so-called ‘longevity risk’ – the risk that a pension scheme or an insurer’s annuity portfolio pays out more than expected due to increasing life expectancy. Omission or miscalculation of this risk could potentially lead to disastrous financial outcomes.

* Nanyang Business School, Nanyang Technological University, Singapore. Email: jackiel@ntu.edu.sg

There are many ways to project future mortality rates. Booth (2006) provides a comprehensive review of demographic forecasting methodologies and mentions that there are broadly three approaches: extrapolation, expectation, and explanation. Some researchers criticise the extrapolation approach as being overly simple (e.g. Gutterman & Vanderhoof, 1998), in the sense that it implicitly assumes that past patterns would repeat in the future and does not take into account expert opinion or the structural relationship between the demographic and other variables. We believe, however, that studying the past patterns and trends carefully forms a solid basis for understanding how mortality changes over time, and projecting these past trends into the future serves as a robust first-step or benchmark for further analysis. Moreover, as noted in Lee and Miller (2001), there has historically been a pessimistic bias of expert opinions on mortality, which suggests that present knowledge reflects on current limitations but not future means of breaking through them. In practice, the distinction between different approaches is less clear-cut and one can always adjust the extrapolation procedure by expert opinions or related variables where appropriate. In this paper we attempt to recognise the underlying patterns of mortality changes and adopt the extrapolation approach to perform projection of future mortality and life expectancy.

We collected New Zealand deaths and population data by gender and single age for years 1948 to 2009 from Statistics New Zealand's Infoshare series (www.stats.govt.nz) and the Human Mortality Database (www.mortality.org). Figure 1 illustrates the changes in the population size over time for the 1880, 1900, 1920, 1940, 1960, 1980, and 2000 cohorts. Without volatile migration movements and abrupt events, the curves are expected to progress smoothly for each year due mainly to the occurrence of deaths. While most parts of the curves are rather smooth, it is interesting to see a few irregular patterns, e.g. the small peak at mid-30s for the 1940 cohort and the severe trough at mid-20s for the 1960 cohort. These erratic patterns exist for a number of consecutive cohorts (not shown here) and could arise from certain temporal migration trends in the past.

Figure 1: Population size for cohorts, 1880 to 2000

Observed Mortality Patterns

Mortality Decline

Figure 2 plots the log death rates against age for years 1948, 1980, and 2009. The shapes of the curves are typical in nature: a drop from high infant mortality for early childhood, then a rise to the peak at around age 20 (more noticeable for males; the so-called accident hump), followed by a linear increase for adult mortality. While it is obvious to see that mortality generally declines over time, the decrease has been uneven across different ages and periods. In particular, the decline at middle to old ages is much more significant between 1980 and 2009 than between 1948 and 1980, especially for males. As mortality at young ages has already reached very low levels, improvement at older ages would tend to play a bigger role than previously for future increase in life expectancy. Figure 3 also demonstrates that in recent decades, mortality improvement has become more prominent at ages 50 and above. With continual breakthroughs in health care and medical technology, it is not unrealistic to expect this trend to last for the next few decades. In addition, we note that the 20-29 rates rise temporarily around 1975 and then get back to the declining trend in about 1985. This change in direction explains why in Figure 2 the accident hump is greater in 1980 but smaller in 2009.

Figure 2: Log death rate for years 1948, 1980, and 2009

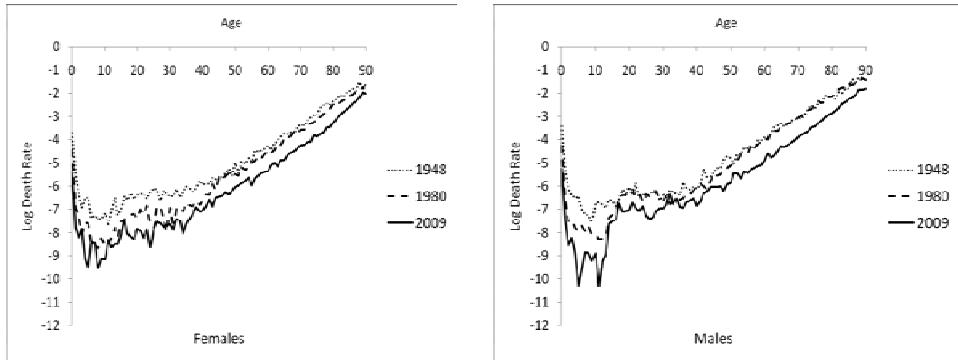
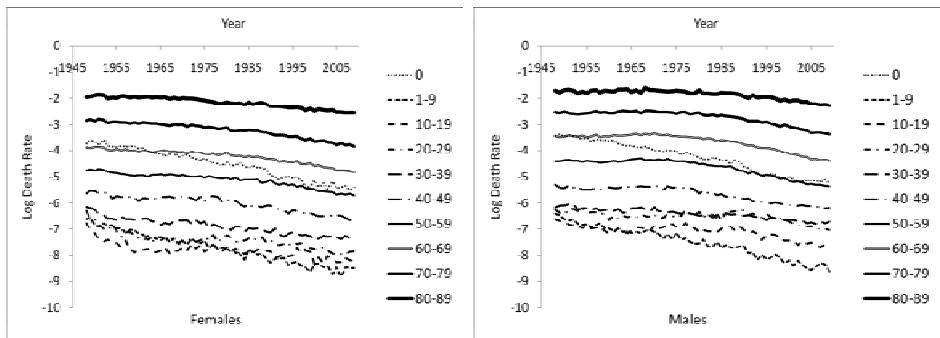


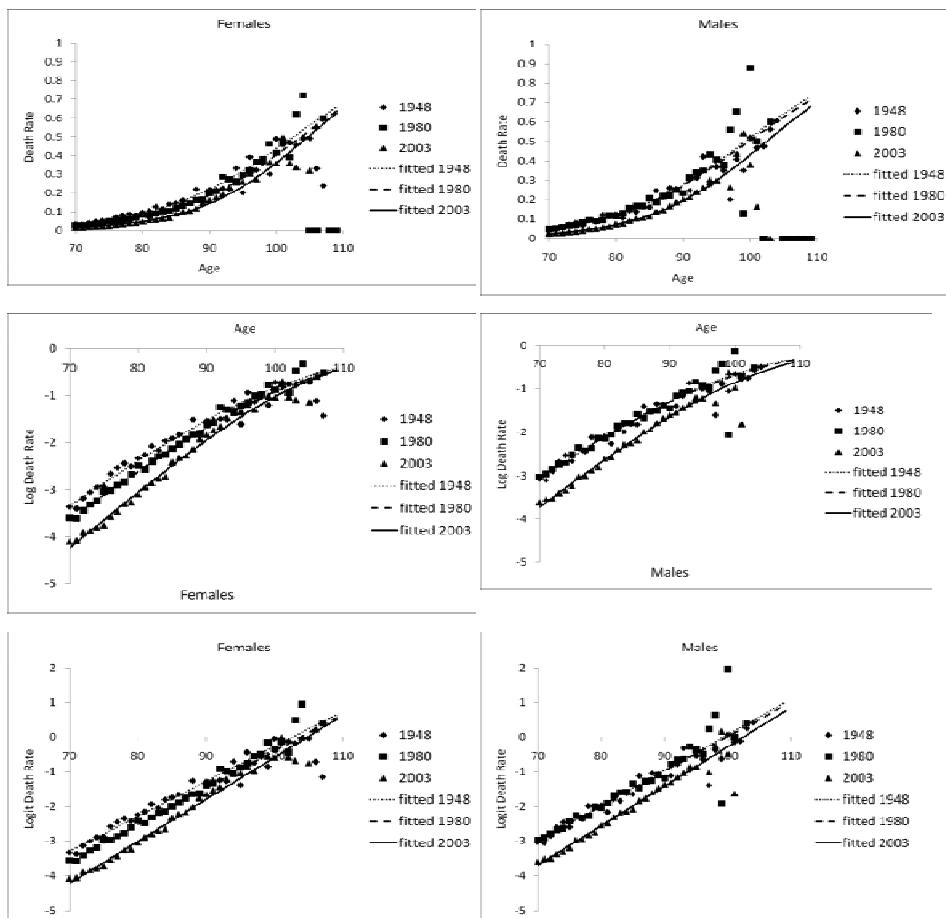
Figure 3: Log death rate for age groups 0 to 80-89



Old-Age Mortality

The data collected span across ages 0 to 110+. As shown in Figure 4, the death rates are more volatile from age 90 onwards, especially for ages 100 and above, due to small exposures of these very old ages. Projecting the patterns of these ages into the future may produce unstable results. Hence we chose to exclude the data of ages 90 and above in our model fitting in the later sections.

Figure 4: Death rate, log death rate, and logit death rate for years 1948, 1980, and 2003



In order to ‘close out’ the life table for calculating life expectancy and deriving the survival curve, we apply the logistic model as proposed by Thatcher (1999). Compared to the traditional Gompertz, Weibull, and Heligman and Pollard models, the logistic model has been found to provide clearly closer fit to a large amount of old-age (80 years old and over) death data of around 13 countries over 30 years. The resulting death rate curve would have a point of inflection (generally around age 100 or above) and the log death rate curve would have a decreasing slope against age.

Deduced from the logistic model, Thatcher (1999) proposes the following linear relationship for high ages:

$$\text{logit}(\mu_x) \approx \ln \alpha + \beta x \quad (1)$$

in which μ_x is the force of mortality at age x , and α and β are regression parameters that can readily be estimated. This linear relationship has been shown to furnish a good approximation to old-age mortality. This relationship was adopted to the death rates from ages 70 to 89 and the rates to ages 90 to 109 were projected. The fitted/projected rates (including the log and logit rates) were then plotted as curves in Figure 4.

It can be seen that the model fitting appears to be satisfactory before age 90 (the R² values for all 62 years of data of both genders have an average of 0.98 with a minimum of 0.95.) Although the actual rates are rather volatile for ages 90 and over, they are still roughly in line with the model projections. As such, we will continue to utilize this technique in the following analysis. (We have also tried projecting the rates to age 119 and realise that the corresponding impact on life expectancy calculation is negligible, simply because the number of survivors is very small at such high ages. We therefore limit the projections to age 109.) In addition, there is a point of inflection on each death rate curve, and the log death rate curves have a decreasing slope across age.

Survival Curve

It is widely documented that the survival curves of many countries have been undergoing a process of transformation called rectangularization (e.g. Cheung et al., 2005). As infant and premature mortality (before ageing-related mortality) declines, the starting part of the survival curve becomes more horizontal, and as there is an increasing concentration of deaths around the modal age at death, the later part of the curve tends to be more vertical. The resulting effect is that the curve moves towards a rectangular shape, hence the term rectangularization.

As demonstrated in Figure 5, such phenomenon has also been happening in New Zealand. For males, it can also be seen that the movement of the curve at older ages is much larger between 1980 and 2009 than between 1948 and 1980, because mortality decline at these ages is more

significant during the later period, as discussed above. Over recent decades, since infant and premature mortality has reduced to historically low levels, horizontalization of the survival curve has turned into a relatively insignificant process; and while verticalization appears to continue to take place, the movement of the curve for males in recent years develops into something slightly similar to a parallel shift to the right, for certain parts of the curve. We suspect that the latter phenomenon would be more prominent if both life expectancy and maximum lifespan keep on increasing in the future.

Figure 5: Survival curve for years 1948, 1980, and 2009

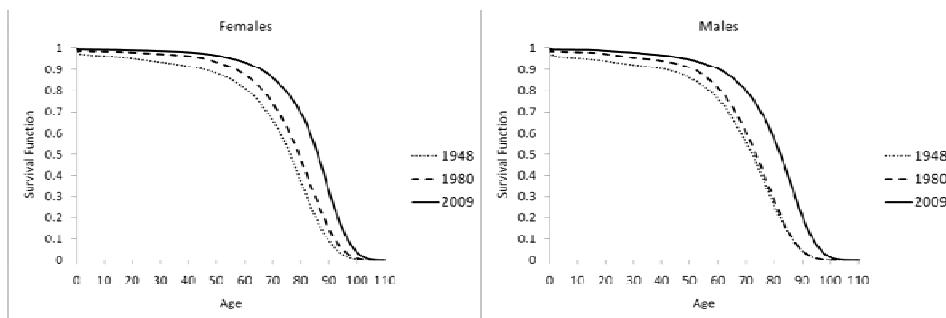
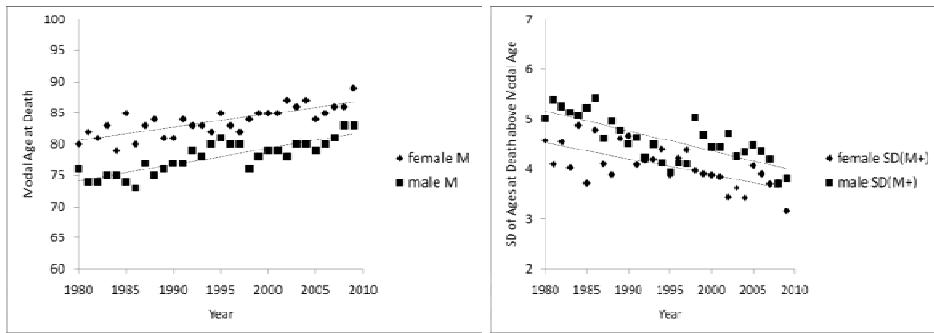


Figure 6 shows how the modal age at death, M , and the standard deviation of the ages at death above M , $SD(M+)$, change over the period since 1980. As shown, there is a clear tendency for M to increase over time for both genders. Moreover, there is also a decreasing trend for $SD(M+)$, which indicates an increasing concentration of deaths around M . (If smoothed values of M are used instead, the decreasing trend of $SD(M+)$ would be clearer and less volatile.) The combined effect is enhancing verticalization of the survival curve, which is in accordance with our discussion above.

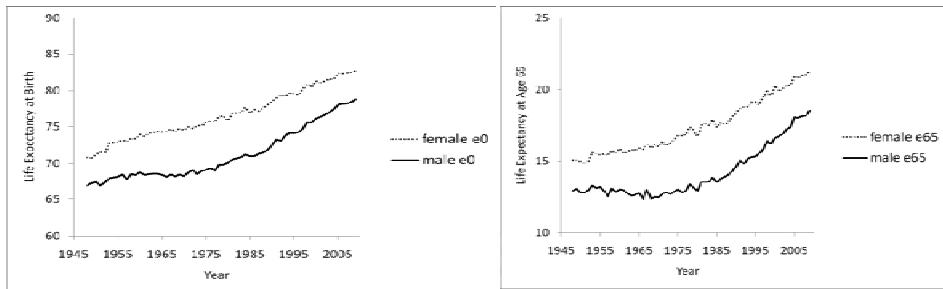
Figure 6: Modal age at death and standard deviation of ages at death above modal age



Life Expectancy

Figure 7 shows clearly that life expectancy at birth, as based on our computation, has been rising gradually from 71 for females and 67 for males in 1948 to 83 for females and 79 for males in 2009. The slope of the trend has increased sharply since around 1985, particularly for males. As discussed earlier, the change in the slope is due largely to mortality improvement at older ages, which is also reflected by the considerable change in the growth rate of life expectancy at age 65 during the same period.

Figure 7: Life expectancy at birth and life expectancy at age 65



The increasing trend seems to have slowed down slightly from the middle of 1990s. The upward trend, however, remains fairly persistent and there is no indication that it would come to an end in the foreseeable future. Though we cannot deny the possibility of unpredicted major structural shifts or catastrophic events, it seems rather likely that life expectancy at

birth, and especially at older ages, would continue to rise steadily for the next few decades, under ongoing advancement in medical knowledge and health care and continuing decline in smoking prevalence (e.g. Harper & Howse, 2008).

Preliminary Fitting of Lee-Carter Model

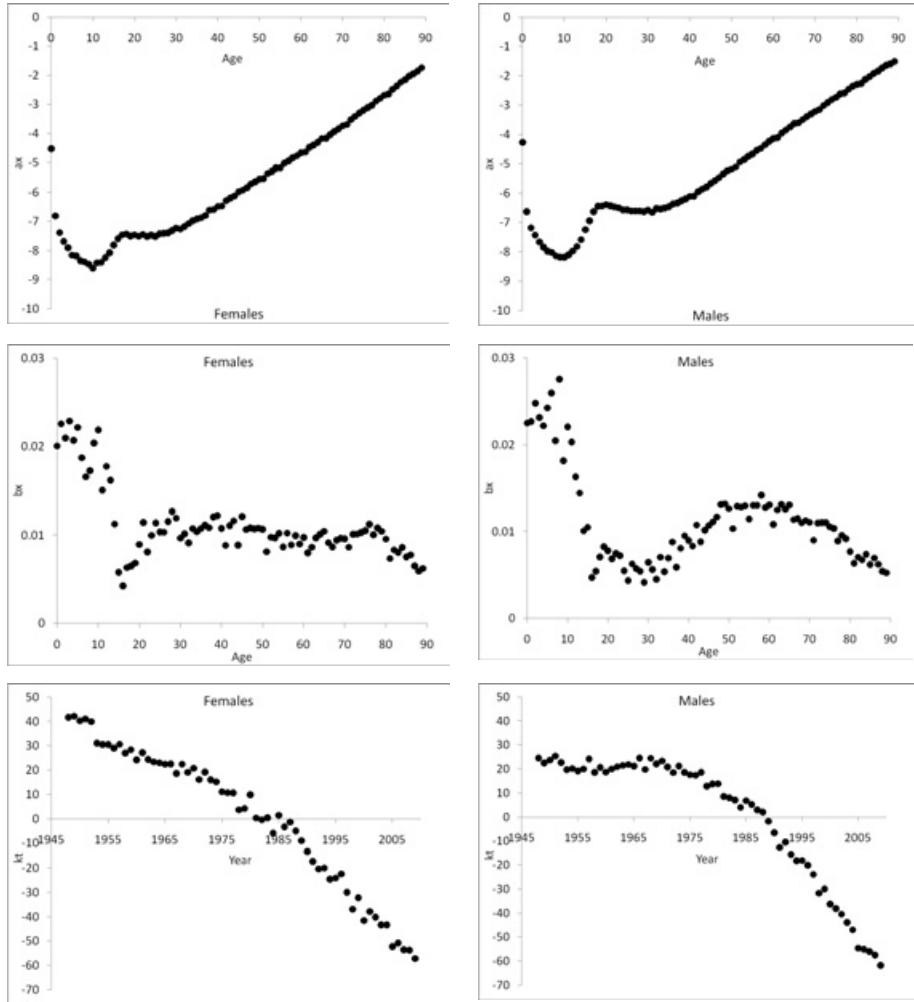
The Lee-Carter model (1992) remains the most popular model for projecting future mortality rates, with various extensions and modifications suggested by different authors (e.g. Lee, 2000). The basic model has the following form:

$$\ln m_{x,t} = a_x + b_x k_t + \varepsilon_{x,t} \quad (2)$$

in which $m_{x,t}$ is the central death rate at age x in year t , a_x depicts the general mortality pattern, b_x measures the sensitivity of the log death rate to changes in the mortality index, k_t is the mortality index, and $\varepsilon_{x,t}$ is the corresponding residual term. The a_x parameters are estimated by averaging $\ln m_{x,t}$ over time. The b_x and k_t parameters are then obtained by applying singular value decomposition (SVD) to $\{\ln m_{x,t} - a_x\}$, subject to two constraints $\sum_x b_x = 1$ and $\sum_t k_t = 0$. Finally the k_t parameters are re-estimated so that the fitted number of deaths and the actual number of deaths are equal for each year. The strengths of this model are mainly its simplicity and also its ability to produce a highly linear series of k_t across time for a number of countries' data (e.g. Lee and Miller 2001). This linearity allows one to simply use a random walk with drift to model the k_t series and highly facilitates projection of mortality rates.

We apply the Lee-Carter model to our data from years 1948 to 2009. The parameter estimates are set out in Figure 8. The a_x estimates, as expected, have a typical shape of log death rates across age. Moreover, the b_x estimates indicate that the highest sensitivity to general mortality decline occurs at two age ranges: infant and early childhood, and middle age. Similar patterns are found by other researchers, e.g. Booth et al. (2002).

Figure 8: Parameter estimates a_x , b_x , and k_t of Lee-Carter model fitted to period 1948-2009

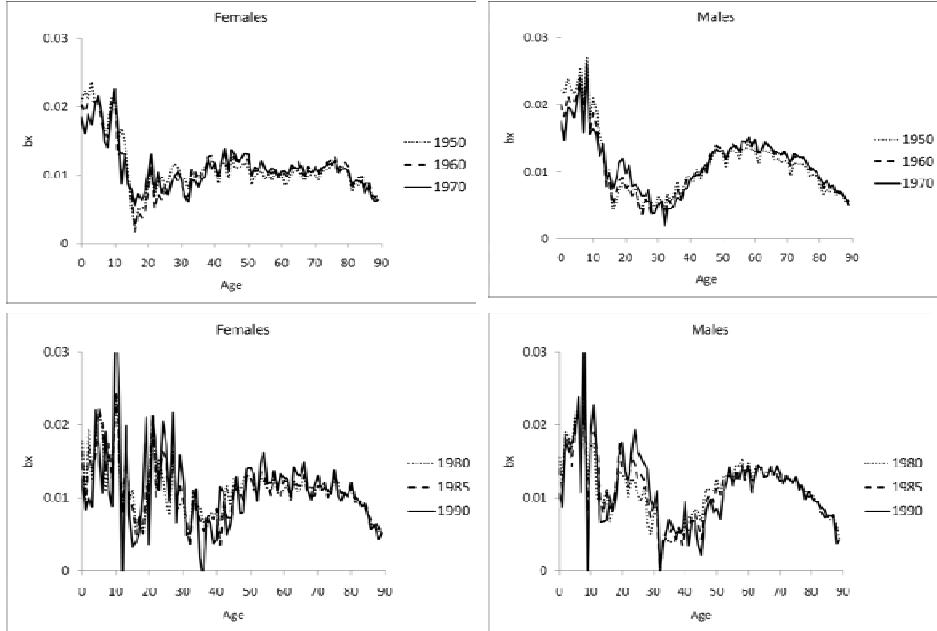


Interestingly, for the k_t estimates, the decreasing trend is not linear and there is a change in the slope in around 1985. Afterwards, the trend is very close to linearity, which implies that it may be more appropriate to choose a later starting year for the model fitting, in order to avoid the systematic change in the k_t series and reduce the variability of projected rates. Nevertheless, it can also be argued that more sophisticated time series models such as ARIMA models can readily be adopted to deal with any non-linearity in the series while preserving the use of the full set of data.

Regarding this viewpoint, we would like to emphasise three important issues. Firstly, the observations made previously reveal that there have been some structural changes in mortality improvement since 1980s. Inclusion of the patterns before these changes would probably be undesirable for model projections. Secondly, one of the main reasons behind the Lee-Carter model's popularity is the highly linear series the model generates based on the data of different countries. This linearity makes the analysis of mortality decline and its projection much more straightforward and sensible. Finally, as illustrated in Figure 9, we discover that the b_x estimates using different starting years exhibit varying patterns. Although the b_x estimates from different fitting periods are not directly comparable, it would still be preferable to select a fitting period not just as long as possible, but also within which the parameter estimates possess more consistent behaviour when switching from one starting year to the next. Booth et al. (2002) study Australian data and discuss the same issues of non-linearity of k_t and invalidity of the assumption of constant b_x over time.

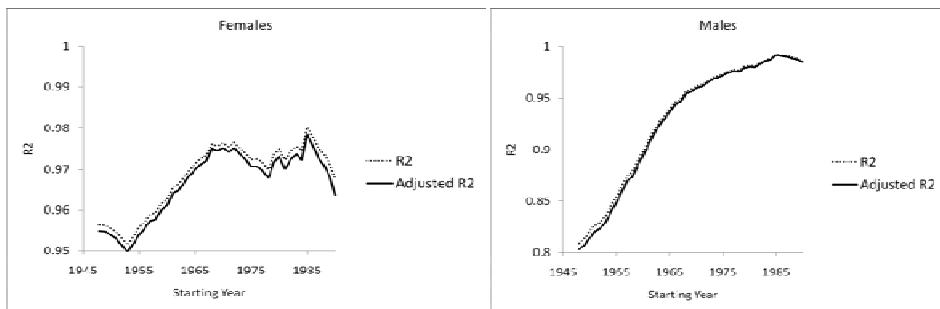
We have tested each starting year from 1948 to 2000 and find that the parameter estimates display some extent of instability when the fitting period is reduced to less than 20 years or so. Accordingly, we will use at least 15 years of data in the following analysis and model fitting. Figure 9 depicts two distinct patterns of the b_x estimates obtained from starting before and after 1980 for both genders. The main difference is that for the later starting years, there is a peak at around age 25, in addition to those at early childhood and middle age. It is also observed that the b_x estimates are less stable when the fitting period is shortened in the latter cases, and this reduction in parameter robustness is a cost of using only the most recent and relevant data.

Figure 9: Parameter estimates b_x using different starting years



Additionally, Figure 10 sets forth the R^2 and adjusted R^2 values of testing linearity of the k_t series for different starting years. For both females and males, the R^2 values reach their maximum with year 1985, being 0.98 and 0.99 respectively. This result is in line with how k_t changes in its slope in Figure 8. To sum up, the observations thus far have provided much support for choosing a later starting year, while keeping a fitting period of at least 15 years. Based on all the analysis above, we decide to use 1985 as the starting year, instead of the whole data set, for the rest of this paper. The resulting k_t series are found to be highly linear in nature.

In the projections below, the observed death rates in the last year of the fitting period are taken as the starting point of projection and k_t is constrained to start at zero in the projection period, as suggested in Lee and Miller (2001).

Figure 10: R₂ and adjusted R₂ using different starting years

Model Evaluation

For further evaluation of model performance, the Lee-Carter model is now fitted to two periods 1985-1999 and 1985-2004. The projected death rates and life expectancy are compared against the observed values for the rest of the period ending in 2009. In particular, the mean absolute percentage error (MAPE), the projected path of life expectancy, and the residuals are examined.

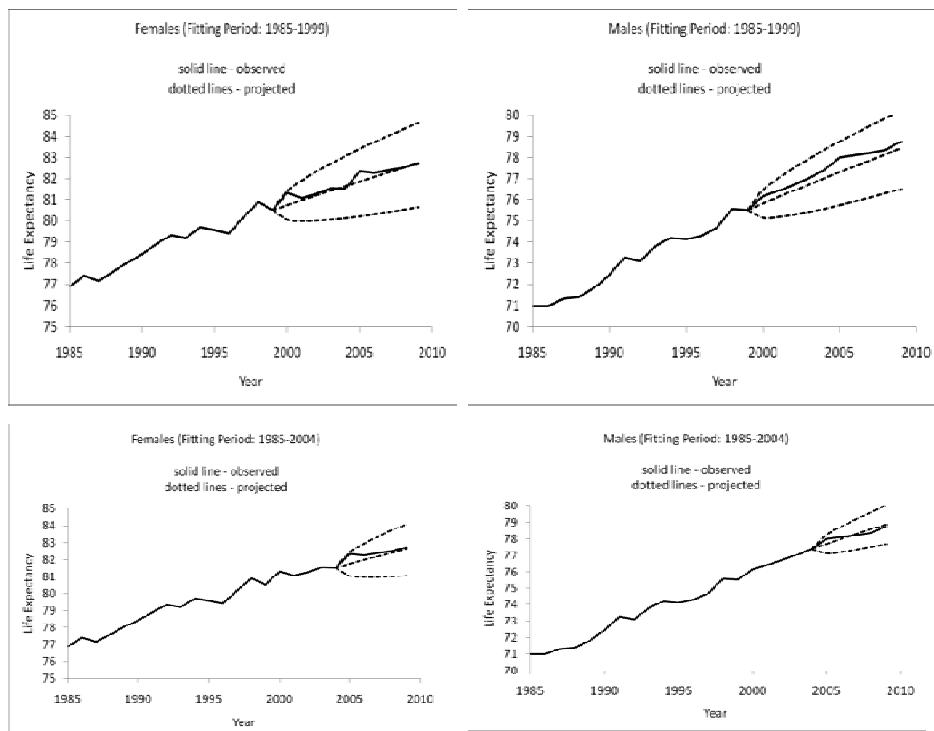
Table 1 lists the MAPE of the projected log death rates for the two fitting periods. The MAPE for each case is around 3% to 4%, and the model prediction appears to be satisfactory overall. The differences between the two fitting periods are quite small, indicating that as long as the linearity of k_t continues and is properly accounted for, decent prediction accuracy could be achieved, with less reliance on the fitting period. Furthermore, the MAPE of the fitted log death rates for each case is close to 2%, and so the model fits reasonably well.

Table 1: MAPE of projected log death rates

	Fitting Period (Projection Period)		
	1985-1999 (2000-2009)	1985-1999 (2000-2004)	1985-2004 (2005-2009)
Females	3.9%	3.6%	3.5%
Males	3.2%	3.1%	3.2%

Figure 11 plots the projected life expectancy at birth with the 95% confidence intervals (dotted lines) against the observed values (solid lines). The intervals are constructed taking only the variability of k_t into account, but not that of $\varepsilon_{x,t}$ and the standard error of the parameters. As shown, there is some underestimation in the projected values, the size of which is around 0.2 to 0.3 years on average. Nevertheless, the performance still looks reasonably good since the underestimation is rather mild and all the observed values lie well within the confidence bounds. (If the fitting period is 1948-1999 instead, the underestimation is 0.9 years on average and tends to increase with the length of projection.) Lee and Miller (2001) also demonstrate under-projected gains with the Lee-Carter model, but to a lesser extent than government forecasts.

Figure 11:Projected life expectancy at birth for fitting periods 1985-1999 and 1985-2004



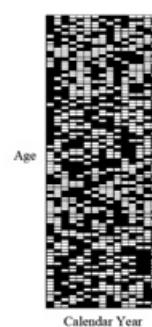
Ideally, the residuals from the fitted model would be randomly spread with no such features as trends or clusterings. For example, if there are unusual patterns when the residuals are plotted against the year of birth, it may be necessary to add a term to (2) to allow for the cohort effect. Figure 12 shows the positive and negative residuals (age vs calendar year) in white and black cells respectively. The signs of the residuals are fairly randomly distributed and there does not seem to be any systematic effect left over in the residuals. Moreover, there are no particular patterns along the diagonal direction, and so allowance for the cohort effect is not needed. The model structure can thus be regarded as being adequate in capturing the main attributes of the data, namely the age effect and period effect.

Figure 12: Residuals for fitting periods 1985-1999 and 1985-2004

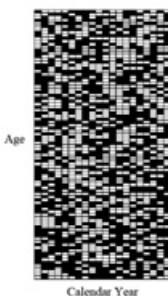
Females (Fitting Period: 1985-1999)



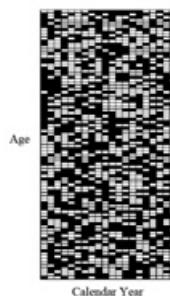
Males (Fitting Period: 1985-1999)



Females (Fitting Period: 1985-2004)



Males (Fitting Period: 1985-2004)



In spite of the satisfactory performance discussed above, separate projections of female and male mortality lead to two potential problems. The first is that the ratio of death rates between genders may or may not change significantly over time, and modeling two genders separately does not take this ratio into consideration at all. Figure 13 compares the projected ratio in 2009 against the observed ratio for 10-year age groups. The model projections clearly fail to realise the change in the ratio at younger ages, especially at 20-29, though the outcome at older ages is much better, due to the stability of the ratio for those ages. As illustrated in Figure 14, historically this ratio is more volatile at younger ages than at older ages, which explains why the projected ratio is more out of line for the former. In addition, except for age groups 0 and 30-49, there is an interesting pattern generally, in which the ratio increases between 1948 and 1980 and then decreases between 1980 and 2009. It is difficult to predict whether this decline in the ratio would continue in the future, and if so for how long. If the focus of the analysis is on pricing annuities for an insurer or valuing pension schemes for the government, however, failing to incorporate the gender mortality ratio into the model is unlikely to cause a serious problem, as long as the ratio remains relatively stable at older ages and the projection period is not too long.

Figure 13: Projected ratio (male to female) of death rates and observed ratio in 2009 for fitting periods 1985–1999 and 1985–2004

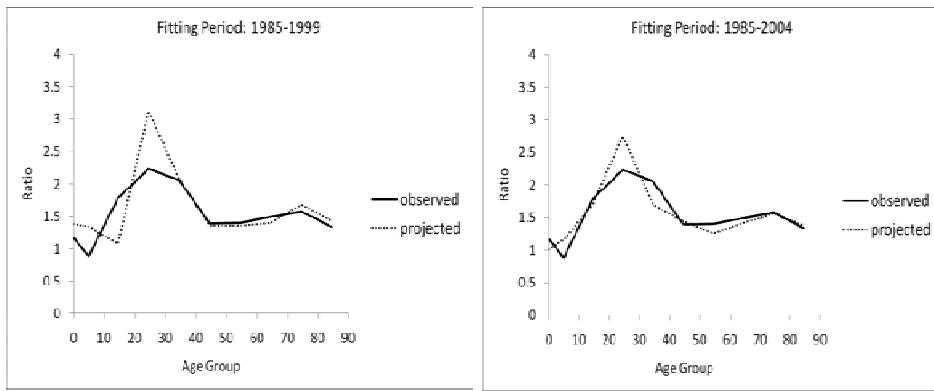
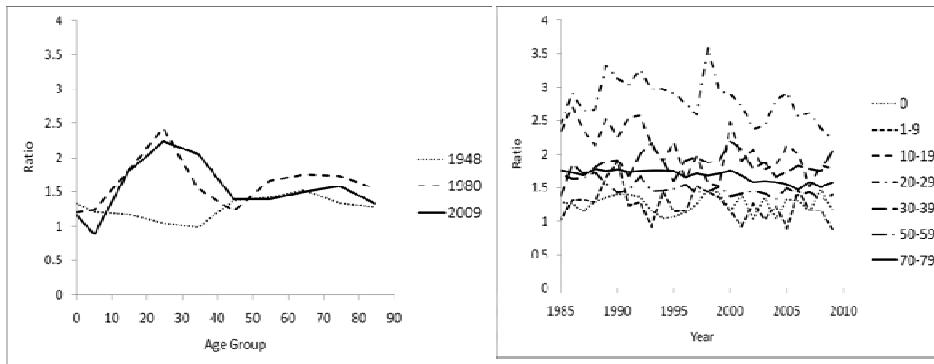


Figure 14: Observed ratio (male to female) of death rates for different years and age groups



There is actually another problem hidden in the modelling process as the projection period is only 5 to 10 years. This problem can turn out to be much more severe when the projection period is longer. As detailed in the appendix of Li and Lee (2005), if each gender is estimated with its own k_t series which is then extrapolated linearly and independently from the other gender, the female and male projected death rates would diverge progressively over time. This divergence is purely a modelling artifact and may need to be avoided in certain applications. One way to reduce this divergence is to adopt the augmented common factor extension of the Lee-Carter model, as discussed below.

Augmented Common Factor Lee-Carter Model

The augmented common factor Lee-Carter model is proposed in Li and Lee (2005) as:

$$\ln m_{x,t,i} = a_{x,i} + B_x K_t + b_{x,i} k_{t,i} + \varepsilon_{x,t,i} \quad (3)$$

in which the meanings of the expressions here are similar to those in (2), except that the subscript i indicates the gender considered, and that the additional terms B_x and K_t refer to the aggregate population. In brief, $B_x K_t$ (common factor) allows for the main trend in mortality change of the whole population and $b_{x,i} k_{t,i}$ (specific factor) represents the short-term difference from the main trend for gender i . The B_x and K_t parameters are first obtained from applying the original Lee-Carter model (i.e. via b_x and k_t in (2)) to the aggregate data combining two genders. All the other parameters are then estimated separately for each gender, by fitting (2) to $\{\ln m_{x,t,i} - B_x K_t\}$. The K_t series is modelled as a random walk with drift as previously. In order to accommodate the short-term difference from the common factor and at the same time ensure this difference fades out in the long run, the $k_{t,i}$ series for females and males are modelled by an AR(1) model. In this way, $k_{t,i}$ converges to a constant value as the length of projection increases and the disparity from the common factor then gradually disappears. Eventually, the projected ratio of male to female death rates turns into a constant at each age. The choice of the AR(1) model is also driven by its straightforwardness in fitting and implementation. We find below that for both genders the autocorrelations of the residuals are statistically insignificant for the first 6 lags (except lag 5), and there is no reason to complicate the analysis of a limited amount of data with a more sophisticated (e.g. higher order) but largely unjustifiable model.

We now apply the Lee-Carter model and also the augmented common factor extension to the period from 1985 to 2009. As listed in Table 2, the MAPE of the fitted log death rates for each case is slightly more than 2%, with little difference between the two models. Conventionally, it is more preferable to have the maximum length of the projection period

approximately equal to the length of the fitting period. Thus we project the death rates and life expectancy only up to 2040. Figure 15 demonstrates that the projected values of life expectancy from the two models are fairly close. For example, life expectancy at birth for females in 2040 is projected to be 88.6 and 88.8 respectively by the two models, and for males 86.4 and 85.9. The augmented common factor model produces a higher value of life expectancy for females but a lower value for males. The main reason is that the drift term of the random walk of K_t (-2.38), being identical for both genders, is roughly equal to the average of those of k_t obtained from applying the Lee-Carter model separately for females (-2.22) and males (-2.59). As revealed in Figure 16, the projected values depend heavily on the drift term of the random walk, and so there is a question on whether it is suitable to employ a common mortality index for both genders as in the augmented common factor model or to deal with each gender independently.

Table 2: MAPE of fitted log death rates

Gender	Lee-Carter	Augmented Common Factor
Females	2.3%	2.3%
Males	2.1%	2.1%

Figure 15: Projected life expectancy at birth from Lee-Carter model and augmented common factor model

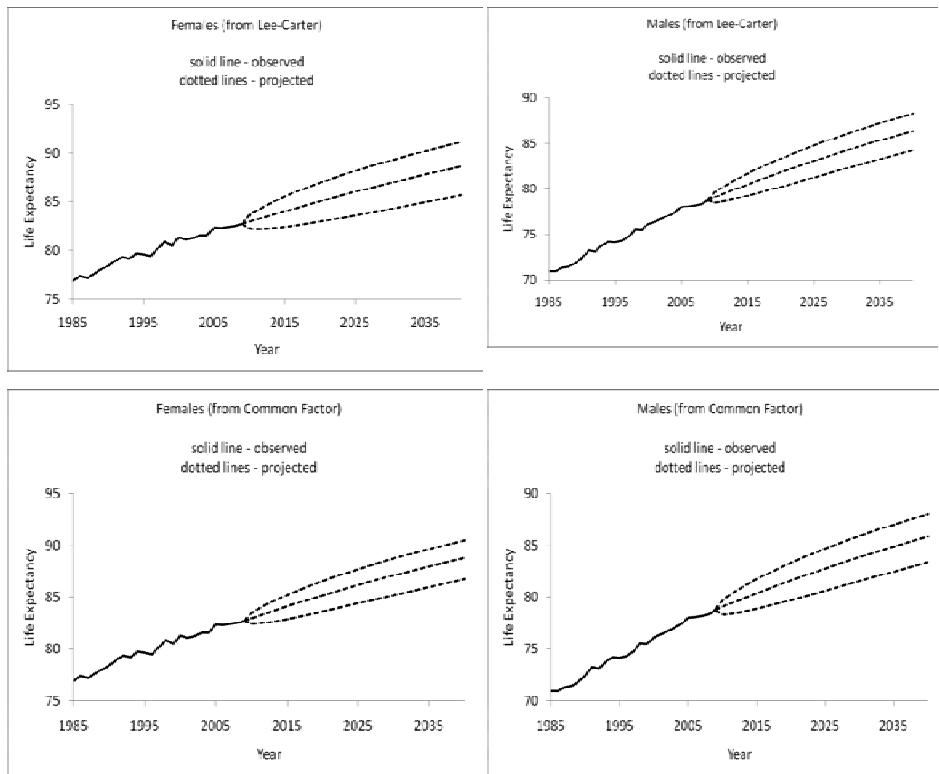
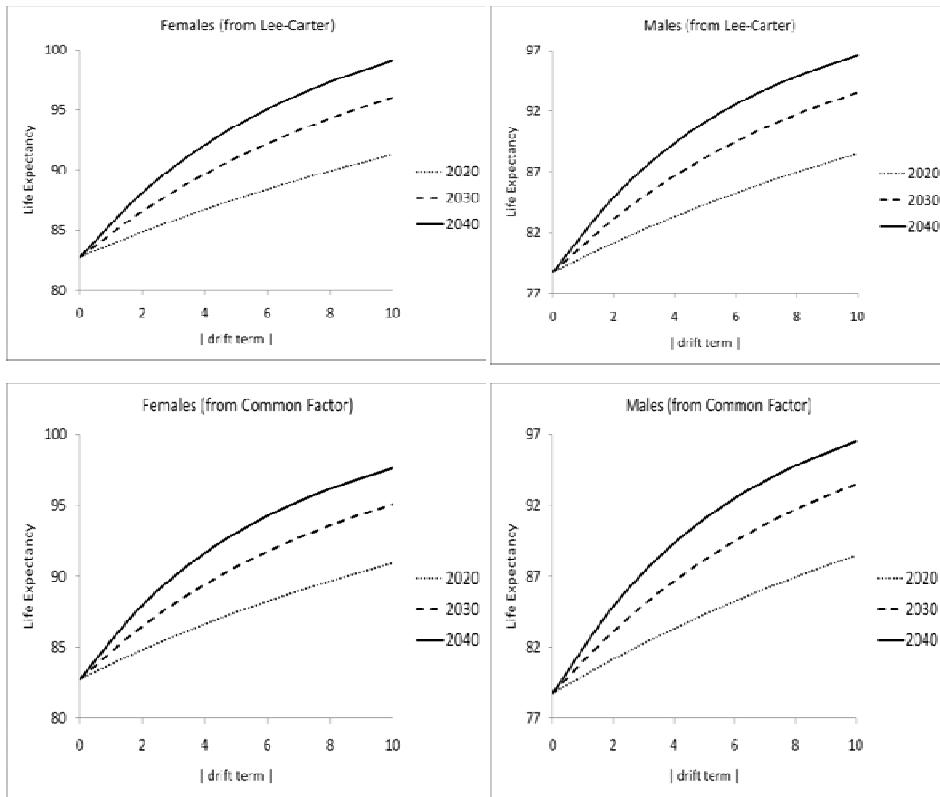


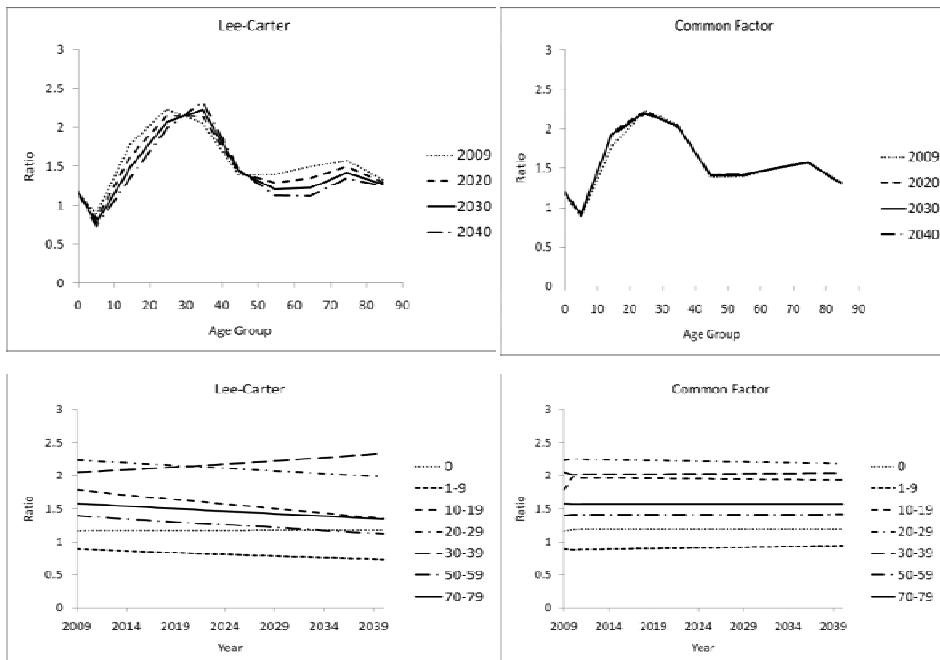
Figure 16: Projected life expectancy at birth in 2020, 2030, and 2040 vs drift term (in magnitude) of k_t for Lee-Carter model and K_t for augmented common factor model



The answer to this question probably depends on the purpose of the analysis. Firstly, it is noted that the differences in projected life expectancy are small between the two models, even the length of projection is 31 years. If the female and male projected death rates are further aggregated in some way, the disparity amongst the two models would be minimal, due to the offsetting effect as noted in the example above. Hence the choice of which model to use seems to be not much of an issue if one intends to focus on projecting life expectancy. On the other hand, if the ratio of death rates between genders is a matter of concern, such as in population projection and policy planning, it would be more sensible to avoid the divergence problem arising from separate projections of female and male mortality, as discussed previously. In this regard, the augmented common factor model would make

sure the projected ratio of male to female death rates at each age converges to a constant. All these issues are clearly reflected in Figure 17. It can be seen that the gender mortality ratios converge under the augmented common factor model. In contrast, the ratios move in various directions under the initial Lee-Carter model.

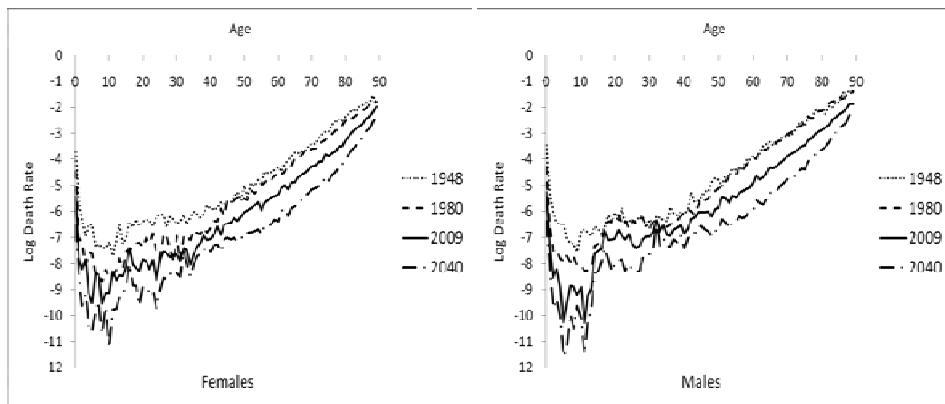
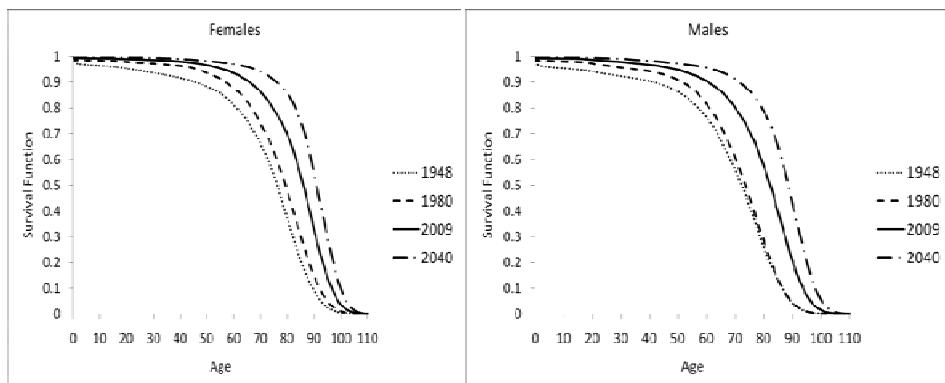
Figure 17: Projected ratio (male to female) of death rates for different years and age groups from Lee-Carter model and augmented common factor model



Because the estimated dependency of $k_{t,i}$ across time is quite weak and the observed death rates in the final year of the fitting period are treated as the starting point of projection, the convergence is achieved quickly and the overall 2009 patterns remain in the projections. Some possible modifications are: averaging the observed rates in the last few years of the fitting period for the starting point of projection; and arbitrarily choosing parameters or model structures which bring about stronger time dependence.

Figure 18 plots the observed log death rates against age for years 1948, 1980, and 2009, and the projected rates in 2040 from the augmented common factor model. The typical shapes in the past are broadly preserved in the projection, but there are two anomalies. First, mortality improvement at around ages 30-44 has been relatively slow compared to other ages for recent decades, so the projected curve at this age range bulges up slightly. On the other hand, mortality decline at ages 50-79 has been faster than at adjacent ages, causing the projected curve less linear than the historical ones for adult mortality. If one is doubtful about whether these extrapolated features would really emerge and believes the typical shapes should be maintained, certain parameterized curves could be fitted or arbitrary adjustments be made to the projected rates.

Furthermore, the projected survival curve in Figure 19 reveals that there is continual verticalization in the projection. With regard to closing out the life table and plotting the survival curve, there is some limitation here as the death rates are only extended to age 109 using (1). More precise and voluminous old-age data are needed to verify the suitability of this technique in the case of a long projection period. As stated earlier, we suspect that there could be some degree of a parallel shift of the curve to the right under enhancing life expectancy and maximum lifespan in the future, and the application of (1) may need to be modified.

Figure 18: Observed and projected log death rates**Figure 19: Observed and projected survival curves**

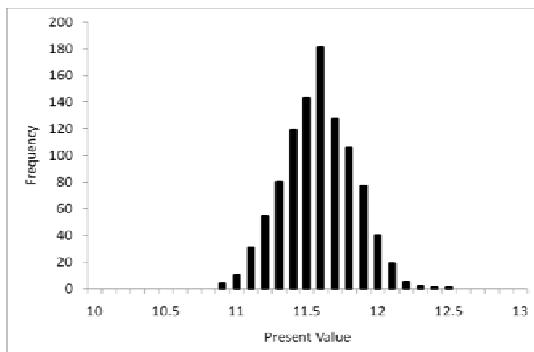
Longevity Risk

Finally, we construct a hypothetical example of a pension to illustrate potential financial impact of longevity risk, which is the risk that a pension scheme or an insurer's annuity portfolio pays out more than expected because of rising life expectancy. The following results imply that miscalculation or omission of this risk could lead to undesirable financial consequences.

Consider a pension with regular payments of \$1 payable in arrear to a female aged exactly 65 on 1 January 2010. The discount rate is assumed to be 6% p.a. (The New Zealand 10-year government bond yield was around 6% in January 2010.) We simulate 1,000 paths of k_t from 2010 onwards, based on the results of applying the Lee-Carter model to the period from 1985 to 2009 in the previous section. Both the variability of k_t and the standard error of the drift term are taken into account, while the variability of $\varepsilon_{x,t}$ is not included. As the latter risk can be diversified by having more independent lives in a pension scheme, we focus on the former risk which cannot be diversified in the same way. The simulated k_t values are then used to generate 1,000 samples of the present value of the pension.

Using the 2009 death rates without allowing for mortality improvement, the expected present value of the pension is \$10.97 as at 1 January 2010. Figure 20 shows that this value falls into the lower 1 percent region of the sampled distribution of the present value of the pension, which has a sample mean of \$11.53 and 99th percentile of \$12.10. In other words, completely ignoring mortality improvement would cause an underestimation of the reserves required to cover the pension by 5 percent in the sense of expectation and by 9 percent for the worst 1 percent scenario. The overall situation could get worse with the rapidly ageing population or if there are major changes in k_t , like the one in 1980s. From this simple example, we can see that proper allowance for longevity risk is of critical importance in maintaining financial stability for pension and annuity providers.

Figure 20: Simulated distribution of present value of a pension as at 1 January 2010



Concluding Remarks

This paper presents the results from an empirical study on New Zealand mortality for the period from 1948 to 2009. We started with analysis of various mortality patterns, and noticed a general mortality decline over the period, rectangularization of the survival curve, and steadily increasing life expectancy - in particular, structural shifts in the mortality trends. We then applied the Lee-Carter model and its augmented common factor extension to the mortality data. 1985 was identified as relatively suitable starting year for fitting the model. The following out-of-sample and residual analyses indicate satisfactory performance of the fitted models. It is noted that the initial Lee-Carter model and the augmented common factor model perform similarly on the whole, but the latter provides an edge in ensuring the convergence of the ratio of death rates between genders. Lastly, we showed through a pension example that failure to accommodate longevity risk could cause significant financial instability to pension and annuity providers.

As noted earlier, projecting relevant past trends into the future via an extrapolative approach can be regarded as a robust starting point. If the projection period is too long, however, this practice would be somewhat unrealistic, as it is difficult to justify the continuance of the same trend without major structural changes over such an extended period of time. When one takes the extrapolation method to perform projection, proper judgement regarding the fitting period, projection period, parameter values, and reasonability of final results should be exercised.

References

- Booth, H. (2006). Demographic forecasting: 1980 to 2005 in review. *International Journal of Forecasting*, 22: 547-581.
- _____, Maindonald, J. and Smith, L. (2002). Applying Lee-Carter under conditions of variable mortality decline. *Population Studies*, 56: 325-336.
- Cheung, S., Robine, J., Tu, E. and Caselli, G. (2005). Three dimensions of the survival curve: horizontalization, verticalization, and longevity extension. *Demography*, 42: 243-258.
- Guterman, S. and Vanderhoof, I.T. (1998). Forecasting changes in mortality: A search for a law of causes and effects. *North American Actuarial Journal*, 2: 135-138.
- Harper, S. and Howse, K. (2008). An upper limit to human longevity? *Population Ageing*, 1: 99-106.
- Human Mortality Database. (2010). University of California, Berkeley (USA) and Max Planck Institute for Demographic Research (Germany). www.mortality.org.
- Lee, R. (2000). The Lee-Carter method for forecasting mortality, with various extensions and applications. *North American Actuarial Journal*, 4: 80-93.
- ____ and Carter, L. (1992). Modeling and forecasting U.S. mortality. *Journal of the American Statistical Association*, 87: 659-671.
- ____ and Miller, T. (2001). Evaluating the performance of the Lee-Carter method for forecasting mortality. *Demography*, 38: 537-549.
- Li, N. and Lee, R. (2005). Coherent mortality forecasts for a group of populations: an extension of the Lee-Carter method. *Demography*, 42: 575-594.
- Statistics New Zealand. (2010). Infoshare www.stats.govt.nz.
- Thatcher, A. (1999). The long-term pattern of adult mortality and the highest attained age. *Journal of the Royal Statistical Society (Series A)* 162: 5-43.

Moving In and Out of Areas of Deprivation: Evidence from the New Zealand Census

PHILIP S. MORRISON *
KIRSTEN NISSEN **

Abstract

One of the important intersections between social policy and demography is the role migration plays in the social mobility of people on one hand and the socio-economic ranking of places on the other. The essential message of this paper is that the socio-economic context people start from when they move has a major influence on where they move to. We use the New Zealand Index of Deprivation to rank neighbourhoods at two census dates 2001 and 2006 and show that the socio-economic rank of the neighbourhood of origin is closely related to the rank of the destination. Among prime age adults for example, the probability of ending a move in a low decile neighbourhood is inversely related to the level of deprivation prevailing at their neighbourhood of origin. Similarly, those who live in relatively deprived areas of the country are more likely to move to areas with either the same or very similar levels of deprivation. The dynamics of internal mobility and migration therefore tend to perpetuate rather than counter the pre-existing geography of social deprivation. These empirical patterns we present by age and ethnicity have potentially important consequences for social mobility and the ability of people to improve the social and economic contexts in which they live.

Introduction

The New Zealand population is highly mobile by international standards and population specialists have paid considerable attention to the geographic patterns of such mobility (Bedford, 1999; Didham, 2003, 2007). The study of residential mobility in New

* School of Geography, Environment and Earth Sciences, Victoria University of Wellington.
Email: Philip.Morrison@vuw.ac.nz

** Population Statistics Unit, Statistics New Zealand.

Zealand, as elsewhere, tends to fall into two camps: moves within cities (Clark & Cadwallader, 1973; Poot ,1981) and moves between cities or local labour markets (Maré & Timmins, 2003). Most moves take place within cities and are driven by housing adjustment needs (Clark & Dieleman, 1984), while a much smaller set involve longer moves which are driven mainly by social and employment reasons (Morrison et al., 2009; Morrison & Clark, 2011).

We have learned in the course of these studies that the propensity to move varies markedly by age and also by ethnicity. What we know far less about is the role residential mobility plays in either reflecting or precipitating change in socio-economic status of people - the relationship between residential mobility and social mobility. Social mobility is typically described as the movement of individuals between different positions within the system of social stratification and is of interest as a measure of the openness of a society. Internationally there is an extensive body of research testing this central proposition, mainly by comparing the ranked occupations of fathers and sons (Solon, 1992). By comparison, research on patterns of inter-generational social mobility within New Zealand society has been extremely limited with the work of early pioneers (Robb & Cloud, 1970) and (Davis, 1979) having only just been updated as part of the Treasury's work programme (Gibbons, 2010).

Geographers in particular have long been concerned with the possible role that spatial context plays in constraining or facilitating social mobility. Considerable attention has been paid to the possible role living in relatively poor areas might have on individual development specifically and social mobility more generally. Unlike the study of inter-generational mobility which addresses inter-generational change using a socio-economic index of occupation, the study of geographic mobility involves people's change of neighbourhood over much shorter periods of time. The focus of the latter is not on changing occupations but on changing neighbours.¹

The inferences one can draw from the study of occupational change and neighbourhood change are quite different even though they both address distributional issues in the degree of social advancement. The focus on changing neighbours stems from a strongly policy oriented literature that addresses the possible existence of negative spill-over effects that accompany the spatial clustering of low income households: in the United

Kingdom (Glennerster et al., 1999; Townsend, 1999; Power & Wilson, 2000), in the United States (Wilson, 1987), in Australia (Baum, 1997; Gregory & Hunter, 2001), and in Canada (Myles & Picot, 2002; Hulchanski, 2007). So far there is little comparable New Zealand research on this important question.

Students of neighbourhood effects tend to focus on the consequences of living in relatively deprived areas. They ask how negative effects of residing in certain social environments in particular are transmitted and differentially absorbed within the neighbourhood and how this might affect the subsequent social mobility chances of affected residents (Lupton, 2003). The literature linking deprived neighbourhoods and outcomes is voluminous but in the end there is little that successfully measures the actual effect of living in deprived neighbourhoods after controlling for the effects of residential sorting (Friedrichs et al., 2003). The research to date establishes strong correlations between deprivation and a variety of outcomes but without necessarily being able to separate the effect of choosing the neighbourhood from the effect of actually living in the neighbourhood. The fundamental methodological difficulty has to do with the presence of selection effects: neighbourhoods may appear to affect behaviour simply because they attract people whose attributes primarily govern such behaviour including their ability to move to alternative neighbourhoods. According to this argument it is the origins of settlement rather than the consequences of living in a particular neighbourhood which may explain any subsequent mobility experience.

The second rationale for the study of social mobility from a neighbourhood perspective stems from an interest in particular places. How areas of high deprivation develop, are sustained and possibly change can be addressed by tracking who moves in and who moves out of such areas (South & Crowder, 1997; South et al., 2005).² In each of these studies net migration flows are observed to have reinforced existing levels of deprivation regardless of the macro-economic context. As UK researchers have observed, “net migration flows act to maintain the gap between deprived areas and the average and, as a result, work to undermine efforts to regenerate deprived neighbourhoods” (Bailey & Livingston, 2008, p. 948).

On the other side of the Atlantic, Nord has also shown how net flows reinforce spatial segregation and how the net flows of both poor and non-

poor contribute to these outcomes: poor people move away from affluent areas to other areas including poor areas, while non-poor move in the opposite direction (Nord, 1998, see also Nord et al., 1995).

The Geography of Deprivation in New Zealand

Readers will be well aware that there is a distinct geography to advantage and disadvantage in New Zealand, both through their personal experience, and more abstractly, through the Atlas of Socio-Economic Deprivation (White et al., 2008).³ Students of health and social welfare as well as practitioners also tell us that the spatial divisions apparent in these maps are long standing and that such areal inequalities have been increasing since the 1980s (Pearce & Dorling, 2006).

Notwithstanding the usefulness of the Atlas and the index of deprivation used to create the maps, our linking of the social geography to public health and social policy to date has usually taken place on the basis of cross-sectional evidence, that is by analysing data collected based mainly on census data at one point in time (Barnett, 2000; Witten et al., 2008). By contrast, we have little understanding of the spatial dynamics underlying the maps of socio-economic deprivation.⁴

In this paper we confront the dynamics by describing the degree to which people upgrade their neighbourhoods when they move (change usual residential address). In doing so, we illustrate the value of linking the index of deprivation at the neighbourhood of origin to the same index applied to their neighbourhood of destination. This linking process helps us better understand the relationship between geographic and social mobility.

Section 1 explains the estimation of the 2006 New Zealand Deprivation Index (NZDep06) on 2001 Census returns thus allowing a consistent set of area units to be compared from one census to the next. Section 2 presents the inter-decile mobility matrix covering the five year period 2001 to 2006. Section 3 considers the extent to which the structure of these mobility patterns vary across four different age groups and four ethnic groups. In Section 4 we reflect on the strengths and limitations of the inter-NZDep mobility matrix for understanding social mobility.

Comparing Indices of Deprivation across Censuses

The NZDep2006 Index is the fourth iteration of the original developed for the 1991 Census (Salmond & Crampton, 2001). It is constructed from nine variables covering eight domains over which deprivation can vary: income, housing tenure, single-parenthood, unemployment, lack of educational qualifications, crowding, lack of access to a telephone and/or a car (*Ibid*). The continuous form of the index, the scores, are obtained from the first principal component extracted from the inter-correlation of nine measures, which is then scaled to have a mean of 1000 index points and standard deviation of 100 index points. In geographic terms, the scores are the weighted sums of the variables that account for most of the variation in socio-economic deprivation across the NZDep2006 areas. These scores are rank ordered into deciles from low to high, so that each contains ten percent of the area units. Those assigned to decile 10 fall among the most deprived ten percent of small areas in New Zealand and those assigned to decile 1 are the ten percent of least deprived area units.⁵

There is a further adjustment made to these area based deprivation measures - their standardisation by age. As the authors of the Atlas point out:

... a small area with a higher proportion of young families is likely to have a low number living in their own home simply because the parents are young, whereas another area with a high proportion of older adults is likely to have a greater proportion living on their own. Socio-economic distinctions between the areas therefore are partly attributable to their different age structures. (White et al., 2008).

Age-standardisation equilises small areas so that some areas cannot be considered more deprived than others simply because their populations have different age structures.

Our use of the New Zealand Deprivation Index in this paper differs from its use in the Atlas. Firstly, unlike the Atlas which maps five quintiles of deprivation, we use the full ten deciles in constructing the mobility matrices below. Secondly, we do not use the aggregations of meshblocks that the Atlas uses to create 'small areas', but instead we use the 2006 Census area units together with their rebased equivalents in 2001.⁶ Thirdly, and most importantly, the Atlas and other published uses of the Deprivation Index have been based on only one census at a time where as our study applies the

index to area units five years apart. It is this last step which allows us to trace the inter-NZDep decile mobility of those changing residence between census dates.⁷

In order to link the deciles of movers' two neighbourhoods we have had to address two preliminary further issues: area instability and index instability. These are discussed below.

Area Instability

While area units may share the same geographic boundaries at two successive census years they may not remain assigned to the same NZDep decile. An imbalance in the socio-economic mix of out-movers and in-movers over the five years can shift the area unit's NZDep score into another decile. In order to assess the extent to which area units are assigned to different NZDep deciles in the two censuses we have constructed Table 1. This comparison shows that over half of the area units in 2001 and 2006 were given the same NZDep classification in the two census years and, as such, maintained their relative position in the deprivation ranking of all neighbourhoods. It is also apparent from Table 1 that one fifth, or 20.5 percent of area units (345/1679), experienced a reduction in their deprivation score over the five years while nearly a quarter or 25.4 percent became relatively more deprived (427/1679).

Table 1. The distribution of NZDep2006 differences for area units in New Zealand with consistent classification coding at the 2001 and 2006 censuses

Difference NZ Dep 2006 – NZ Dep 2001	Number of area units	Percent distribution
-10	-	-
-7	1	0.1
-6	-	-
-5	1	0.1
-4	1	0.1
-3	11	0.7
-2	52	3.1
-1	279	16.6
0	907	54.0
1	375	22.3
2	41	2.4
3	9	0.5
4	2	0.1
6	-	-
7	-	-
10	-	-
Total	1679	100.0

Source: Statistics New Zealand, customised tabulations

Table 1 shows that shifts up or down by more than one decile were relatively rare. Shifts in the socio-economic composition of area over five year periods are therefore rather gradual. The large shifts that do occur are characteristics of area unit with relatively few people. Whereas the average number of people living in area units experiencing either no change (0) or simply a shift into a neighbouring decile (-1 or 1) was well over 2000, those experiencing a decile change of two or more typically had under a 1000 people, and those area units experiencing an even more extreme change usually had very few inhabitants. As a consequence the proportion of people affected by ‘area mobility’ was much smaller than the proportion of area units.

Index Instability

The second issue we had to deal with is index instability. We have assumed for convenience that the analysis of flows of people between deciles can be conducted when 2006 decile ratings are applied to area units of origin and destination. The alternative would have been to compute flows of migrants between 2001 area units rebased to 2006 boundaries using 2001 decile ratings. The underlying assumption made in using just 2006 deciles was

that the two indices are highly correlated. Such an assumption is justified by the fact that over 62 percent of the statistical variation in one can be accounted for by knowing the other. As the last column in Table 2 shows, in all but two cases deciles of origin vary by less than ten percent.

Table 2. Distribution of movers by NZDep decile of origin

NZ Dep of origin 2001	NZDep2001	NZDep2006	Percent difference
1	8.5	7.7	-9.6
2	9.2	9.2	-0.9
3	9.1	9.0	-0.2
4	10.3	9.0	-12.1
5	9.7	11.3	17.0
6	10.6	9.9	-7.4
7	10.6	10.9	2.6
8	11.7	12.4	5.3
9	11.3	11.0	-2.3
10	9.0	9.6	7.4
Total	100.0	100.0	-

Source: Statistics New Zealand, customised tabulations

Notes Area units in New Zealand with consistent classification codes at the 2001 and 2006 Censuses

In summary, most previous analyses of the New Zealand deprivation index have used the index cross sectionally and, as far as we know, there have been no attempts to estimate mobility in NZDep terms from one census to the next. We have begun by showing that most area units are sufficiently stable in NZDep decile terms over the five year inter-censal period to enable us to focus on the movements of individuals between what in effect are a fairly fixed hierarchy of neighbourhoods. On that basis we now turn to the flows of people that took place between area units ranked by NZDep06 deciles over the inter-censal period 2001 to 2006.

Mobility between Deprivation Areas

Our aim is to present a count of the moves that people made over the last inter-censal period between area units ordered according to their relative level of socio-economic deprivation. Unlike studies of geographic mobility which focus on moves between areas, we focus on moves between deciles – that is, neighbourhoods at different steps in the socio-economic ranking of all neighbourhoods.⁸ Our decile of origin by destination matrix is presented in Table 3 which captures those 1.28 million adults enumerated at the 2006 census who were also usually resident in New Zealand five years earlier and who have changed their address.

Table 3. NZDep2006 classification of residents aged 15+ at the 2006 Census who lived elsewhere in New Zealand five years earlier

NZDep2006 at origin 2001	NZDep2006 index at destination 2006										Total
	1	2	3	4	5	6	7	8	9	10	
1	27,840	14,076	9,726	8,823	9,342	7,641	6,939	6,174	5,478	3,153	99,192
2	14,196	30,636	12,693	11,571	11,700	9,687	8,235	8,103	7,251	4,104	118,176
3	11,253	13,476	26,022	11,181	11,724	10,980	9,939	10,176	7,353	4,080	116,184
4	10,281	12,291	10,821	27,150	12,108	10,206	9,672	11,136	8,976	5,043	117,684
5	10,812	13,176	12,486	12,756	32,742	13,278	12,687	13,230	11,088	6,195	138,450
6	7,845	9,747	11,268	10,689	12,996	31,716	12,420	13,377	10,758	7,095	127,911
7	8,451	9,090	10,398	10,137	13,269	12,936	37,071	17,811	12,393	8,169	139,725
8	7,035	9,789	10,335	11,976	14,151	13,635	17,892	40,647	18,321	11,610	155,391
9	5,532	8,334	7,140	9,741	12,141	10,887	13,077	18,615	39,063	16,812	141,342
10	2,958	5,076	4,263	5,463	7,422	8,418	8,997	13,587	20,286	47,700	124,170
Total	106,203	125,691	115,152	119,487	137,595	129,384	136,929	152,856	140,967	113,961	1,278,225

Source: Statistics New Zealand, customised tabulations from the 2006 Census

Notes: Figures in this table represent those who moved between 2001 and 2006 and where NZDep2006 was identified for each of the two specified addresses.

By way of illustration, one can see from Table 3 that a total of 47,700 people living in decile 10 area units were living at a different address in 2001 but still in a decile 10 neighbourhood (bottom right cell of Table 3). By contrast, 20,286 had moved from a decile 10 to a decile 9 neighbourhood and 16,812 from a decile 9 to a decile 10 (the neighbouring two cells). And so forth for the other cells in Table 3.

The counts in Table 3 can be used to estimate the empirical probability that those moving from a previous residential address in New Zealand to the one in which they were enumerated in 2006 will have moved upward or downwards in the deprivation ranking of all neighbourhoods. By subscripting the area unit of origin as i and the area unit of destination as j , each cell in Table 3 contains counts f_{ij} .

We have computed the unconditional cell probabilities using $p_{ij} = f_{ij}/f..$ to produce Table 4. For example, if we divide the number of people who moved between neighbourhoods in decile 1 and decile 2 over the five year period (14,076) by the total of all people who changed address (1,278,225) we get the unconditional cell probability $p_{12} = 0.011$; and so on for each of the cells in Table 4.

Table 4. Unconditional probabilities of residents moving within and between NZDep2006 deciles in New Zealand between 2001 and 2006

NZDep2006 at origin (2001)	NZDep2006 index at destination (2006)										Total
	1	2	3	4	5	6	7	8	9	10	
1	0.0218	0.0110	0.0076	0.0069	0.0073	0.0060	0.0054	0.0048	0.0043	0.0025	0.0776
2	0.0111	0.0240	0.0099	0.0091	0.0092	0.0076	0.0064	0.0063	0.0057	0.0032	0.0925
3	0.0088	0.0105	0.0204	0.0087	0.0092	0.0086	0.0078	0.0080	0.0058	0.0032	0.0909
4	0.0080	0.0096	0.0085	0.0212	0.0095	0.0080	0.0076	0.0087	0.0070	0.0039	0.0921
5	0.0085	0.0103	0.0098	0.0100	0.0256	0.0104	0.0099	0.0104	0.0087	0.0048	0.1083
6	0.0061	0.0076	0.0088	0.0084	0.0102	0.0248	0.0097	0.0105	0.0084	0.0056	0.1001
7	0.0066	0.0071	0.0081	0.0079	0.0104	0.0101	0.0290	0.0139	0.0097	0.0064	0.1093
8	0.0055	0.0077	0.0081	0.0094	0.0111	0.0107	0.0140	0.0318	0.0143	0.0091	0.1216
9	0.0043	0.0065	0.0056	0.0076	0.0095	0.0085	0.0102	0.0146	0.0306	0.0132	0.1106
10	0.0023	0.0040	0.0033	0.0043	0.0058	0.0066	0.0070	0.0106	0.0159	0.0373	0.0971
Total	0.0831	0.0983	0.0901	0.0935	0.1076	0.1012	0.1071	0.1196	0.1103	0.0892	1.0000

Source: Calculated from the entries in Table 3.

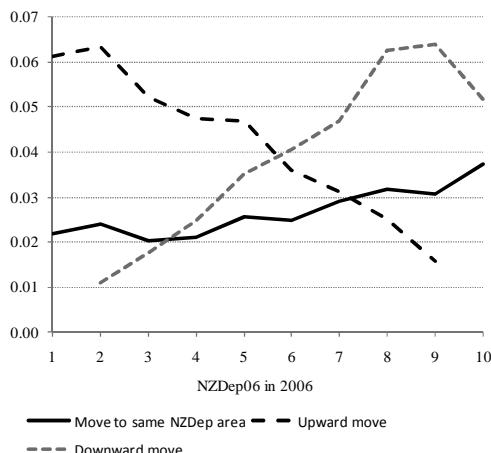
The inter-decile mobility matrix that is Table 4 allows us to identify the direction of mobility in decile terms. Upward residential mobility involves moving to areas with a lower NZDep06 classification - the probabilities in cells below the diagonal ($i > j$). Inter-decile stability refers to moving within

the same category of the deprivation index, as identified by entries in the diagonal ($i=j$). Downward mobility involves moving to a higher index category as indicated by probabilities in the cells above the diagonal, $i < j$.

The sum of the probabilities in the diagonal (i.e. $0.0218 + 0.0240 + \dots + 0.0306 + 0.0373$) suggests that about one quarter of all those changing address within New Zealand between 2001 and 2006 remained in the same deprivation category. Nearly three quarters of movers therefore changed their relative position in neighbourhood terms over the five year period.⁹

We have used the entries in Table 4 to construct Figure 1 which depicts three relationships of interest. The first is the solid line showing the probability of moving to another neighbourhood with the same deprivation decile between 2001 and 2006. As the upward slope of the line indicates, the more deprived the neighbourhood of origin the more likely the mover will have remained in their decile of origin when they move. So those moving from within the most deprived area units (decile 10) exhibit the highest chance of moving to a dwelling in a neighbourhood of the same decile.¹⁰

Figure 1. The (unconditional) probability of moving to neighbourhoods with the same, higher or lower levels of deprivation (NZDep2006) within New Zealand between 2001 and 2006.



Source: Statistics New Zealand. Based on customised tabulations from the 2006 Census of Population and Dwellings.

The second point of interest in Figure 1 is the way the level of deprivation of the destination neighbourhood relates to whether people have moved up or down in deprivation terms. What the two dashed lines show is that when people do change deciles they are most likely to move to a neighbourhood which is very similar to the one they left. Those leaving areas where deprivation is very low move mainly to other neighbourhoods like theirs, or with slightly higher or lower levels of deprivation. This is why we see probabilities of upward moves (the black dashed line) start off being high in decile 1, rise slightly in moves to decile 2, then diminish rapidly in the case of moves to neighbourhoods with successively higher deprivation levels (0.00613, 0.00634, ..., 0.0252, 0.0159).¹¹

The grey dashed line in Figure 1 traces those moving from more deprived neighbourhoods. Unlike the previous case of those moving from less deprived areas, those moving from the most deprived neighbourhoods are less likely to move to another neighbourhood in decile 10 than they are to move to adjacent (less deprived) neighbourhoods, i.e. decile 9 or 8. Those moving to decile 7 through to 2 show lower and lower probabilities of coming from neighbourhoods with lower levels of deprivation.

In summary, what Figure 1 tells us is that while there is a degree of upward and downward mobility in decile terms residential mobility in general tends to reinforce or perpetuate a pre-existing distribution of residents over neighbourhoods ordered by the deprivation index. The exceptions are those moving out of decile 10 upward into neighbouring deciles 9 and 8, and to a much lesser extent, those moving from decile 1 down into decile 2. On net there is a slight upward movement as a result of boundary effects i.e. decile 10 based movers can only stay put or move down in decile terms (to less deprived neighbourhoods). For movers as a whole the probability of staying in the same NZDep areas was 27 percent, the probability of moving up over the period was 38 percent and having moved down, 35 percent.¹²

Implications

A central question in the debate over the geographic correlates of social mobility and residential socio-economic polarisation more generally is the degree to which movement out of areas of relatively high deprivation is constrained by characteristics of the neighbourhood of origin. For example,

do people living in the most deprived areas find it harder to move up to the next most deprived areas than those living further down the deprivation scale? We know from Figure 1 that people who live in the most deprived areas are the least likely to leave them (for locations elsewhere in New Zealand), however, we have also learned that when people from decile 10 do move out of their decile, they are more likely to move into decile 9, and even more likely to move into decile 8 but after that the chances of further upward mobility fall noticeably.

We observe therefore an inverse relationship between the decile of the neighbourhood and upward mobility and ask whether this occurs simply because residents of these areas select them (residential sorting) or because living in their neighbourhood has affected their willingness and/or ability to move (neighbourhood effects). For example, to what extent, if any, do those who remain in the most deprived areas do so as a result of the presence of negative externalities generated by living in such areas? By the same argument, do the chances of moving to areas with very low levels of deprivation increase as deprivation decreases because of the increasing presence of positive neighbourhood effects i.e. does the presence of better facilities, more parent funded education facilities and programmes and assistance from neighbours with higher levels of human capital actually increase peoples chances of maintaining or raising their social advantage?

These are not easy questions to answer despite there being a huge international literature on neighbourhood effects. Contrary to the interest shown in these questions overseas, New Zealand appears to have paid them very little attention. One way of gaining greater contemporary insight into the relative importance of residential sorting, conditioned as this is by the attributes of movers, is to examine how different categories of people actually behaved. We introduce this question by looking at two such attributes: age and ethnicity.¹³

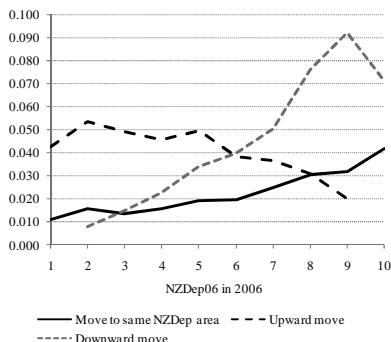
Transitions by Age and Ethnicity

The aggregate picture in Figure 1 raises the question as to how the inter-decile mobility matrix might vary by sub-group. Two of the most important dimensions are age and ethnicity. We begin therefore by constructing the same relationships depicted in Figure 1 for each of the four age groups separately as shown in Figure 2. What we discover is that there is a striking

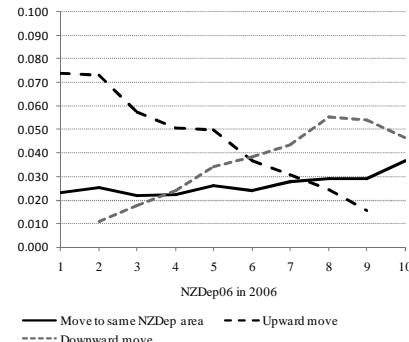
similarity in these graphs between the young and old on one hand and the middle age groups on the other. The chances of movers remaining in their decile of origin rise with the deprivation level of the origin but at a decreasing rate with age, to the point where among those 65 years and over stability (the continuous line) actually falls for those in deciles 9 and 10. By contrast, those in the working age group (34–64 years) are much more likely to retain their residence in deciles 1 and 2 than is the case for the young and the old whose ability to sustain residence in these privileged locations appears much weaker.

Figure 2: The proportion of movers in each of four age groups in New Zealand who moved to area units of same, higher or lower NZDep2006 deciles between 2001 and 2006

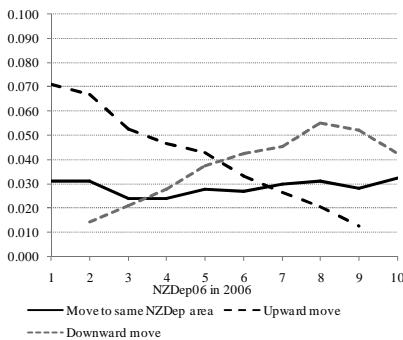
Aged 18-29 years



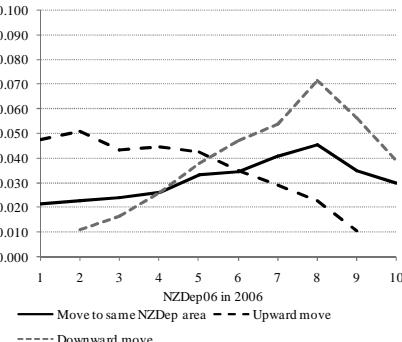
Aged 30-44 years



Aged 45-64 years



Aged 65+ years



Source: Statistics New Zealand. Based on customised tabulations from the 2006 Census of Population and Dwellings.

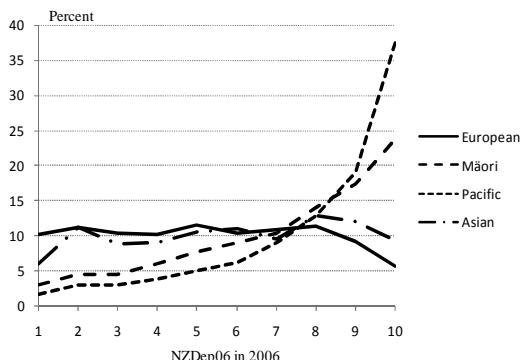
Many of the movements of the 18-29 year age group are motivated by leaving home and going on to further study or relatively low wage employment which means moving from an owner occupied family home in a lower decile area to rental accommodation in more deprived areas. Such a scenario would account for the high peak of downward moves by this age group. The fact that mobility rates are disproportionately high among this age group means that the young have a disproportionate influence on the aggregate pattern of stability depicted in Figure 1.¹⁴

In summary, each of the four age groups depicted in Figure 2 retain their higher propensity shown in the aggregate case to move to neighbourhoods which are similar in decile terms to those they leave. The young are the most mobile and are also the most likely to move downwards (41 percent) and their behaviour in terms of inter-decile mobility is very closely replicated by those over 65 years. This trend is reversed for people in their prime working ages who are more likely to remain in low decile areas when they move and are less likely to enter areas experiencing high levels of deprivation.

Ethnicity

It is helpful to introduce the discussion of mobility by ethnic group by recalling their relative share of the population. European make up almost three quarters (65 percent) of the country's population and, as Figure 3 shows, were fairly evenly distributed across the deciles with the exception being their under representation in decile 10 areas. The Asian population who make up nine percent of the 2006 population were also fairly evenly distributed although are underrepresented relative to European in the least deprived decile and are over represented in the most deprived deciles. In stark contrast are Maori and Pacific who make up 14 and 7 percent of the 2006 population respectively. They were under represented in lower to medium decile neighbourhoods and quite over represented in neighbourhoods with relatively high levels of deprivation, a feature particularly characteristic of the Pacific population.

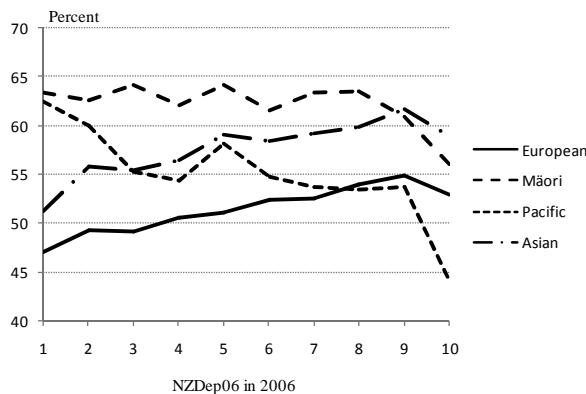
Figure 3: Distribution of ethnic groups in New Zealand by decile of the NZDep2006 index



Source: Statistics New Zealand. Based on customised tabulations from the 2006 Census of Population and Dwellings.

Mobility rates are far more even across the ethnic groups than they are across the age groups. While European, Pacific and Other ethnicity display relatively low rates (approximately half having changed residence at least once over the five year to 2006), Maori and Asian display higher rates (at 60 and 57 percent respectively).¹⁵ Figure 4 depicts the proportion of movers in each of the four ethnic groups by area deprivation decile over the five years to 2006. Of note here is the contrasting way in which European and Asian mobility rates rise with neighbourhood deprivation (slowing only in decile 10), while mobility rates for Maori are the reverse, being the highest in low to medium deprivation areas and lowest among those in decile 10 in 2006. Pacific show lower levels of mobility in general even though they are similar to Maori in decile 1. By decile 10 however, mobility rates of Pacific are extremely low.

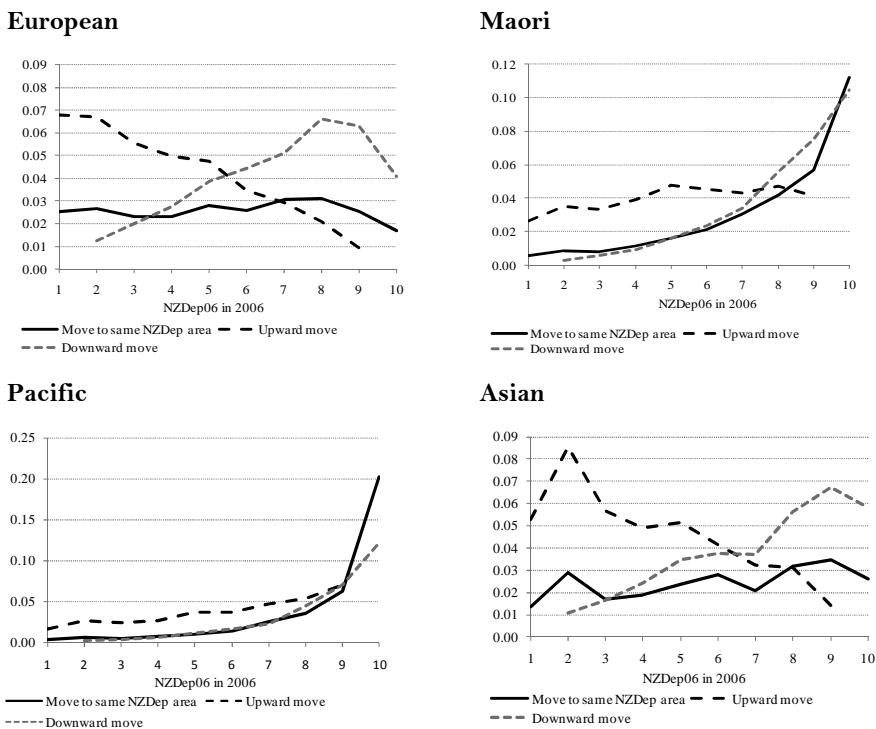
Figure 4. The proportion of individuals by ethnic group who moved within New Zealand 2001-2006 by NZDep2006 of residence



Source: Statistics New Zealand. Based on customised tabulations from the 2006 Census of Population and Dwellings.

Figure 5 replicates Figure 1 for each of the four ethnic groups. Of particular interest is the stark contrast between Europeans whose profile replicates the aggregate picture of Figure 1 and those of the other smaller ethnic groups. The lack of inter-decile mobility rises at an increasing rate with neighbourhood deprivation but there is a major contrast between Maori and Pacific on one hand and European and Asian on the other. The solid line indicating movement within and between neighbourhoods of the same decile highlights the comparative lack of inter-decile mobility among Maori and Pacific especially among those living in the higher decile neighbourhoods.

Figure 5. The proportion of movers in each ethnic group who moved to area units of same, higher or lower NZDep2006 decile within New Zealand between 2001 and 2006



Source: Statistics New Zealand. Based on customised tabulations from the 2006 Census of Population and Dwellings.

In the case of the Asian population we note a slightly higher upward migration rate to most decile areas compared to European, and higher levels of stability in the low decile areas. In contrast, we observe higher downward mobility rates among Europeans in most deciles except for those living in most deprived areas, decile 9 and 10 areas.

When it comes to upward mobility, that is moves into the lower deciles in 2006 (the black dashed lines), Pacific and Maori exhibit very similar trends (once scale differences are noted). Not only are relatively few members of Maori and Pacific ethnicity actually resident in the lower NZDep neighbourhoods (recall Figure 3) but also exhibit very low probabilities of staying there (the reverse of the European experience).

Unlike European and to only a slightly lesser extent Asian, the propensity of Maori or Pacific to move downwards to areas of higher

deprivation does not decline in the most deprived areas (as opposed to what one may have inferred from Figure 1). On the contrary, the more deprived the neighbourhood the greater the likelihood both Maori and Pacific will move to areas with higher levels of deprivation. That this is not the case for European and Asian, who are more likely to move out of the most deprived areas, accounts for the aggregate behaviour we see exhibited in Figure 1 (the grey dashed line).

In summary, there is a strong connection between ethnicity and likelihood of moving in and out of areas of high deprivation. The markedly different dynamics exhibited by European and Asian not only reflects socio-economic points of differences but may actually exacerbate them resulting in an increasing separation by decile.

Conclusions

Understanding the way migration is associated with social mobility is an important point of connection between social policy and demography. By tracking five yearly changes in address that are linked to a consistent classification of socio-economic status we have been able to describe the prevailing patterns of mobility in the aggregate and for key subgroups within the society. The central question we have posed is whether residence in neighbourhoods with relatively high rates of deprivation is associated with the direction of mobility as judged by the relative socio-economic position of the neighbourhood.

New Zealand has yet to grapple with the relationship between social mobility and residential deprivation and its implications. One of the reasons neither the patterns nor the underlying processes themselves are well understood is that we have confined our understanding of our social geography to cross sectional evidence. Therefore, in contrast to the snap shot representations of the geography of deprivation depicted in the Atlas of Socio-economic Deprivation for example, we have focussed in this paper on the movement of people between deciles of deprivation.

While levels of residential mobility *per se* remain similar across deciles when people do move, the relative deprivation score of the neighbourhood of origin appears negatively related to the degree of upward movement in deprivation index terms. The young (and the old) have a much higher

propensity to move to areas with higher deprivation but those of prime working age are more likely to move to areas of lower deprivation.

When it comes to ethnicity, those who leave deprived neighbourhoods are more likely to be of European and Asian ethnicity and those who enter are more likely to be Maori and Pacific. The net result is a reinforcing of the correlation between ethnicity and levels of neighbourhood deprivation.¹⁶

Limitations

This paper is the first attempt that we know of to trace the pattern of movement individuals living in New Zealand make between neighbourhoods ranked according to the country's deprivation index and to argue for a link between geographic and social mobility. It is important therefore that we also draw attention to some of the limitations of our analysis.

The first is our confining of entry to and exit from high deprivation areas to those changing address only within New Zealand. We have not included those settling from overseas nor have we addressed the geography of emigration and the neighbourhoods people leave behind. When it comes to ethnicity in particular, this wider perspective on the relationship between geographic and social mobility may well be tempered by the evidence on diaspora. The former step is possible given existing data but the latter requires access to results from overseas censuses as well as a consistent deprivation index.

A second feature of the internal migration process and its relationship to the differential deprivation of areas not addressed here is the difference between circulation, temporary migration and more permanent migration. We don't know for example, whether the movements between the different neighbourhoods reflect permanent or temporary moves, whether such moves are structural or circulatory in nature. This is important if we are going to argue for the possible presence of neighbourhood effects where the timing of exposure is of obvious importance. Answering such questions will require instruments other than the census notwithstanding the possibilities opened up by using rebased area unit measures as we have done here.

A third limitation addresses the degree of socio-economic heterogeneity within New Zealand neighbourhoods, a point raised by the referee, who points out that, "even at the meshblock level the heterogeneity of the socio-economic status of households is high". The point is well taken even though

we are using individuals rather than households in our analysis. The more heterogeneous the neighbourhood the less likely residents will be subject to interaction with any one particular socio-economic group. At the same time, there is evidence that this heterogeneity which has been characteristic of New Zealand suburbs may be diminishing in favour of greater homogeneity (Pearce & Dorling, 2006) and this is a trend we need to learn more about.

Fourthly, and a related point, there are many instances of personal and community growth within neighbourhoods over considerable periods that can and do occur in spite of the residential sorting process. In other words geographical mobility is neither a necessary nor sufficient condition for social mobility. From a public policy point of view, as has been learned from the UK experience, rather than viewing progress simply as the geographical redistribution of upwardly mobile individuals, it is important to jointly invest in both people and places, that is in all individuals in places that can provide employment, security and supportive social environments (Cheshire et al., 2003). There is a need therefore to define and document 'social mobility' in an inclusive, broader way which involves *in situ* development and not just upward mobility by migration (Blakely & Pearce, 2002).

Finally, one cannot tell from our evidence whether it is primarily residential sorting which drives individuals to move between neighbourhoods with different deprivation deciles or whether neighbourhood effects do actually play a role and how. The distinction is important because the first largely reflects income and wealth inequality and the second reflects presence of externalities within neighbourhoods. It is the presence of negative externalities in particular which the literature addresses as likely to exacerbate the different potential for social mobility already inherent in the selection effects which govern residential sorting. This paper has reminded us that deprivation rankings of neighbourhoods are maintained through a highly regularised dynamic of reciprocal physical movement of a heterogeneous population and that our understanding of the possible role of the neighbourhood in the development of individuals in New Zealand remains at a very early stage.

Acknowledgements

We would like to acknowledge funding from the Science Faculty Research Grant (No 4738) which assisted in the background research that led to this paper. We would also like to thank Robert Didham of Statistics New Zealand who read an earlier draft and provided valuable comments.

The views and opinions expressed in this paper remain strictly those of the authors. Access to the data used in this study was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the authors, not of Statistics New Zealand.

Notes

1. The recently released study of residential location patterns in Auckland underscores the attention people pay to the characteristics of their neighbours in their location decisions. See Maré et al. (2011).
2. For an earlier study refer to Shefer and Primo (1985).
3. These maps may be also be viewed on the Ministry of Health website: <http://www.moh.govt.nz/moh.nsf/indexmh/dhb-maps-and-background-information-atlas-of-socioeconomic-deprivation-in-nz-nzdep2006>
4. An exception is the study of mortality rates at area unit level over five census periods within District Health Boards (Pearce & Dorling, 2006).
5. This study confines itself to the use of deciles. An analysis of mobility based on scores themselves (with comparisons to deciles) is reported in Clark & Morrison (2011).
6. In terms of their average geographic and population size, mesh blocks are smaller than area units, which, in turn, are smaller than small areas.
7. While this linkage is possible for the vast majority of area units, it is not possible for all. The 2006 census counted 1919 area units and of these 93.4 percent (1792) could be assigned an NZDep06 score. There were 1859 area units assigned in the 2001 census and 1723 or 92.7 percent were able to have deprivation score assigned. In 2006 a total of 1792 area units had a deprivation score compared to a total of 1723 in 2001. A total of 1679 area units (with no boundary changes) had a defined NZDep score assigned in both 2001 and 2006.
8. Geographic and socio-economic mobility are not entirely separate of course and there is a case here for formally recognising the spatial clustering of neighbourhoods sharing similar NZDep deciles. We do not pursue this link here however.
9. The degree of actual movement is much higher than this because we are only counting people who change decile categories as movers, and not those who

change position within the deciles - a point elaborated in greater detail elsewhere (see Morrison, 2011).

10. Any two neighbourhoods could be the same or a different physical neighbourhood, down the road or at the other end of the country. This conclusion is partly a function of decile 10 being an end state. While those originating in decile 10 can move to a lower decile they cannot move any further 'downwards' in socio-economic terms. It is important in evaluating Figure 1 however, to recognise that the range of scores within decile 10 is actually wider than the range over all the other deciles combined, and therefore there is considerable scope for movement within decile 10 (see Clark & Morrison, 2011).
11. The probabilities plotted in Figure 1 were calculated from Table 4, as the row sum of the unconditional probabilities in the cells of the corresponding row to the right of the diagonal; 0.0613, in the case of row one for example. The second value in the black dashed line, 0.0634, is the sum of the unconditional probabilities in the cells of the second to top row of Table 4, and so on.
12. These are the sums of the cells to the right and left of the diagonal in Table 4.
13. We explore a wider set in a multivariate framework elsewhere, one using the Survey of Motivation and Dynamics of Migration, in Clark & Morrison (2011) and the other further Morrison & Nissen (2011).
14. Almost three-quarters (73 percent) were living at a different address in 2006 than in 2001 compared to 63 percent for those 30-44, 40 percent for those 45-64 and only a third for those 65 years and over (33 percent).
15. The highest mobility rates among the five categories identified are recorded for the relatively small Middle Eastern/Latin American/African group at 68 percent.
16. These conclusions, drawn from the descriptive evidence in this paper, are confirmed in multivariate analysis of the Survey of Dynamics of Motivation and Migration reported elsewhere (Clark & Morrison, 2011).

References

- Bailey, N. and Livingston. M. (2008). Selective migration and area deprivation: evidence from 2001 census migration data for England and Scotland. *Urban Studies* 45(4): 943-961.
- Barnett, R. (2000). Does place of residence matter? Contextual effects and smoking in Christchurch. *New Zealand Medical Journal* 113: 433-435.
- Baum, S. (1997). Sydney, Australia - a global city? Testing the social polarisation thesis. *Urban Studies* 34: 1881-1902.
- Bedford, R. (1999). Internal migration in New Zealand's settlement hierarchy, 1991-96. *New Zealand Journal of Geography* April 25-33.
- Blakely, T. & Pearce, N. (2002). Socio-economic position is more than just NZDep. *New Zealand Medical Journal* 115, 109-111
- Cheshire, P.C., Monastiriotis, V. & Sheppard, S. (2003). Income inequality and residential segregation: labour market sorting and the demand for positional goods. In R. Martin, & P.S. Morrison (Eds) *Geographies of Labour Market Inequality*, London: Routledge, 83-109.
- Clark, W. A. V. & Cadwallader, M. T. (1973). Locational stress and residential mobility. *Environment and Behaviour* 5: 29-41.
- ____ & Dieleman, F. M. (1984). Housing consumption and residential mobility. *Annals of the Association of American Geographers* 74(29-43).
- ____ & Morrison, P.S. (2011). Residential sorting, neighbourhood effects and social mobility: evidence from a large scale survey. *Urban Studies* Submitted.
- Davis, P. (1979). Social mobility in New Zealand: preliminary results from a national survey. *Australian and New Zealand Journal of Sociology* 15(1): 50-56.
- Didham, R. (2003). *New Zealanders on the move*. Working Paper. Wellington: Statistics New Zealand.
- ____ (2007). *Where people move and why people move: two key questions on internal migration*. Paper presented at the Population Association of New Zealand 2007 conference, Wellington, New Zealand.
- Friedrichs, J., Galster G. & Musterd, S. (2003). Neighbourhood effects on social opportunities: the European and American research and policy context: editorial. *Housing Studies* 18(6): 797-806.
- Gibbons, M. (2010). *Income and occupational intergenerational mobility in New Zealand*. New Zealand Treasury Working Paper, New Zealand Treasury.
- Glennerster, H., Lupton, R., Noden, P and Power, A. (1999). *Poverty, social exclusion and neighbourhood: studying the area bases of social exclusion*. London, London School of Economics.
- Gregory, R. G. and Hunter, B. H. (2001). Growth of income and employment inequality in Australian cities. In G. Wong and G. Picot (Eds.). *Working time in comparative perspective, Vol 1: patterns. Trends and the policy implications of earning inequality and unemployment*. Kalamazoo, W.E. Upjohn Institute for Employment Research.

- Hulchanski, J. D. (2007). The three cities within Toronto: income polarization among Toronto's neighbourhoods, 1970-2000. *Centre for Urban and Community Studies. Research Bulletin* Toronto, University of Toronto.
- Lupton, R. (2003). 'Neighbourhood effects': Can we measure them and does it matter? CASEpaper 73 London: Centre for Analysis of Social Exclusion.
- Maré, D., Coleman, A., & Pinkerton, R. (2011). *Patterns of Population Location in Auckland*. Motu Working Paper 11-06. Wellington
- _____ and Timmins, J. (2003). *Moving to jobs*. Motu Working Paper 03-07. Wellington Motu Economic and Public Policy Research Trust.
- Morrison, P. S. (2011). Residential sorting and social mobility in New Zealand. *Policy Quarterly* 7(2 (May)): 46-52.
- _____ and Clark, W. (2011). Internal migration and employment: macro flows and micro motives. *Environment and Planning A* in press.
- _____ Clark, W., Nissen, K., Didham, R. and Sloan, M. (2009). Moving for employment reasons. *Proceedings of the Labour, Employment and Work Conference 2008* (LEW13), Victoria University of Wellington, School of Geography, Environment and Earth Sciences: 326-342
- Myles, J. and Picot, G. (2002). Neighbourhood inequality in Canadian cities. *Horizons: Policy Research Initiative* 5(1): 8-10.
- Nord, M. (1998). Poor people on the move: county-to-county migration and the spatial concentration of poverty. *Journal of Regional Science* 38(2): 329-351.
- _____, Luloff, A. & Jensen, L. (1995). Migration and the concentration of poverty. *Rural Sociology* 60(3): 399-415.
- Pearce, J. and Dorling, D. (2006). Increasing geographical inequalities in health in New Zealand, 1980-2001. *International Journal of Epidemiology* 35(3): 597-603.
- Poot, J. (1981). Intra-urban residential mobility: a case study of New Zealand. in W. F. J. Van Lierop and P. Nijkamp. (Eds). *Locational development and urban planning*. The Netherlands, Sythoff and Noordhoof, Alphen aan den Rijn
- Power, A. and Wilson, J. (2000). *Social exclusion and the future of cities*. CASE paper 35. London Centre for Analysis of Social Exclusion
- Robb, J. H. and Cloud, J. (1970). Occupational mobility in a New Zealand provincial borough. *The Australian and New Zealand Journal of Sociology* 6(1): 49-51.
- Salmond, C. and Crampton, P. (2001). NZDep96: What does it measure? *Social Policy Journal of New Zealand* 17(82-100).
- Shefer, D. and Primo, N. (1985). The determinants of household migration into and out of distressed neighbourhoods. *Urban Studies* 22: 339-347.
- Solon, G. (1992). Intergenerational mobility in the United States. *American Economic Review* 82(June): 393-408.
- South, S. J., Crowder, K., & Chavez, E. (2005). Exiting and entering high-poverty neighbourhoods: Latinos, Blacks and Anglos compared. *Social Forces* 84(2): 873-900.
- _____ & Crowder, K. (1997). Escaping distressed neighbourhoods: individual, community, and metropolitan influences. *American Journal of Sociology* 102(4): 1040-1084.

- Townsend, P. (1999). Poverty, social exclusion and social polarisation: the need to construct an international welfare state. in Shaver, S. and Saunders, P. (Eds.) *Social Policy for the 21st century: justice and responsibility?* : Proceedings of the National Social Policy Conference, Sydney, 21-23 July 1999. Sydney: Social Policy Research Centre, University of New South Wales.
- White P., Gunston J., Salmond C., Atkinson J., Crampton P. (2008). *Atlas of Socioeconomic Deprivation in New Zealand NZDep2006*. Wellington: Ministry of Health.
- Wilson, W. J. (1987). *The truly disadvantaged: the inner city, the underclass, and public policy*. Chicago, Illinois, University of Chicago Press.
- Witten, K., Hiscock, R., Pearce, J. and Blakely, T. (2008). Neighbourhood access to open spaces and the physical activity of residents; a national study. *Preventative Medicine* 47: 299-303.

Migration, Home and Belonging: South African Migrant Women in Hamilton, New Zealand

ANNIKA PHILIPP *
ELSIE HO **

Abstract

In the traditional settler migration model, the term 'home' commonly refers to migrants' country of origin. In today's highly globalised world however, migrants can have ongoing attachment to their societies of origin and destination and thus can have different perceptions of what the term 'home' means. This article examines how six South African women who came to New Zealand between 1998 and 2007 actively created a sense of home in their new country through everyday domestic practices, such as furnishing their homes with certain objects they brought from South Africa, grocery shopping at South African stores, and consuming South African food. While images of their South African home remained strong even after migrating, other elements such as safety, family, new social networks and New Zealand's outdoor lifestyle were also crucial for our participants' sense of home, and impact on their identity and sense of belonging. The article concludes with two points. First, migrants' subjective home-making experiences are just as important as objective labour market performance indicators in providing an understanding of migrant settlement outcomes. Second, there is an emerging transnational identity amongst some South African migrants whose changing understanding of home incorporates images, values and feelings from both their country of origin and their current place of residence.

* Email: Annika.philipp.nz@gmail.com

** School of Population Health, The University of Auckland.

Introduction

The experience of leaving a place that one has called home for many years and settling in a new country challenges an individual to reflect on the meaning of 'home'. In the traditional settler migration model, migration is a once-in-a-lifetime change of country of residence. Home is understood as a single localised place often associated with the migrant's country of origin, as opposed to the place of destination, which remains 'a strange land' (Ahmed, 1999; Ahmed et al., 2003). However, in today's highly globalised world, migrants can maintain intensive contacts and multi-stranded relations that link together their societies of origin and destination (Basch et al., 1994; Levitt & Jaworsky, 2007). As a consequence, it is questionable whether the old notion of home in dichotomised terms of a 'here' (or 'home') as opposed to a 'there' (or 'away') truly reflects migrants' lived experiences (Ahmed, 1999; Brah, 1996).

The approaches used to conceptualise home are as varied as the disciplines that attempt to do so and often result in conflicting findings (for a review of the literature and theoretical debates concerning this topic, see, for example, Mallet, 2004). In this article, our focus is on consideration of what it means to be 'at home' for migrants themselves. We begin by investigating the use of objects in everyday life, such as furniture, as a form of migrant self-expression of being at home or not at home (Chapman and Hockey, 1999; Gurney, 1997; Salih, 2003). Prior to leaving their country of origin, migrants have to decide which objects to take with them and which to leave behind. These decisions are often influenced by many factors, such as the conditions of departure, financial means, the intended duration of their stay in the new country, as well as attachment to certain objects that are imbued with special meaning. In the process of migrating to and settling in a new place of residence, objects brought from the previous place of residence can play an important role in the active (re)creation of a home and can transform 'spaces', such as houses, into 'places' of home (Rapport and Dawson, 1998; Rensel, 1997; Salih, 2003; Weiss, 2005).

Just as domestic objects can evoke positive feelings of familiarity and a sense of stability to counter feelings of estrangement, disruption and dislocation in the new place of residence, food, habits and routines can also help migrants feel at home (Beer and Chen, 2007; Kershen, 2002; Petridou, 2001). Food can be a bridge to a new home. When migrants arrive at a new

place, familiar tastes and smells can help create new visceral associations between their country of origin and their new country (Longhurst et al., 2009). Besides, the consumption of food does not solely take place through eating, but also through the practice of grocery shopping (Manekkar, 2005). For migrants, the everyday experiences of buying food from 'home' often evokes feelings of nostalgia, memories of places, and authentic tastes and products that make them feel connected with it (Petridou, 2001). Approached this way, home can be understood as a 'lived experience' through everyday matters of people, and in this case, of migrants (Brah, 1996).

Social relations, namely family ties, networks of friends or other migrants can further contribute to the establishment of a sense of home in the country of destination. At the same time, however, ties to family members left behind and amongst members of the migrating group, can be a source of struggle and tension and thus can be counterproductive in the post-migration adjustment and re-creation of a sense of home (cf. Ward et al., 2001 on homesickness and intergenerational and gender-based conflict in migrating families).

Clearly, the things that can make migrants feel at home or not at home are varied, and can change over time, as are reflections about where home is. Migrants' home-making experiences can tell us a great deal about how well they are settling in, and adapting to, the society they have moved into and how socially cohesive this society is. Yet, successful settlement or integration is commonly measured through 'objective' indicators such as labour market outcomes, ability to match qualifications with jobs, income measures, home ownership, or the rate of improvement in non-English speaking migrants' English proficiency (Fletcher, 1999; Khoo and McDonald, 2001). In this article we explore how six migrant women from South Africa created a sense of home in New Zealand through everyday domestic practices, and how their home-making processes provide an insight into the settlement and integration of this migrant group to contemporary New Zealand society.

Migration between South Africa and New Zealand is not a new phenomenon; however, it was not until the 1990s that migrant numbers began to rise rapidly. The political and economic turmoil following the transition to democracy in 1994 saw an increase in emigration from South

Africa. These events coincided with the introduction of the points-based system of migrant selection in New Zealand which enabled migrants to be selected on merit, such as work experience, age, recognised qualifications and proficiency in English language (Bedford, 2004). As a result, the volume of South African migration to New Zealand increased dramatically. In the ten years between 1986 and 1996, the South Africa-born population in New Zealand increased from 2,685 people to just over 11,000. The numbers continued to accelerate, to 26,061 in 2001 and then to 41,676 in 2006, making South Africa the sixth largest overseas-born group in New Zealand at the time of the latest census in 2006 (Statistics New Zealand, 2007a). It is important to note that these census birthplace population figures may not reflect the 'real' extent of immigration from South Africa as many 'South Africans' were born elsewhere: in the United Kingdom, or in other African and European countries (Trlin, 2010).

For these recent migrants from South Africa, emigration to New Zealand has largely been driven by a complex set of 'push' factors associated with increasing violence, crime and political instability, as well as a perceived drop in educational standards, employment and the quality of infrastructure (Barkhuizen, 2006; Barkhuizen & Knoch, 2005; Lucas et al., 2006; Trlin, 2010). South African migrants in New Zealand have a youthful age structure and most of them have completed vocational or university education in their country of origin (Ho et al., 2005). The majority of them have entered New Zealand as skilled migrants, and have achieved positive labour market outcomes. For example, their labour force participation rates are similar to those of New Zealand-born residents (Bedford, 2004; Ho et al., 2005). Studies related to their employment and housing experiences also show that this group of migrants have better outcomes compared to skilled migrants from China and India (Johnston et al., 2005, 2006). These results seemingly support a popular view that South African migrants are able to settle relatively easily in New Zealand due to their economic participation and assumed cultural proximity — as former British colonies, both countries have things in common including language, sports and driving conventions, to name a few. Nonetheless, the subjective migration and settlement experiences of this migrant group are not well researched or understood. In addition, concern over migrant settlement issues tends to concentrate on New Zealand's largest city, Auckland. However, our study focuses on the experiences of women in one of New Zealand's smaller

metropolitan centres, Hamilton, where the number of South African migrants (1,750) made up 1.4 percent of the city's total population of 130,000 in 2006 (Statistics New Zealand, 2007b).

The remainder of this article is divided into five sections. The first section describes the methodological process used to carry out the research. In the next two sections we consider the role of furniture and other domestic objects, as well as food and the everyday practice of grocery shopping. The fourth section looks at what constitutes home, and discusses the complexities of our participants' multiple belongings and transnational practices. Our findings suggest that in addition to memories and images of home in South Africa, elements such as safety, family, new social networks and New Zealand's outdoor lifestyle are also crucial in our participants' constructions of home. In conclusion, we argue that researching migrants' home-making experiences is useful for deepening understanding of migrants' settlement process and their sense of belonging to their country of origin as well as their current place of residence.

Research on Home-Making Experiences

This study drew on findings from the first author's Master's thesis and involved repeat interviews of six South African women resident in Hamilton in 2007. The research participants were recruited through contacts at the University of Waikato, the Waikato Migrant Resource Centre, the Hamilton City Council as well as the South African Immigration Community Trust. Although there are only a small number of South African migrants in Hamilton, they are not a particularly 'visible' population because the majority of them are white and their residential pattern is rather dispersed. Therefore, multiple contact points were used to ensure that information about the research reached as many prospective participants in the South African community as possible. Initially, we hoped to have at least one participant from each of South Africa's five ethnic groups but we were unable to find any participants belonging to the 'Black African' and the 'Indian/Asian' groups. Despite this limitation, the participants were a diverse group in terms of age groups, years of residence in New Zealand, living arrangements and employment status (see Table 1).

Table 1: List of participants

Name*	Ethnic group (Apartheid category)	Age group	Years living in NZ**	Living arrangements	Work
Jane	Afrikaner	40-44	8	Husband, two children	Owns a café
Ellen	Afrikaner	40-44	6	Husband, one son	Works in a welfare organization
Lisa	Afrikaner	35-39	10	Husband, three children	Tertiary teacher
Carla	Afrikaner	25-29	2	Lives alone	Tertiary student
Linda	English South African	30-34	7	Husband, one son	Administrator
Ruth	Coloured	40-44	10	Husband	Tertiary teacher

* Pseudonyms have been used

** At the time of the study (2007)

Because the research is about home, migration motivations, social relationships, beliefs and meanings, we were mindful of the need to proceed with caution. Asking participants to talk about and reflect on home, in particular, meant touching on very personal feelings — feelings that might not always be positive because strong, negative memories could also be recalled. Therefore, several steps were taken to gain research participants' confidence and trust. Prior to the interviews, contact was made with each prospective participant to explain the purpose of the research and to clarify any questions regarding the interview process (such as using a tape recorder, to which all women agreed). It was also important to explain to them why the researchers were interested in the research topic. The fact that both researchers are migrants to New Zealand (from Germany and Hong Kong) was a useful factor in establishing empathy and building good rapport with the participants.

The first interview with each participant generally lasted between 45 and 90 minutes, and occurred in places where they felt comfortable and able to express themselves, such as their home or a private corner at their workplaces. Interviews were semi-structured; open-ended questions were used to give the women as much freedom as possible to explore meanings and topics that were important to them. At the beginning of the interviews we asked the women to talk about their life in South Africa, when and why

they decided to migrate to New Zealand, and what their general feelings were about their migration to Hamilton and so on. Each woman had her own way of approaching the topics and adjusting to the interview situation. We then went on to explore more sensitive topics relating to the concept of home, such as what made each participant feel at home in New Zealand, what objects they brought from South Africa to decorate their new homes, what role food played in creating a new home, and whether their understanding of home had altered in any way. The interviews were conducted in a conversational style, which meant that at times they asked the researchers questions, such as when they came to New Zealand themselves.

Following the interviews the audiotapes were transcribed. Each woman was then sent a copy of the transcript to read and asked to provide feedback about the accuracy of the transcription. They were also given an opportunity to make further comments, or erase any material that they did not want to be used. This proved useful in terms of maintaining contact, reinforcing their trust in us, and above all, empowering them to retain their ‘voice’ in the research process.

A variety of fieldwork strategies were used. Besides interviews with participants, the researchers were invited to attend an ‘everyday’ dinner and a social gathering as well as participant-observation sessions at some of the participants’ homes and workplaces. However, it should be noted that the participant-observation sessions were carried out to ascertain what material and decorative arrangements were being used in homes or at the workplace, as opposed to person-orientated behaviours. In other words, we just “hung out” (Bernard, 2006, p. 345) with participants so that we could develop some insight and understanding into the lived experiences of our participants.

All women were interviewed two to three times. Because the participants appeared to place trust in us, the follow-up interviews allowed us to explore sensitive issues in greater depth (these were often related to post-migration difficulties in their personal and family lives), as well as to fill gaps in our data and verify interpretations drawn from previous interviews. Emerging themes relating to the meaning of home were identified and are discussed below.

Furniture

All women in this study left South Africa at a time when the country was undergoing dramatic change (Davenport and Saunders, 2000; Sparks, 2003). Increasing crime rates and growing uncertainty about the country's future were mentioned as the main push factors that the decision to leave South Africa in the post apartheid period had been made. Although not all of them had gained permanent residence status when first arriving in New Zealand, they had brought objects from South Africa to decorate their new homes. Ellen, Jane, Linda and Ruth (and their husbands and children) had all decided to leave South Africa permanently at the time of their migration to New Zealand. Ellen brought with her most of their furniture together with domestic items such as cups, plates and cutlery. She only sold electronic devices (computers and CD-players) because she thought they were incompatible in New Zealand.

We brought the furniture ... because we were told that the furniture here is very expensive and we were also told that it is very comforting to have your own things here and ... I mean, we just decided to take everything we could in a container. I think a container is about the size of a garage, so there was only one double bed that couldn't fit in there but the rest could go ... When you come here, nothing is familiar. The grocery isn't familiar, the labour is not familiar, the people are not familiar, the church is not familiar, the doctor is not familiar ... Yeah, I think in the beginning, anything that is familiar is something to hold on, just remind you of your roots.

Creating a sense of familiarity, in order to counter the disruption their migration caused was also particularly important to Jane, who migrated with two young children. Just like Ellen, one of Jane's strategies was to create an environment that visually resembled the familiarity of the South African home they left behind.

In those years there were very few South Africans [in New Zealand] and you don't have your belongings, your furniture, to remember you of your place. So, to make you feel at home ... And it's important for the kids. The kids need to have familiar things around them.

Initially, the women's decision to bring or send objects from South Africa to New Zealand was based on financial implications. The cost of buying new furniture in New Zealand was perceived as higher than shipping their furniture from South Africa. However, after their belongings arrived in New Zealand (which took up to three months after their migration), the significance and importance these familiar objects held were highlighted. Ruth described her feelings as follows:

I tell you, I can recall the day our furniture ... cos you know when you're new here ... the day that your things arrive from South Africa, it's like Christmas. You're so excited; it's just the fact that they are familiar things. So yes, there is something about bringing things with you. It's a good feeling when you get things that you are familiar with ... when everything else is so unfamiliar.

Ruth and her husband brought with them a large amount of furniture and decorative objects from South Africa. When we visited their home, Ruth told a story about almost every object in her home, where they purchased it, who gave it to them, and what meaning it held for them. All of these objects were very well looked after and many were prominently placed. The only item that was missing in the kitchen was their South African fridge. Ruth told us that this fridge exceeded New Zealand fridge sizes and therefore it was unable to be fitted into the kitchen space. She bought a new fridge in New Zealand, and stored the old fridge in the garage. Ruth's old fridge had a lock on the door. She explained that during the apartheid period in South Africa, most fridges in South Africa had a lock not only to prevent burglaries, but also to make sure that black and coloured servants did not steal food from their bosses. Ruth identifies herself and her husband as Coloured South Africans. A strong advocate for democracy and equality, Ruth constantly displayed ambivalent feelings about her decision to leave South Africa. She told us "if it hadn't been for the violence, we would have stayed in South Africa". The fridge held special meaning for her because it served as a reminder of apartheid South Africa.

Ellen, too, has kept almost all her furniture from South Africa even six years after her move to New Zealand. During the initial period of her settlement in New Zealand, these familiar objects helped her counter feelings of alienation and discontinuity in the new environment. Today, her

feelings towards them have changed and only a table still holds special meaning to her.

I'm not feeling that much about it anymore. This table I do because ... it was made by one of my husband's children and he died. So the table will go everywhere, but the rest ... not really.

Lisa's migration experience was different to that of Ruth, Ellen and Jane. At the time of her migration to New Zealand, Lisa was single and had just completed her doctoral studies. She gained a two-year contract to work in New Zealand and so she considered her move to be temporary. Lisa only brought some basic belongings, which included a piano, with her to New Zealand. Now, ten years later, she is married to a New Zealander and has three children. None of the things she brought from South Africa are kept, except the piano.

I hardly ever play anymore, though I'm always planning to. I sometimes feel that I should get rid of it, because we're just basically carrying it around from house to house, but then again I do feel that this is something I brought over, the one thing that I still have and I should keep and so ... I just hang on to it.

For Lisa, the piano has long changed its meaning. Like Ellen's table and Ruth's old fridge, these objects have become memory aids about places, events and people. At the same time, objects from South Africa represent something unique, something different from things in New Zealand.

One South African object that was repeatedly mentioned during the interviews was the biltong maker. Biltong, a South African speciality, is meat that gets dried in a box, the biltong maker. Jane and Ellen brought their biltong makers from South Africa and still use them regularly; Jane sells biltong she makes in the café she owns in Hamilton. Ruth did not bring a biltong maker, but she found another way to dry meat. Her brother built a biltong maker out of two cardboard boxes with a light bulb that provides the necessary heat to dry the meat properly. This self-made box shows the creativity of migrants, who can make things possible in a foreign environment where certain elements, in this case, a biltong maker, are not available (cf. Salih (2003) who observed similar practices in her study on transnational Moroccan migrant women).

All women in this study perceived their migration to New Zealand a major turning point in their lives. All had experienced periods of distress, variegated feelings of alienation and insecurity, and a loss of knowledge and routines. Hence, objects such as furniture, cooking utensils or a cardboard box converted into a biltong maker, evoked feelings of familiarity, continuity and safety, and helped the women gain a sense of being at home in their new environment.

Tastes and Smells

The struggle to find and prepare ‘tasty’ food in the country of destination can reflect the distance between past and present localities and the resultant longing for certain tastes and products (Beer & Chen, 2007; Petridou, 2001). In almost all interviews the ‘superior’ tastes of South African food products were mentioned in opposition to New Zealand-made groceries or dishes, and especially New Zealand-made sausages and meat, which were described as tasting ‘too bland’, ‘plain’, ‘watery’, not salty or spicy enough. Jane decided that the only way to change this was to open her own café.

After we came here, we went to some cafés – because I love going to cafés or dining out – and we soon realised that almost nothing is homemade. I got tired of not finding a place that I really liked and so decided to open my own shop.

Although Jane did not advertise her café as specifically South African, the food on display in her shop is labelled in Afrikaans and English, and South African dishes like milktarts, koeksisters and biltong, are sold. Her café in Hamilton provides her with a means to remedy homesickness by re-creating her taste and memories of home, especially as she has not been able to return to South Africa since migrating to New Zealand eight years ago.

For Ellen, it is not just eating South African food but eating with other South African migrants that she enjoys most. When we first met her, she hosted a meeting of the South African Immigration Community Trust at her property. The evening started with some information on matters such as how to find a job and what kinds of social support are available in Hamilton. The highlight of the meeting, however, was the big braai (South African barbecue) with South African sausages and meat. Ellen told us how she felt about that evening:

... just makes you feel at home. It is like bringing a piece of home to the place where you are now. Everything about it. It is the taste, it is the way you do it, the way you talk to each other, you know, the way you do it, the jokes you make, it will be the same kind of jokes, so it's all about that.

Lisa also had a longing for certain tastes of South Africa. In her first year in New Zealand, she had tried several times to bake a special type of South African biscuit but was disappointed when she failed to create the right taste each time. She also possessed a South African cookbook, which she kept for 'special occasions'. But in her 'ordinary' days, eating food was not important to her. Lisa also told us that she could buy South African products at some bigger supermarkets in Hamilton, which have special shelves for South African groceries. There is also a South African butcher in Hamilton. All of the women knew of this butcher who, apart from selling meat, sells products like coffee, biscuits, rice and even toothpaste and washing powder. To Lisa, shopping at the South African butcher was different from just picking up some South African products from the supermarket. Shopping there presents an opportunity through which all the senses are engaged and the sights, sounds, smells and tastes of her previous place of residence can be recalled.

I like to go to the South African butcher, not so much because I love the food itself; I just like the familiarity, seeing things I remember from my childhood, and speaking my language. For that little while in the shop I feel as if I am back home, so I tend to stretch it out a bit. I guess food is an important part of one's everyday cultural experience, so it is not so much the fact that South African food taste better (which it does) as the fact that it provides the opportunity to participate in one's culture that makes you want to buy it.

Lisa's experience can be described as food nostalgia; that is, a 'rediscovery' of products that are perceived as either authentically South African or as provoking strong memories of her past (James, 1996). All women reported nostalgic moments like Lisa's, where the tastes and smells of certain food make them think of their South African upbringing or of people in South Africa. Yet, Lisa also appreciated that the experience of migration had opened up a whole new market of products for her to use. Now Lisa, as well as three other women, prepares South African dishes with

ingredients that are available in New Zealand, thus creating a whole new, creolised ‘taste of home’.

Home, Belonging and Transnational Practices

So far our paper has been focused on how domestic objects brought from South Africa, food and everyday practices such as grocery shopping, have helped our participants re-create a home for themselves and their families in New Zealand. Some women, however, expressed their understanding of home by emphasising elements that they perceived as lacking in South Africa.

Carla was the youngest woman we interviewed. She told us she decided to come to New Zealand to pursue her doctoral studies because she felt bored in her country of birth. Carla enjoys outdoor activities and travelling, but it was hard for her to do these things in South Africa because she felt unsafe there. After studying in Hamilton for one year, Carla returned to South Africa to visit family and friends. She was surprised she did not feel at home there.

I think New Zealand is my home now. Like I said, I was there for three weeks and during the second week I started missing New Zealand...

It was the feeling of being safe, the outdoor lifestyle and the general way of life in New Zealand that Carla missed — the three things she said she values most in her understanding of being at-home. All of the other participants also referred to the constant threat of crime and violence they experienced in South Africa and associated this situation with not feeling at home in their home country. Ruth said:

My husband and I didn’t have real violence affecting us directly, but we had it happening to friends. They were held up in their houses, and things like, a friend of mine was raped in her house, because that’s what they do. They break in and if there’s a woman that’s what they do ... and you live with a dog, with burglar bars, with high walls, you know, glass at the top and all of these things ...

New Zealand is the country where Ruth and the other women feel it is safe to live and raise their children.

We wanted something quiet and peaceful and I know that that sounds boring, but when you've got so much violence around you, you want that.

For Linda, it was the white South African values in her home country that she wanted to break away from. These values were mentioned repeatedly in the three interviews we had with her — they were described as ‘conservative’, ‘strict’, having a high level of ‘formality’ and ‘hierarchies’, ‘being so ambitious and wanting to win’, and wanting to do ‘better than anybody’ (cf. Sparks, 2003 on perceptions of South African values). Linda felt she did not fit into her country of birth. When she became pregnant and thought more seriously about how she wanted to raise her son, it became apparent that her values were very different from the values of her parents and the people in her immediate environment. The move to New Zealand offered her the opportunity to start a new life and to be able to raise her son her way.

I mean we talk to him as a person and I mean we don't smack him. We explain to him that he has done wrong. And you know, my parents sort of think that for disciplining they need to be smacked kind of thing, cos that was what it was like when we were young, but he's different in the way that he is comfortable speaking what he feels, you know.

One of the first things Linda described to us when we met was about the day that she, her husband and her son became New Zealand citizens, describing it as one of the most important days in her life. She stressed repeatedly that she is a ‘Kiwi’¹ now, and that she felt at home in New Zealand.

You see, for my husband and I, we always wanted to fit in. We wanted to come here and make this our home; that was our intention and then, when we got our citizenship, with the seal of approval on it, to know that we are Kiwis and I think because we don't have any ties, or anything that wants us or that would make us go back to South Africa. And because it is our home, you know, it's our home.

For Linda, being a Kiwi was mainly grounded in feelings of belonging to New Zealand, and the adoption of Kiwi values such as egalitarianism and informality. However, the women in our study negotiated different scales of belonging to their country of origin and their current place of residence.

Jane felt that her belonging still lay in South Africa, despite her positive employment outcomes. The biggest problem Jane faced in New Zealand was the perceived change in the value system of her children — that is, their adoption of Kiwi values such as informality and ‘being extremely laid back’, which she described as equivalent to ‘disrespectful’ and ‘unambitious’, and are contradictory to South African values. Jane’s desire for her children to preserve the values of the old society often created tension between herself and her children, and complicated her adjustment to the new society. Jane constantly weighed the pros and cons of New Zealand and South Africa. Although she felt her loyalties still lay in her country of origin, she did not want to live there anymore. As a result, keeping the furniture she brought from South Africa was a way of reproducing her home in New Zealand, and opening her café was a retail reproduction of home.

For Ruth, Ellen and Lisa, home is not just ‘here’ or ‘there’, but both. They felt that having a sense of belonging to New Zealand did not mean that their attachments to their country of origin had diminished. Ruth explained:

If somebody asked me ‘What is home?’ I would say ‘New Zealand.’ Because I think that this is where I’m working, where my house is, you know, where I’m living. Where I am living at that time, that would be home for me ... I’d say that New Zealand is my home, but there are things South African that you’ll always miss, so you bring that up and it’s about ... it’s about food, it’s about places that you knew as you were growing up.

Ruth’s understanding of home is grounded in what Brah (1996, p. 4) describes as “an image of ‘home’ as the site of everyday lived experience”. This everyday experience not only comprises networks of friends, family or neighbours and the workplace, but also day-to-day routines and activities such as cooking, shopping, exercising and going out. No differentiation can be made between ‘here’ or ‘there’. Rather, it is a fusion of both (Ahmed, 1999). In one interview, during a discussion about food and cooking, Ruth made a comment that encapsulated her image of home:

At home [in New Zealand] I rather cook like at home [in South Africa], very spicy food.

Ellen's feelings of being at-home were closely associated with loved ones. Home, therefore, is where the heart is.

For me, the thing that's most important for me to feel at home, is just to have people that I love around me. For me, that's home. Because I don't have family there [in South Africa], I think it's a lot easier for me to feel at home here. I would feel very unsettled if my mum and dad were still alive and still there. Yeah, for me the people are the most important thing and it's really good to have my son over here.

Lisa is married to a New Zealander. She said it was through her relationship with her husband and becoming part of his extended family that she developed a sense of belonging to New Zealand. This feeling became even stronger after the birth of their three children and as her network of friends grew over the years. Yet, Lisa still has strong attachment to people and places in South Africa, and felt like she "needed to go back home" to see her parents, siblings and relatives, and "just to touch base" every two to three years.

I still need to go back often, a part of it is ... is for my own sanity, but part of it is also for the sake of my family as well. I feel I owe it to them.

When asked what made going back to South Africa, even if it was just for a short period, feel like 'going home' for her, Lisa explained:

The familiarity, the history and all that. Like waking up in the morning and hearing birds chirping and then realising that that particular kind is bird chirping, in that particular way, is just something that you have missed. So it's just the sound and the feel and the smell and of course the people.

Although Ruth and Carla had also made return trips to South Africa after moving to New Zealand, they found many places had changed, and said they felt more like visitors in their home country. Jane, Ellen and Linda have not returned to South Africa since they arrived in New Zealand six to eight years ago. Ellen's parents have passed away; if they had still been alive she said she felt she would have been very unsettled if she hadn't been able to travel back to see them. Linda's parents and a sister migrated to New Zealand after her arrival. Because her main reason for leaving South Africa

was to break away from South African values, she had not felt it necessary to return to South Africa. However, when her son is older, Linda thought they would pay a visit to South Africa so they could show their son the places where she and her husband had grown up and met. However, Jane's mother and siblings still live in South Africa, and this fact acts as a constant reminder of the physical distance between her country of origin and her current destination.

I miss my family extremely much. It sometimes scares me to think I'm not going to see them again. I haven't seen them in all the seven years. That's a scary thought, you know, you get to an age where you think, 'Is it more important to be in a safe country, than to be with your family?' That's a sad thought.

While a physical return was not possible, these women maintained contact with family, relatives and friends back home through phone calls, text messages and emails. These transnational ties enable them to be simultaneously part of the communities in both their country of origin and their current home. This provides them with crucial emotional, ideological and material resources and support during the process of post-migration adjustment and settling.

Conclusion

Despite cultural proximity and positive labour market experiences, the stories that migrant women from South Africa tell about making home in New Zealand suggest that their post-migration adjustment and settlement has not been an easy process. Differences in everyday matters, communication etiquette and values, together with difficulties establishing friendships with local residents, were frequently mentioned as things that had complicated their settlement. The consumption of material goods plays an important role in their (re)creation of home. All women in our study placed strong emotional values on the objects they brought from South Africa, even though some were described as being highly impractical and almost never in use. These objects, together with other everyday domestic practices such as grocery shopping at South African stores, created feelings of familiarity and comfort which concomitantly aided settlement into their new home.

Family is crucial in the women's constructions of home and belonging, regardless of whether they refer to the family back in their country of origin, the family in their current place of residence, or in both places. Migration disrupts family life and can create tensions and conflicts among members. Some women in this study had experienced distress, and feelings of ambivalence and guilt associated with emigration from South Africa. Creating lifestyles that they or their families are either familiar with or becoming accustomed to (e.g. the outdoors) but without the negatives of violence, crime and political instability is in part a strategy some women have used in the settlement process.

Migrants' construction of home is an ongoing negotiation of transnational belonging and local attachments (cf. Ehrkamp, 2005). At the time of interviews, one woman in this study wanted to break off her linkages with South Africa, while another one felt that her belonging still lay in her country of origin. The remaining four women felt they had developed a sense of belonging to New Zealand and also held strong attachments to South Africa. They identified themselves as 'South African Kiwis', an emerging transnational identity that blends South African and New Zealand elements together.

In the transnationalism literature, transmigrants' lives are characterised by "simultaneity" and transmigrants "develop and maintain multiple relationships ... that span borders" (Basch et al., 1994, p.7). In our study, only three of the four South African transmigrants had made return visits to South Africa; however, all of them kept links with 'home' by relying on their memories and familiar object or tastes, consuming South African goods, and maintaining close contacts with family, relatives and friends in South Africa via telecommunication. It is interesting to note that not all transnational practices involve physical movements across borders of nation-states; some take place within the borders of the country of destination. One example is shopping at the South African butcher, who provides not only 'nostalgic' products that cater to the tastes and habits of fellow migrants but also an important space for socialising and conversation (cf. Ehrkamp, 2005). In other words, migrants can establish transnational belonging without travelling to the countries to which they feel they belong (see also de Bree et al., 2010).

The narratives of South African transmigrants in our study suggest that transnational practices help ease their uprooting feelings, which in turn facilitate their integration. Yet, some scholars argue that an ongoing connection with the home country prevents integration (Smith, 2001), and may encourage return migration (see, for example, Ley and Kobayashi, 2005; Sanderson, 2009). While return is not a popular option for the women in this study for the present moment, future work might consider what alternatives and outcomes might evolve over time.

Acknowledgements

We would like to thank the migrant women who participated in this research, and in particular their time and enthusiasm for this project. Thanks are also due to the Foundation for Research, Science and Technology for funding this research, and to Joanna Lewin for assistance in the preparation of the manuscript. Finally, we would like to thank the anonymous reviewers who provided invaluable feedback on an earlier draft of this article.

Notes

1. The term 'Kiwi' is commonly used to refer to New Zealanders.

References

- Ahmed, S. (1999). Home and away: narratives of migration and estrangement. *International Journal of Cultural Studies* 2(3): 329-347.
- _____ Castañeda, C., Fortier, A. M., and Scheller, M. (2003). Introduction: uprootings/regroundings. Questions of home and migration. In S. Ahmed, C. Castañeda, A. M. Fortier & M. Scheller (Eds.), *Uprootings/regroundings. Questions of home and migration* (pp.1-19). Oxford: Berg.
- Barkhuizen, G. (2006). Immigrant parents' perceptions of their children's language practices: Afrikaans speakers living in New Zealand. *Language Awareness*, 15(2): 63-79.
- _____ & Knoch, U. (2005). Missing Afrikaans: 'linguistic longing' among Afrikaans-speaking immigrants in New Zealand. *Journal of Multilingual and Multicultural Development*, 26(3): 216-233.
- Basch, L., Glick Schiller, N., & Szanton Blanc, C. (1994). Nations unbound, transnational projects, postcolonial predicaments, and deterritorialized nation-states. Pennsylvania: Gordon & Breach.
- Bedford, R. (2004). Out of Africa ... new migrations to Aotearoa. In G. Kearsley & B. Fitzharris (Eds.), *Glimpses of a Gaian world: essays in honour of Peter Holland* (pp. 345-381). Dunedin: University of Otago.
- Beer, B., & Chen, Y. (2007). Heiße und kalte Nahrung: alltäglicher Konsum, Heilmittel und Kulturkontakt. IAKE, Mitteilungen, 14: 8-16.

- Bernard, H. R. (2006). *Research methods in anthropology: qualitative and quantitative approaches* (Fourth ed.). Lanham: Altamira.
- Brah, A. (1996). *Cartographies of diaspora: contesting identities*. London: Routledge.
- Chapman, T. & Hockey, J. (1999). The ideal home as it is imagined and as it is lived. In T. Chapman & J. Hockey (Eds.), *Ideal homes? Social change and domestic life* (pp. 1-13). London: Routledge.
- Davenport, T. & Saunders, C. (2000). *South Africa: a modern history*. Foreword by Desmond Tutu. Hampshire: Macmillan Press.
- de Bree, J., Davids, T. & de Haas, H. (2010). Post-return experiences and transnational belonging of return migrants: a Dutch-Moroccan case study. *Global Networks*, 10(4): 489-509.
- Ehrkamp, P. (2005). Placing identities: transnational practices and local attachments of Turkish immigrants in Germany. *Journal of Ethnic and Migration Studies*, 31(2): 345-364.
- Fletcher, M. (1999). *Migrant settlement: a review of the literature and its relevance to New Zealand*. Wellington: Department of Labour.
- Gurney, C. (1997). "... Half of me was satisfied": making sense of home through episodic ethnographies. *Women's Studies International Forum*, 20(3): 373-386.
- Ho, E., Guerin, P. B., Cooper, J., & Guerin, B. (2005). *The public health needs of Waikato migrants and refugees*. Hamilton: Migration Research Group University of Waikato.
- James, A. (1996). Cooking the books: global or local identities in contemporary British food cultures? In D. Howes (Ed.), *Cross-cultural consumption: global markets, local realities* (pp. 77-92). London: Routledge.
- Johnston, R., Trlin, A., Henderson, A., & North, N. (2005). Housing experience and settlement satisfaction: recent Chinese, Indian and South African skilled immigrants to New Zealand. *Housing Studies*, 20(3): 401-421.
- _____. (2006). Sustaining and creating migration chains among skilled immigrant groups: Chinese, Indians and South Africans in New Zealand. *Journal of Ethnic and Migration Studies*, 32(7): 1227-1250.
- Kershen, A. (Ed.). (2002). *Food in the migrant experience*. Aldershot: Ashgate.
- Khoo, S., & McDonald, P. (2001). *Settlement indicators and benchmarks: report for the Department of Immigration and Multicultural Affairs*. Canberra: Australian Centre for Population Research, Australian National University.
- Levitt, P. & Jaworsky, B. (2007). Transnational migration studies: past developments and future trends. *Annual Review of Sociology*, 33: 129-156.
- Ley, D. & Kobayashk, A. (2005). Back to Hong Kong: return migration or a transnational sojourn? *Global Networks*, 5(2): 111-127.
- Longhurst, R., Johnston, L., & Ho, E. (2009). A visceral approach: cooking 'at home' with migrant women in Hamilton, New Zealand. *Transactions*, 34(3): 333-345.
- Lucas, D., Amoateng, A. Y., & Kalule-Sabiti, I. (2006). International migration and the rainbow nation. *Population Space and Place*, 12(1): 45-63.

- Mallet, S. (2004). Understanding home: a critical review of the literature. *The Sociological Review*, 52(1): 62-89.
- Mankekar, P. (2005). India shopping: Indian grocery stores and transnational configurations of belonging - a reader. In J. L. Watson & M. L. Caldwell (Eds.), *The cultural politics of food and eating* (pp. 197-214). Malden: Blackwell.
- Petridou, E. (2001). The taste of home. In D. Miller (Ed.), *Home possessions. Material culture behind closed doors* (pp. 87-104). Oxford: Berg.
- Rapport, N. & Dawson, A. (1998). The topic and the book. In N. Rapport & A. Dawson (Eds.), *Migrants of identity: perceptions of home in a world of movement* (pp. 3-18). Oxford: Berg.
- Rensel, J. (1997). Introduction. In J. Rensel & M. Rodman (Eds.), *Home in the islands: housing and social change in the Pacific* (pp. 7-26). Honolulu: University of Hawai'i Press.
- Salih, R. (2003). *Gender in transnationalism: home, longing and belonging among Moroccan migrant women*. London: Routledge.
- Sanderson, L. (2009). International mobility of new migrants to Australia. *International Migration Review*, 43(2): 292-331.
- Smith, M.P. (2001). *Transnational urbanism: local globalisation*. Oxford: Blackwell.
- Sparks, A. (2003). *Beyond the miracle: inside the new South Africa*. London: Profile Books.
- Statistics New Zealand (2007a). *QuickStats about culture and identity - 2006 Census*. Retrieved 14 September, 2007, from <http://www.stats.govt.nz/NR/rdonlyres/5F1F873C-5D36-4E54-9405-34503A2C0AF6/0/quickstatsaboutcultureandidentity.pdf>
- _____. (2007b). *QuickStats about Hamilton City*. Retrieved 12 October, 2007, from <http://hamilton.co.nz/file/fileid/4063>
- Trlin, A. (2010). Moving to New Zealand in 1997/98: The experience and reflections of skilled South Africans. In A. Trlin, P. Spoonley, & R. Bedford (Eds) *New Zealand and international migration. A digest and bibliography*, Number 5. (pp.159-193). Palmerston North: Massey University.
- Ward, C., Bochner, S. & Furnham, A. (2001). *The psychology of culture shock* (Second Edition). Hove: Routledge.
- Weiss, R. (2005). *Macht Migration krank? Eine transdisziplinäre Analyse der Gesundheit von Migrantinnen und Migranten*. Zürich: Seismo.

The ‘Meet Market’: A Research Update

PAUL CALLISTER *
ROBERT DIDHAM ††

Abstract

Between 1986 and 2006 young men and women made significant gains in educational attainment, with faster gains among young women. There was also a significant decline in partnering of young people, especially for those with no formal qualifications. By 2006 however, it was the well-educated who were most likely to be partnered. In all censuses from 1986 to 2006 the well educated, when partnered, tended to have similarly qualified partners. In contrast, partnering has been declining for those reporting no formal educational qualifications and, if partnered in 2006, this group were more likely to be with an unqualified partner than in 1986.

In 1998 the New Zealand Population Review published a paper titled ‘The “meet” market: Education and assortative mating patterns in New Zealand’ (Callister, 1998). Against a background of changes in sex-ratios, partnering trends, changes in educational outcomes for men and women, and a review of assortative mating literature, the paper drew on census data from 1986, 1991 and 1996 to examine the impact of changes in sex ratios and educational attainment on assortative mating in New Zealand amongst people aged 25-34. In the two censuses since 1996, sex ratios in this age group shifted even more, indicating further growth in ‘missing men’.¹ In addition, among young adults there has been a ‘gendered educational transition’, a reversal from males being more likely to hold a tertiary qualification to females now being better qualified. There have also been some important changes in the labour market that might be affecting partnering.

* Institute of Policy Studies, Victoria University. Email paul.callister@vuw.ac.nz

†† Statistics New Zealand

While international studies identify a wide range of factors influencing the formation of heterosexual couples and the choice of partner within these couples, the 1998 Population Review paper indicated that, as in other industrialised countries, education seems to be an important factor in assortative mating decisions and outcomes. This research note uses census data from 2001 and 2006 to update and comment on trends in partnering and partner choice in New Zealand.² It then poses some questions that could be investigated when new census data comes available. In doing so, the paper draws on a number of strands of work carried out within the Foundation for Research, Science and Technology (FRST) funded 'Missing Men' project.³

Background

Changes in the educational attainment of the New Zealand population are driven by flows from the school and tertiary education sector and by migration, both in and out of New Zealand. Over recent decades through both these routes there has been a dramatic lift in the proportion of the young adult population who hold tertiary qualifications, including degrees or higher qualifications (Bedford et al., 2010). However, primarily through changes in completions in the domestic education sector, levels of formal educational attainment across the population have risen much faster for young women than for young men. By 2008, women comprised 58 percent of level 1-3 domestic tertiary completions, 62 percent of level 4 through to level 6 completions, 65 percent of bachelor's degrees, 66 percent of graduate diplomas, 63 percent of honours degrees, 58 percent of Masters degrees and 51 percent of doctorates (Education Counts, 2010).

There have also been some major changes in employment and incomes for women and men. Between 1986 and 2006 there was a decline in overall employment among men aged 30-44 (Callister & Rea, 2010). The major decline was between 1986 and 1991 and despite a strong economy through to 2006 overall employment rates had not returned to the levels seen in 1986. The largest decline was amongst those with no formal qualifications. In contrast, over the same period there was strong overall growth in the employment of women in this age group. Again, education is an important variable with employment gains strongest amongst the well educated. Both in New Zealand and overseas, there is much evidence showing that the

employment prospects of those with no formal qualifications have diminished over recent decades (Callister & Rea, 2010).

The research of Callister and Rea (2010) also demonstrated changes in partnering over this period for men and women in the 30-44 age group. While there was an overall decline between 1986 and 2006, the decline was most marked amongst those with no formal qualifications (Callister & Rea, 2010).

Annual incomes reported in census amongst this age group reflect a range of factors, including income from the labour market. Other census based research which compared income growth for men and women on both sides of the Tasman points to slower overall growth for New Zealanders but with the poorest growth faced most by middle-aged men (Coleman & McDonald, 2010). When real annual income growth is considered for men and women aged 30-44, the poorest outcomes again are to be found amongst those with no formal qualifications. In addition, average personal income has been found to the lowest amongst men and women who are not only poorly qualified but also not partnered (Callister et al., forthcoming).

While not brought together in any formal modelling way, the various studies suggest links between education, employment, income and partnering. One simple hypothesis about the relationships is that a shortage of males who have the ability to support a partner and family though either their labour market attachment or their labour market income will lead to a decline in partnering by both men and women. Another is that with an increasing value of education in the labour market, this might increase its value in the 'marriage market' as well. One result might be an increase in educational homogamy. This itself might feed back to the labour market through a growth in dual career couples and, in turn, feed into changes in household income inequality. These are all very complex issues to unpick.

While some of these issues will be returned to in the final section, the next part of this paper considers patterns of partnering using formal education qualifications as the key variable. It starts by considering overall sex ratios found in the census, then considers changing ratios of men and women by formal educational qualification. Changing patterns of partnering are then examined and finally, assortative mating outcomes are reported.

Changes in Sex Ratios

Table 1 indicates changing ratios of men to women in the age group 25–34. This age group was chosen as it is the time period where most people have completed their formal education and are forming couples and beginning to raise children.⁴ In 1986 there were roughly equal numbers of men and women, but by 2001 the census recorded around 25,000 more women than men in this age group, with a ratio of 0.91. There was only a slight decline in this imbalance in 2006.

Of course not all those aged 25–34 will be seeking a partner within this age group. However, various New Zealand studies suggest that most partnering does occur within a relatively narrow age gap between women and men, with males being slightly older on average (Callister, 1998; Lawton & Callister, 2010). Just based on these ratios, there would appear to be a shortage of men to partner within New Zealand and this could potentially be affecting partnering patterns. However, partnering across national boundaries and, through this, often across cultures and ethnic groups, is becoming increasingly important so sex ratios within a particular country may be coming of less influence in marriage markets (Constable, 2005; Lu & Yang, 2009; Niedomysl et al., 2010; Lawton & Callister, 2011).

Table 1: Numbers of men and women aged 25–34, usual resident population, 1986 to 2006

	1986	1991	1996	2001	2006
Males	254,784	266,815	274,905	250,206	248,100
Females	258,276	277,890	291,882	275,972	270,903
Ratio of males to females	0.99	0.96	0.94	0.91	0.92

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

Changes in Numbers of Men and Women aged 25-34 with Formal Educational Qualifications

Table 2 shows the highest qualifications gained by women and men in the 25-34 age group in 1986 through to 2006. This includes all individuals, whether single or in couples. The table also shows the ratio of actual numbers and also the ratio of percentages of women and men in each qualification group.⁵ Changes in the census education question, coding difficulties and changes in the underlying qualifications framework mean that there are problems in comparing data for non-university tertiary qualifications and school qualifications separately, so these are treated as one group in this, and subsequent, tables.

Table 2: Highest qualifications of men and women in the 25-34 age group, 1986 to 2006

	Male		Female		Ratio of men to women (Ratio of percent)	
	Number (000s)	Percent	Number (000s)	Percent		
1986						
Degree or postgraduate	26.1	10.7	18.0	7.4	1.45	(1.45)
Other qualifications	146.6	60.1	147.6	60.4	0.99	(1.00)
No formal qualifications	71.2	29.2	78.9	32.3	0.90	(0.90)
Total specified	244.0		244.4			
1991						
Degree or postgraduate	28.0	10.9	23.1	8.7	1.21	(1.25)
Other qualifications	160.0	62.4	173.1	65.3	0.92	(1.96)
No formal qualifications	68.3	26.6	69.0	26.0	0.99	(1.02)
Total specified	256.3		265.2			
1996						
Degree or postgraduate	34.5	13.3	33.4	12.0	1.03	(1.11)
Other qualifications	156.9	60.4	179.7	64.4	0.87	(0.94)
No formal qualifications	68.4	26.3	66.0	23.7	1.04	(1.11)
Total specified	259.7		279.0			
2001						
Degree or postgraduate	37.1	16.7	46.7	18.6	0.79	(0.90)
Other qualifications	140.2	63.1	163.8	65.2	0.86	(0.97)
No formal qualifications	44.8	20.2	40.6	16.2	1.10	(1.25)
Total specified	222.1		251.1			
2006						
Degree or postgraduate	51.9	23.1	75.0	29.9	0.69	(0.77)
Other qualifications	136.6	60.8	145.9	58.2	0.94	(1.04)
No formal qualifications	36.3	16.2	29.7	11.9	1.22	(1.36)
Total specified	244.8		250.6			

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

Table 2 shows a number of important changes over time. These include:

- The number and proportion of men and women in this age group reporting no formal qualifications declined markedly between 1986 and 2006. However, the period started with more women than men in this group and ended with significantly more men than women.
- It is likely that the characteristics of those recording no formal qualifications have changed over time. By 2006 those in this group are likely to represent a potentially more disadvantaged set of people. This suggests there will be compositional affects when considering trends in partnering.
- There was strong growth in the number and proportion of men and women holding degrees or higher qualifications, particularly amongst women.
- In 1996, the ratio of men to women holding degrees or higher qualifications was 1.45 - that is, there were 45 percent more males than females holding this qualification.
- By 2006, the ratio had declined to 0.69. This means that there were 45 percent more women than men - a complete reversal over the 20 year period.

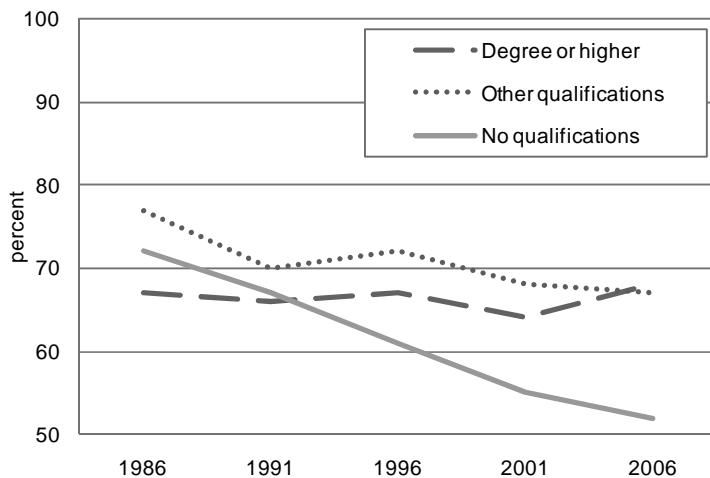
Changes in the Proportion of Men and Women aged 25-34 Living in Couples in Each Education Group

Figures 1 and 2 are based on marital status data rather than household based data. Both legal marriage and de-facto relationships are included but this does not mean that the couple necessarily resides in the same household. These data will also include same-sex couples as the gender of their partner is not asked in the census question.

As expected from the research already noted on those aged 30-44, overall the data show some decline in partnering for women and men between 1986 and 2006 (Callister & Rea, 2010). For men the drop was from 67 percent partnered in 1986 down to 62 percent by 2006. For women the decline was from 74 percent to 66 percent. The major decline was between 1986 and 1991. The proportion of men and women in this age group with a degree or higher qualification who were partnered has hardly changed.

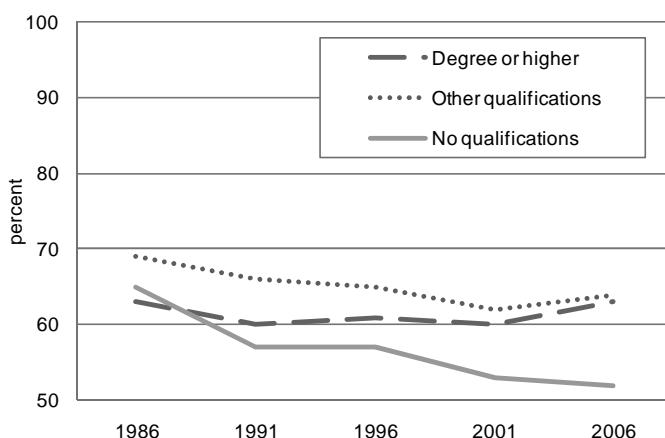
The largest change has been in those with no formal qualifications. By 2006, just over half of men and women with no formal qualifications were partnered.

Figure 1: Percent of women aged 25-34 in each qualification group who stated they were partnered, 1986 to 2006



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

Figure 2: Percent of men aged 25-34 in each qualification group who stated they were partnered, 1986 to 2006



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

Sorting Outcomes

Table 3 is based on household data and shows how people aged 25-34 were matched at census time. It uses the highest formal qualifications of both partners in couples aged 25-34 in 1986 through to 2006. The table shows the percentage of couples in each qualification mix.

In brackets, there is a ratio of the actual percentage outcome relative to the expected value had there been random matching. Any number over one indicates a concentration greater than would be expected through random sorting.

Table 3: Highest qualifications of women and men in couples in the 25-34 age group - percentage of couples in each group

Male		Female			
		Degree or postgrad..	Other qual.	None	Total
1986	n= 110,526				
	Degree or postgraduate	4.2 (5.4)	6.5 (0.9)	0.4 (0.1)	11.1
	Other qualifications	2.5 (0.6)	44.9 (1.1)	14.5 (0.8)	61.9
	No formal qualifications	0.2 (0.1)	12.7 (0.7)	14.0 (1.8)	27
	Total	7.0	64.1	28.9	100
1991	n= 108,408				
	Degree or postgraduate	5.1 (5.0)	6.3 (0.8)	0.2 (0.1)	11.7
	Other qualifications	3.5 (0.6)	51.2 (1.1)	10.9 (0.8)	65.6
	No formal qualifications	0.3 (0.1)	12.4 (0.8)	10.1 (2.1)	22.8
	Total	8.8	69.8	21.3	100
1996	n= 108,237				
	Degree or postgraduate	7.1 (4.1)	6.5 (0.7)	0.3 (0.1)	13.9
	Other qualifications	4.9 (0.6)	48.6 (1.1)	9.5 (0.8)	63.1
	No formal qualifications	0.4 (0.1)	13.0 (0.8)	9.7 (2.2)	23
	Total	12.5	68.1	19.5	100
2001	n=86,274				
	Degree or postgraduate	10.7 (2.8)	7.3 (0.6)	0.2 (0.1)	18.2
	Other qualifications	9.4 (0.7)	50.5 (1.1)	5.7 (0.8)	65.6
	No formal qualifications	0.6 (0.2)	10.1 (0.9)	5.5 (3.0)	16.2
	Total	20.8	67.9	11.4	100
2006	n= 90,654				
	Degree or postgraduate	17.8 (2.0)	7.6 (0.5)	0.2 (0.1)	25.7
	Other qualifications	15.6 (0.7)	42.9 (1.2)	4.0 (0.8)	62.5
	No formal qualifications	1.0 (0.2)	7.5 (1.1)	3.4 (3.8)	11.9
	Total	34.4	58.0	7.6	100

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

A number of patterns are evident. These include:

- Between 1986 and 2006 the proportion of couples where both partners hold a degree or higher qualification significantly increased from 4.2 percent to 17.8 percent.
- Conversely, the proportion of couples in which neither had a formal qualification declined from 14 percent to 3.4 percent.
- With an increased supply of men and women with degree and higher qualifications the concentration within couples declined over this period. In 1986 this was 5.4 times more than would be expected by random sorting but by 2006 it was down to twice as much.
- While by 2006 there were fewer couples who had no formal qualifications, the concentration had gone up from 1.8 times what would be expected with random sorting to 3.8 times.
- The ratios are higher than 1 along the diagonal thus supporting the idea that 'like tend to be with like'.
- Matching across two levels of qualification is uncommon and much less than random sorting would deliver.

Further comparison of Tables 2 and 3 also indicates that those with higher formal educational qualifications are most likely to be partnered, and, if partnered, tend to have similarly qualified partners. The other side of this is that those reporting no formal educational qualifications are less likely to be partnered, but if partnered are now more likely to be with an unqualified partner.

Given that there are unequal numbers of men and women in each qualification group; if couples do form there has to be some matching taking place across educational boundaries. In the past, men were more likely than women to hold formal educational qualifications and there was more likelihood of women 'marrying up' educationally. Increasingly, women face the prospect of 'marrying down'. Some of this shift shows up in Table 4. In 1986, when there were fewer women with degrees or higher qualifications, just over 60 percent had a similarly qualified partner. This percentage declined to just over half by 2006. Few women with degrees or higher qualifications had a partner with no qualification in 1986 and this declined further in 2006.

Table 4: Partners of men and women in couples aged 25-34 with degrees or higher qualification - percent with degrees or higher qualifications and percent with no qualifications

	Percent of partners in qualification group	
	Degree or higher	No qualification
Women with degrees or higher		
1986	60.6	3.1
1991	58.0	2.9
1996	57.3	3.2
2001	51.6	3.0
2006	51.7	2.9
Men with degrees or higher		
1986	38.0	3.8
1991	43.9	2.1
1996	51.3	2.2
2001	59.9	1.1
2006	69.4	0.9

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

The change for men has been more dramatic. Due to the increased supply of women with degrees, the proportion of men with degrees who are partnered with a highly qualified woman has increased from 38 percent in 1986 to nearly 70 percent.

Aside from perhaps the change in overall sex ratios, none of the patterns demonstrated in this section are unique to New Zealand. For example a Canadian study using census data from 1981 to 2006 shows very similar patterns (Martin & Hou, 2010).⁶

Some Implications and Research Directions

The period from 1986 through to 2006 was a time of major change in economic conditions and social patterns in New Zealand. It began with significant economic restructuring and ended with strong employment growth. In this time there was also a significant growth in household income equality (Perry, 2009).

There are several reasons for this growth in income inequality but one potential contributor is that assortative mating can concentrate earning power in particular households. As demonstrated by research carried out in the United States of America on the 30-44 age group, those with fewer qualifications are amongst the lower income earners – as individuals and in

terms of household incomes (Fry & Cohn, 2010). This is due, in part, to their lower personal earnings in the labour market. However, it is also due to the fact that they are less likely to be partnered but, if partnered, their partner is also likely to be a low earner. The highest income earners are those couples where both are well qualified and both employed in high income jobs. When new census data comes available it would be useful to try and track individual and household income from the early 1980s in order to better understand the various contributors to personal and household income inequality over time.

Recent data on completions in New Zealand's tertiary sector suggest that educational imbalances in favour of young women will have increased further since 2006. While changes have been strong across the whole population they have been particularly strong for Maori and Pacific peoples. Notably, in these groups women have been outstripping men in gaining formal qualifications. Undertaking research on the changing patterns of assortative mating within these groups, both in terms of educational sorting and ethnic inter-marriage, would be useful when new census data become available. Such research would ideally use more sophisticated log-linear modelling techniques in order to identify the relative effects of ethnicity and education in mating patterns.

Finally, earlier research on ethnic intermarriage (Callister et al., 2005) showed quite different patterns for those born in New Zealand versus those born overseas born. Some of the partnering of overseas born people takes place before they migrate to New Zealand but, through a variety of mechanisms, there is also increasing cross country partnering taking place. One factor in the complexification in partnering processes is the rise of global social networks. These have moved beyond the former social groupings around institutional and religious networks (Chan Wing Lun, 2004), indicating a realigning of social controls implicit in "meet markets" with this new manifestation of "meet marketing". This suggests that exploration of relationships between migration policies and partnering patterns needs to position itself within discussions of wider sociological change.

Notes

1. A parallel paper in this edition (refer to Bedford et al. 'Missing Men and Unacknowledged Women: Explaining Gender Disparities in New Zealand's Prime Adult Age groups 1986 – 2006') examines whether the changes in sex ratios are real or the result of undercount.
2. Updating the literature review published in the 1998 paper is beyond the scope of this brief note.
3. Information on the 'Missing Men' project can be found at
<http://ips.ac.nz/events/completed-activities/Missingpercent20men/Missingpercent20men.html>
4. It should be noted that the median age of childbearing rose from around 26 in the mid-1980s to around 30 years in 2006 so behaviour within this age band is changing in a variety of ways.
5. The ratio of percentages is shown as this is a simple way of controlling for differing underlying population sizes. More detail on this method can be found in Callister (1998).
6. Although North American research tends to focus on changes in rates of formal marriage.

References

- Bedford, R., Callister, P. & Newell, J. (2010). Old gaps are closing, new gaps are opening: Education, ethnicity and gender in New Zealand, 1986–2006. In: I. Snyder and J. Nieuwenhuysen (Eds.) *Closing the Gap in Education? Improving Outcomes in Southern World Societies*, Melbourne, Monash University Press.
- Callister, P. (1998). The "meet" market: Education and assortative mating patterns in New Zealand. *New Zealand Population Review*, 24: 43–69.
- _____, Didham, R. & Potter, D. (2005). *Ethnic Intermarriage in New Zealand*. Working paper, September, Wellington: Statistics New Zealand.
- _____, & Rea, D. (2010). *Why are a group of mid-life men on the margins of work and family?* A literature review, IPS Working Paper 10/13, Wellington, Institute of Policy Studies.
- _____, von Randow, M & Cotterell, G. (forthcoming). *Women, men and the new economics of partnering in New Zealand*, IPS Working Paper, Wellington: Institute of Policy Studies.
- Chan Wing Lun (2004). *Cupid in trouble: romantic love, social control and social networking*. Thesis presented for the degree of Master of Social Sciences, Department of Sociology. Singapore, National University of Singapore.
- Coleman, A. & McDonald, H. (2010). "No country for old men": a note on the trans-Tasman income divide. mimeo, Motu Economic and Public Policy Research, Wellington.

- Constable, N. (2005). *Cross-border marriages: Gender and mobility in transnational Asia*. University of Pennsylvania Press.
- Fry, R. & Cohn, D. (2010). *Women, Men and the New Economics of Marriage*. Washington, Pew Research Center.
- Lawton, Z. & Callister, P. (2010). *Older Women-Younger Men Relationships: the Social Phenomenon of 'Cougars': A Research Note*. IPS Working Paper 10/02, Wellington: Institute of Policy Studies.
- _____. (2011). 'Mail-order brides': are we seeing this phenomenon in New Zealand? 'Missing men' Background Paper, Wellington: Institute of Policy Studies.
- Lu, M. & Yang, W-S. (2009). *Asian cross-border marriage migration: demographic patterns and social issues*, Amsterdam University.
- Martin, L. & Hou, F. (2010). Sharing their lives: women, marital trends and education. *Canadian Social Trends*, 90: 68-72, Statistics Canada.
- Ministry of Education (2010). Education Counts database. http://www.educationcounts.govt.nz/statistics/tertiary_education. Accessed 20 November, 2010.
- Niedomysl, T., Östh, J., & van Ham, M. (2010). The globalisation of marriage fields: The Swedish case. *Journal of Ethnic and Migration Studies*, 36(7): 1119-1138.
- Perry, B. (2009). *Household Incomes in New Zealand: trends in indicators of inequality and hardship, 1982 to 2008*, Wellington: Ministry of Social Development, <http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/household-incomes/index.html>

Informing the Debate on Population Ageing in New Zealand: the role of Statistics New Zealand

MANSOOR KHAWAJA *
BILL BODDINGTON

Abstract

As the national agency responsible for regularly updating and publishing demographic projections and related series, Statistics New Zealand has been in the forefront in highlighting emerging changes in New Zealand's population size and structure, especially the greying of the country's population. It has ushered the key findings from a formal socio-demographic sphere to the public domain, to facilitate an informed debate on the social, financial and resource implications of an ageing population. This paper will review Statistics New Zealand's contribution to this debate, and then under the broad banner of 'what we have learnt', highlight selected results of the organisation's various analytical studies, focusing on longevity gains, the impending burgeoning of the population aged 65 years and over, the ageing of the aged, and ethnic and regional variations in ageing. Implicit in these findings is that in the coming decades mature societies like New Zealand are set to face increasing demands for health provisions, aged care services, retirement housing as well as leisure and recreation opportunities.

Introduction

It is now widely acknowledged that the global population is in the throes of some unprecedented demographic changes. In common with other OECD countries, and a growing number of developing nations, the population of New Zealand is ageing (United Nations, 2009). Its most documented features are the rise in average age of population, a burgeoning

* Mansoor Khawaja and Bill Boddington are both at Statistics New Zealand, Christchurch.
Email: Mansoor.Khawaja@stats.govt.nz.

number of senior citizens, as well as their rising share of the total population (Statistics New Zealand, 2000; 2007a).

Because of its implications for economic and social planning at both the national and local level, the subject of population ageing has generated widespread interest among policy planners, administrators, decision makers, economists, social researchers and the general public.

The impending rise in the number of senior citizens, as babyboomers (large cohorts born after World War II) move into pensionable ages, has raised concerns about the sustainability of the state-funded pension and the increased cost of providing health and related age care services.

To assist this debate, and to enhance greater understanding of evolving demographic changes, Statistics New Zealand has published an array of analytical reports over the last three decades. This is consistent with its overall strategic goal as the national statistical agency, to provide relevant and good quality statistics for government and communities on key aspects of New Zealand's economy, environment and society. A host of other public service agencies, academics and social analysts have also researched and contributed to the growing body of knowledge on the determinants and consequences of population ageing in New Zealand. These have included, to name a few, the Ministry of Social Development (2001, 2007), Retirement Commission (2007), Ministry of Health (2002), academics at various New Zealand universities (for example, see Boston and Davey, 2006; Koopman-Boyden, 1993; Koopman-Boyden & Waldegrave, 2009; Zodgekar, 2000); and the Treasury (2008) as a part of its long-term fiscal projections.

This research note comprises of two broad parts. The first section reflects on Statistics New Zealand's contribution to the debate on population ageing, which includes the establishment of a web-based statistical volume, dedicated to the 65+ population. The overriding objective has been to inform, to provide an insight, and to stimulate discussion about implications for New Zealand.

The second section defines and highlights some key findings on ageing-related issues that have emerged from perennial analyses of demographic trends, patterns and differentials, and in the process have facilitated useful indicators for evidence-based planning.

Major Reports/Papers Published by Statistics New Zealand

A number of major reports and papers on population ageing and related subjects have been released by Statistics New Zealand over the last three decades (see Appendix A). The organisation's initial excursion into ageing related issues was driven by a cohort analysis of the post-World War II baby boom phenomenon as well as a long-standing interest in age distribution shifts, largely because changing age structures of populations are important for the planning of many products, infrastructure and services.

Three decades ago, a paper titled 'The influence of fertility on New Zealand's population age structure, 1936-2006' was published in the Quarterly Population Bulletin (a precursor of the agency's current Demographic Trends) (Department of Statistics, 1977). The baby boom had just completed, and there was a growing interest about its likely impact on various spheres of society, such as education, health, labour market, and social welfare – as the bulge moved up the age scale. The first impacts of the baby boom related to planning for maternity services, child care centres, kindergartens, primary and post-primary schools. At that time population ageing was in the distant future and little attention was paid to it.

Drawing on a cohort analysis, and allowing for the passage of baby bulge up the age scale, the paper concluded:

Over the next 25 years the dependency burden on the economically active population in New Zealand will decrease considerably as the large birth cohorts from the 'baby boom' years enter the labour force and the smaller post-boom cohorts are in the 'dependent youth' category. However, like all the past demographic phases this 'favourable' dependency situation will be only temporary and will tend to reflect only the initial outcome of a demographic phenomenon which began over 40 years ago.

It added:

After the turn of the century, when the 'boom' babies start leaving the labour force through retirement, there will be an increase in the burden of old-age dependency, the final outcome of this demographic phenomenon. It is at that time that the demands upon the economically active population, to meet the needs of the 'retired' population will be at their greatest.

Note the emphasis on the financial burden of an ageing population! In the late 1980s baby boom cohorts started to enter mature working ages. The oldest of them (those born in 1946) reached age 44 years in 1990, and was just one and a half decades away from the then minimum age of eligibility for universal superannuation, and thus the public concern about its socio-economic implications was not unfounded.

'Elderly Population of New Zealand', published in 1990, was the first statistical report which brought together demographic and related information to promote and assist discussion and research on, and encourage a greater understanding of, the ageing issues. This report covered a myriad of topics on New Zealanders aged 60 years and over, in relation to future growth pattern, age structure, marital status, living arrangements, income, ethnicity, and spatial distribution (Department of Statistics, 1990).

Two points are worth noting here: one, the use of the term 'elderly', and second, the focus on ages 60 years and over. Life expectancy at birth at that time was 71 years for men and 77 years for women, and the age of eligibility for the old-age pension was 60 years. Given this, people were probably accepting of the word 'elderly' to describe the 60+ group. Things were about to change, however. An increase in the age of entitlement for New Zealand Superannuation from 60 to 65 years was phased in gradually between 1992 and 2001. Similarly, the Human Rights Act, introduced in 1999, abolished the compulsory age for retirement. Prior to that, workers were generally expected to, or were forced to retire after about 40 years of service, often while still in their mid- or late-50s (Khawaja & Boddington, 2009).

The United Nations designated 1999 as the International Year of Older Persons, and one of its goals was to promote discussion and research on ageing-related issues. To commemorate the occasion a research paper aptly titled 'Population Ageing in New Zealand' was prepared and published in the Monthly Abstract of Statistics (Khawaja, 2000). That paper traversed the demographic background to the expected spurt in the country's 65+ population after 2010, when baby boomers would start to reach pensionable ages, it highlighted the changing socio-economic profile of senior New Zealanders, and it also commented on the numerous challenges and opportunities that lay ahead.

After 2001, Statistics New Zealand produced a number of census-based updates with a focus on the 65+ population (see Appendix A). It also organised seminars on the changing face of New Zealand society, beginning with three public seminars on population ageing held at the dawn of the new millennium in the major urban centres of Auckland, Christchurch and Wellington. At these inaugural seminars, the organisation's population analysts presented a demographic overview, while invited experts covered the economic, social and health perspectives.

Since then Statistics New Zealand staff have regularly given lectures on population trends to professionals, managers and researchers, in both the public and private sectors to highlight the changing demographic profile of New Zealand.

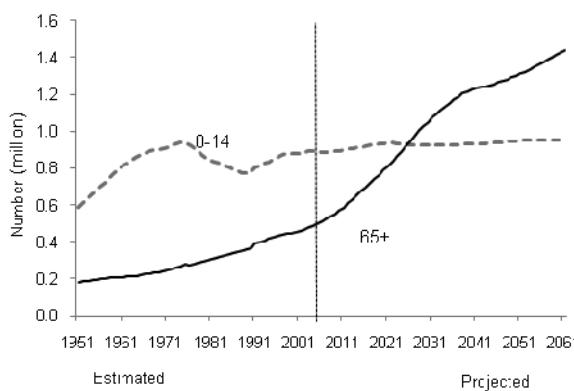
The statistical volume on the 65+ population first compiled in 2007 (Statistics New Zealand, 2007b) has a much broader scope than any previous official publication. It brings together key information on the demographic and socio-economic characteristics of older New Zealanders to assist researchers, planners, administrators and others interested in ageing-related issues. The publication draws on a rich diversity of data sources, including the five-yearly Census of Population and Dwellings, national and sub-national population estimates and projections, ethnic, labour force and household projections, social surveys and other administrative sources. Besides standard information on population size and structure, health, ethnicity, housing and migration, it covers topics such as employment and retirement, ageing in place, living standards and well-being. The volume is envisaged as a living document, is web-based and is accessible on the Statistics New Zealand website.

An Overview of Selected Findings of Statistics New Zealand Publications

Older citizens constitute a special and important segment of any society. Relatively few participate actively in the labour force, while a majority have relatively low income, and high incidence of morbidity. This makes many of them dependent on public agencies for financial assistance, and for medical and hospital treatment, and social care. From a planning perspective, therefore, it is important to accurately determine the future numbers and socio-demographic characteristics of the older population, as well as changes over time. The rest of this paper will describe and discuss principal findings of Statistics New Zealand's investigations.

There are two broad categories of population ageing - numerical ageing and structural ageing. Numerical ageing refers to the increase in the number of older persons (say, aged 65+ years). Structural ageing relates to their growing share of the country's total population. The latter may result from a drop in the share of other segments of population, e.g. fewer children or fewer residents of working ages. As an example of structural ageing, Figure 1 illustrates the expected shift in the relative position of children (aged below 15 years) and superannuitants (aged 65+ years) in New Zealand in the foreseeable future.

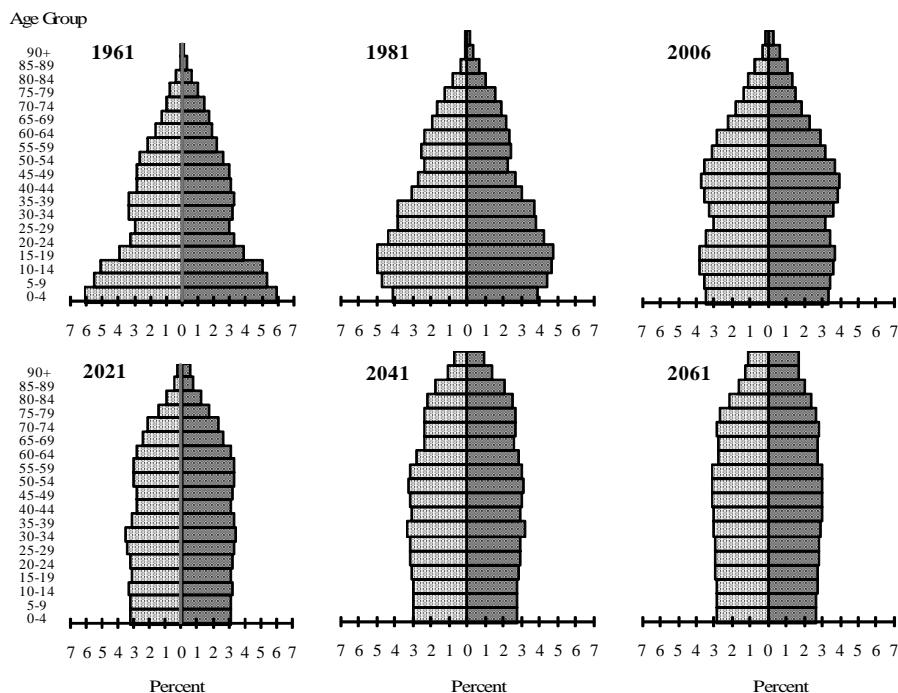
Figure 1: Age structure changes: fewer children and more senior citizens (aged 65+ years), New Zealand, 1951- 2051



Source: Statistics New Zealand, Demographic Trends (various years); National Population Projections (2006-base), series 6 (assuming medium fertility, medium mortality and annual net immigration of 10,000), 2006-2061.

At the 2006 Census, children under 15 outnumbered the 65+ group by two to one. Given low fertility and the large cohorts born during the post-WWII years moving into pensionable ages, senior citizens are expected to outnumber children by 2023. This is already the case in some countries such as Austria, Germany, Japan, Poland, Spain, and Sweden which have much lower fertility levels than New Zealand (United Nations, 2009). Nevertheless, given the prospects of sub-replacement fertility, longer life expectancy and the passing of the baby boom cohorts into older ages, New Zealand population will continue to age further (Figure 2). Half a century ago, in 1961, the age-sex structure of New Zealand population had a pyramid shape - a broad base and a slim top. In the coming years, it has progressively taken on a barrel shape, and is projected to change to an almost rectangular shape, indicating a growing number of older citizens.

Figure 2: Age-sex pyramids, New Zealand, 1961-2061



Source: Statistics New Zealand, Demographic Trends (various years); National Population Projections (2006-base), series 6 (assuming medium fertility, medium mortality and annual net immigration of 10,000), 2006-2061.

The median age of population is projected to rise from 36 years at the 2006 Census to 39 years by 2021, and to 44 years by 2061. A century ago, the median age was only 22 years. This suggests that population ageing has been a part of our changing demographic landscape for over a century now, and the transition is not over yet.

How many senior citizens? The 2006 Census enumerated about half a million persons who were aged 65 years and over. Official population projections indicate a significant acceleration in the growth of senior citizens in the coming decades, as large cohorts born during the post-WWII years enter pensionable ages in increasing numbers after 2010. Between 1996 and 2006, the 65+ population grew at a rate of 1.8 percent per annum, and this is projected to climb to over 3.0 percent per annum during 2011 and 2031. The 65+ population is expected to reach between 1.17 million (Projection series 1) and 1.48 million (Projection series 9) by 2061, when they will make up 25 percent or a quarter or more of all New Zealanders – double the 2006 figure of 12.5 percent (Statistics New Zealand, 2007).

Previously, some analysts had asserted that as people who will reach age 65 years over the next five decades have already been born, their future numbers can be estimated fairly accurately. However, it is also acknowledged that the return of some expatriate Kiwis – currently estimated at over half a million in Australia alone (Australian Government: Department of Immigration and Citizenship, 2010) could boost this figure, as would any significant upturn in the numbers of new migrants.

Continuing longevity gain has emerged as another vital factor. Under the ‘medium’ mortality variant, the 1996-base projections had assumed a gain in the life expectancy at birth for men of 6.7 years, up from 74.4 years in 1996 to 81.0 years by 2051 (Table 1). For women the projected gain over this period was 6.0 years – from 79.7 years to 85.5 years. Yet, during the ten years from 1996 to 2006, the life expectancy at birth in New Zealand increased by 3 years, at a remarkable rate of improvement of 3.5 months a year for men, and 2.5 months for women. This presumably prompted an upward revision of the future life expectancy levels. Incidentally, elsewhere in the developed world official statisticians seem to have taken a rather conservative view on the likely future gains in life expectancy.

Table 1: Life expectancy at birth, New Zealand, 1951- 2051

Period	Observed		Projected to 2051	
	Men	Women	Men	Women
1951	67.2	71.3		
1971	68.5	74.6		
1991	72.9	78.7	<i>Projection series</i>	
1996	74.4	79.7	1996 base	81.0
2001	76.3	81.1	2001 base	82.5
2006	78.0	82.2	2006 base	84.5
Increase between 1996 and 2006	3.6	2.5		88.0

Source: Statistics New Zealand, Demographic Trends (various years).

The net outcome of the longevity gain has been a significant increase in the projected size of the future 65+ population (Table 2). Whereas the 1996-base projections had generated a 65+ population of 1.193 million by 2051, with an improved mortality assumption, the 2006-base projections gave a corresponding figure of 1.353 million - that is, 160,000 or 13 percent more 65+ people than the 1996-base series. What this illustrates is that future population projections will require constant vigilance on the part of official statisticians in monitoring international progress in reducing mortality by cause of death at older ages, as well as a rigorous analysis and assessment of the impact of advances in medical knowledge and treatment, is necessary to ensure a more realistic figure on future longevity levels and numbers of senior New Zealanders.

Table 2: Upward revision of projected population aged 65 years and over, New Zealand, 2051

Projection base	Projected population in 2051(million)
1996-base	1.193
2001 base	1.256
2006 base	1.353

Note. All series assume medium fertility, medium mortality and annual net immigration of 10,000 during the projection period.

Population ageing is more advanced in some countries, notably Germany, Italy, Japan, Singapore and Spain, all of whom have lower fertility rates than New Zealand. Latest United Nations (2009) projections indicate that by 2050, the median age in these nations will be 50 years or more, and their 65 + citizens will make up over 30 percent of their total population.

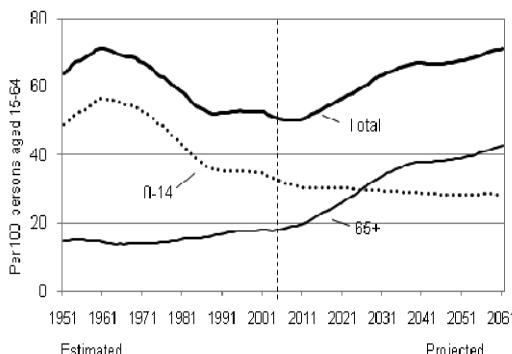
With developing nations following suit, we have the blueprints of a greyer global society.

In 1977 the Department of Statistics noted:

One useful method of illustrating the social and economic significance of changing age structure of population is to examine trends in the 'dependency ratio'. This ratio is an approximate measure of the burden placed on the productive segment of the population by the so-called 'dependent' population, the relationship between the dependent or productive components being defined either in terms of age or economic status.

The 'old-age dependency ratio' (defined here as the 'number of persons aged 65+ years per 100 persons aged 15-64'), increased significantly between 1936 and 1951 and then remained almost unchanged until the mid-1970s. Over the next two decades, it rose slowly but steadily, partly reflecting the growth of the 65+ population. The ratio is projected to more than double from less than 20 persons aged 65+ years per 100 persons aged 20-64 years in 2006 to over 40 persons per 100 aged 20-63 years by 2051 (Figure 3).

The rise needs to be interpreted with care, because of the limitations inherent in this demographic measure. Many persons of working age are not in the labour force, while a growing proportion of superannuitants are 'actively engaged'. Moreover, the true extent of the economic burden placed on the labour force, also depends on age-specific labour force participation, the level of earnings as well as Government's commitment to various socio-economic goals and welfare policies.

Figure 3: Trends in dependency ratios, New Zealand, 1951-2061

Source: Statistics New Zealand, National Population Projections (2006-base), series 5
 (assuming medium fertility, medium mortality and annual net immigration of 10,000),
 2006-2061.

A Demographic Profile of Senior Citizens

Senior citizens are not a homogenous group. There are noticeable differences by age in terms of sex ratio, marital status, living arrangements, employment, income, mobility and spatial distribution.

Table 3: Ageing of the aged, New Zealand, 2006 - 2061

Age group	Population			Age group as a percentage of 65+ population		2006 Sex ratio (1)
	2006	2061	Growth	2006	2061	
65-69	155,500	316,300	103	30.4	21.9	106
70-74	120,200	297,900	148	23.5	20.7	109
75-79	103,600	258,000	149	20.2	17.9	118
80-84	74,200	208,300	181	14.5	14.4	146
85 +	58,200	360,400	519	11.3	25.0	219
Total 65+	511,600	1,440,800	181	100.0	100.0	124

(1) Number of women per 100 men.

Note. There were 531 centenarians in New Zealand at the 2006 Census, up from 399 in 2001.

Source: Statistics New Zealand, National Population Projections (2006-base), series 5
 (assuming medium fertility, medium mortality and annual net immigration of 10,000),
 2006-2061.

The first consideration here is the ageing of the aged (Table 3), because the positive impact of the further longevity gains would be particularly pronounced at advanced ages. The New Zealand Life Tables for

2005-07, gave the remaining life expectancy at age 65 years of 17.8 years for men and 20.5 years for women. The 2006-base projections assumed (under series 5) that by 2061, this would have increased to 22.7 years for men and 25.2 years for women - a gain of about five years for both men and women. The overall effect is that the size of population aged 80-84 years will go up by nearly three times from 74,000 in 2006 to over 208,000 by 2061. The relative growth for the 85+ group would be much larger – up six times from just 58,000 to 360,000. By 2061, the 80+ group could make up forty percent (or two out of every five) of all pensioners, as against 26 percent (or one in four) in 2006. This is important from a health expenditure perspective, as this group requires and utilizes medical and hospital services (for example for cataract, hip replacement, heart operations, diabetes, orthopaedics) and special aged-care services far more than any other group.

Women outnumber men among the 65+ group. As they have longer life expectancy than men, the differential grows with increasing age, leading to marked feminization of the aged (see last column in Table 3). Less than half of older women are married or living in de-facto relationships.

Statistics New Zealand studies have found that the incidence of living alone increases significantly with advancing age. Given the high rate of home ownership, a majority presumably prefer to live independently. In 2006, half of the 85+ population lived alone. This raises issues of social isolation, security, and assistance with daily chores, among other things.

An Ethnic Dimension

There is also a broad ethnic dimension to the ageing process in New Zealand, arising from significant disparities in the demographic experience and make-up of various ethnic groups. The majority European population, which has consistently experienced sub-replacement fertility over the last three decades along with the Asian group, heads the ethnic longevity stakes (Table 4), has a substantially older age structure - a median age of 38 years in 2006. By contrast, the indigenous Maori and the Pacific Island groups which together make up one-quarter of the country's population, have much higher fertility rates – well above the replacement level – and with a median age of less than 23 years, have a much more youthful age structure. Even 15 years on, their median age (projected to be around 25 years by 2026) will be

18-20 years less than for the European group. Currently, children (<15) among the Maori and Pacific Island communities outnumber the older group (65+) by a margin of eight to one, and the latest ethnic population projections (Statistics New Zealand, 2008a) suggest that children would continue to dominate their age structures in the foreseeable future. Among the European group, pensioners (65+) are likely to outnumber children within the current decade.

Table 4. Estimated life expectancy at birth, 2005–07, and 65+ group as a percentage of total population, by ethnic group, New Zealand, 2006 and 2026

Ethnic group	Males	Females	2006	2026
	Years		Percent	
Maori	70.4	75.2	4	9
Pacific	72.8	77.2	4	7
European/Other (2)	79.4	83.2	14	23
Asian	84.0	87.2	5	12
New Zealand total	78.2	82.2	12	19

Source: Statistics New Zealand, National Ethnic Population Projections, 2006 (base) – 2026.
Notes

(1) As a percentage of total population

(2) Includes 'New Zealander'

Although substantial progress has been made in bridging inter-ethnic disparities in socio-economic standards, some significant areas of disadvantage remain, especially in terms of educational achievements, income and health standards. Both the indigenous Maori and the Pacific Island groups have higher mortality rates and lower life expectancy – at least 6 to 7 years lower than that for their European counterparts (Table 4). According to the latest (2006-base) official ethnic population projections, the 65+ group will make up 23 percent of the European population by 2026, compared with 9 to 12 percent of the Maori, Pacific Island and Asian communities.

Disability Studies

One factor common to all older New Zealanders is the high incidence of disability. Disability surveys conducted after the last three Censuses of Population and Dwellings have added considerably to our knowledge about the prevalence, nature, duration and cause of disability and on the barriers

that people with disability encountered in everyday life (Statistics New Zealand, 2009b). The most common disability types for older adults are physical and sensory disabilities. Disease or illness, and accidents or injuries are the most common causes of disability for adults, in general. Judging by the results of the 2006 Disability Survey (Statistics New Zealand, 2008b), the percentage of people with disability increases with advancing age, from 10 percent for children aged below 15 years to a high of 45 percent for those aged 65 years and over. Older women have a higher rate of disability than older men. Also, 73 percent of the 65+ group had multiple disabilities, compared with 53 percent of those aged 45–64 years.

Following the 2006 Disability Survey, several reports were prepared that presented information on the lives of people with disabilities in New Zealand. One report titled Disability and the Labour Market focused on the experience of disabled people in the labour force, examining their labour force participation by educational qualification and type of disability, and the types of industries and occupations that disabled people are employed in, the need for workplace modifications and support, and the extent to which these needs are currently met among employed disabled people.

Spatial Variations in Population Ageing

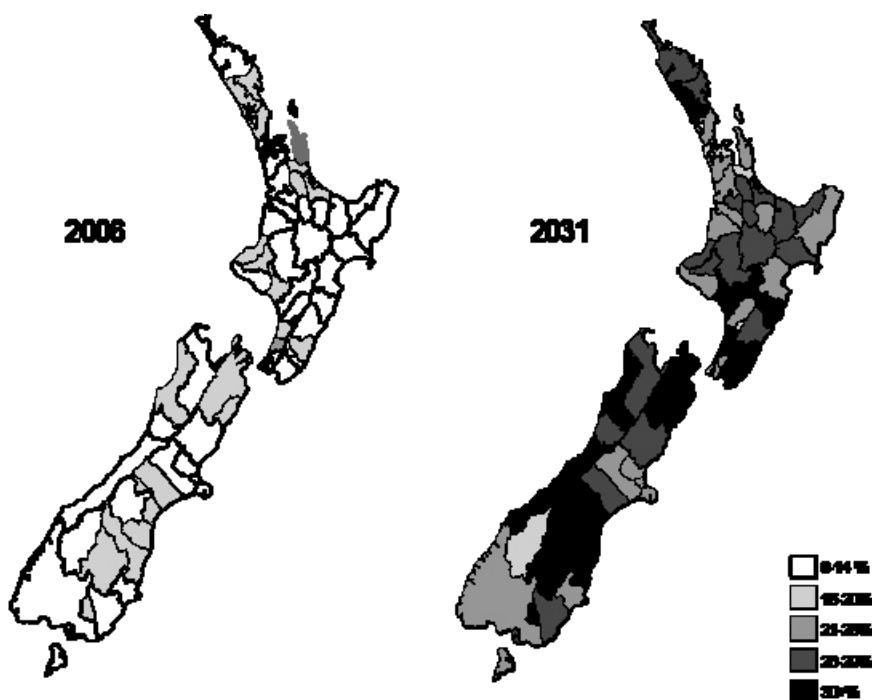
While national experience is valuable for identifying policies required by the national planners to deal with problems, issues and concerns arising from changing population structure, at the regional or local level, there is a complexity of experiences involved, which require ‘sensitivity on the part of policy makers to the implications of emerging demographic changes’.

Within New Zealand, there is a remarkable variation in population ageing. The South Islanders are older than their northern cousins. Similarly, urban residents are older than the rural dwellers. Latest sub-national population projections indicate that all regional and local populations would age, though at different paces. This reflects their current age structure, future fertility levels as well as patterns of internal and external migration. Areas with low fertility or a history of out-migration of young people in pursuit of better educational or employment opportunities elsewhere, tend to have an older age structure. Influx of older migrants, for example to retirement centres, similarly exerts an ageing effect. Regional disparities in fertility and mortality have already been documented (Department of Statistics, 1985,

1990; Khawaja & Boddington, 2006). Available evidence suggests that population ageing is advancing at a faster pace in some South Island regions than others. By 2031, the populations of Tasman, West Coast, and Marlborough regions are expected to have 29-30 percent of their population aged 65 years and over, compared with less than 21 percent nationally. For Auckland and Wellington regions the corresponding figures would be 17 and 20 percent, respectively.

For the country's territorial authorities, the percentage of population aged 65+ years in 2006 and 2031 are compared using maps in Figure 4. In a great majority of the cities and districts, the 65+ group made up less than 20 percent of all residents at the 2006 Census. By 2031, the figure will be 30 percent or more in at least five districts in the North Island – Thames Coromandel (32.1 percent), Hauraki (32.0 percent), Horowhenua (31.4 percent), Kapiti Coast (29.7 percent) and South Wairarapa (31.6 percent) and three districts/cities in the South Island – Buller (30.0 percent), Timaru (29.3 percent) and Waitaki (34.2 percent). There are another 17 areas fairly close behind, and these include Far North, Whangarei, Matamata-Piako, Taupo, Central Hawke's Bay, New Plymouth, Stratford, Masterton, Carterton in the North Island, and Tasman, Marlborough, Kaikoura, McKenzie, Waimate and Central Otago in the South Island, with the projected figures ranging between 25 and 29 percent by 2031. What this variation suggests is that some regions/local areas will have less lead-in time to develop strategies for improving the general quality of life of their older residents.

Figure 4: Percentage of population aged 65 years and over, territorial authorities, 2006 and 2031



Other research studies have focussed on issues relevant to planning in various spheres, including, ageing in place, spatial mobility, labour force participation, etc. Recent Statistics NZ investigations have found that more and more New Zealanders have started to extend their working life, buoyed by the abolition of the retirement age, or driven perhaps by economic necessity to maintain a desired standard of living. In 2006, one-third of those aged 65-69 years were in paid employment (Statistics New Zealand, 2009a). The labour force participation rate at ages 70-74 years is the same as that for 65-69 year olds, a decade ago, in 1996. Overall, this trend would also contribute to the ageing of the labour force.

Concluding Thoughts

The population of New Zealand is ageing, and the trend is expected to accelerate as baby boomers move into pensionable ages in growing numbers over the next two decades. The demographic evidence is compelling. The challenges of the greying phenomenon are manifold, and a basic role of demographic analyses and social surveys undertaken by Statistics New Zealand and others is to provide insight into its likely implications for decision making, to assist evidence-based planning for a successful outcome.

At the national level the primary concern about the impending burgeoning of the third age population is the sustainability of the state-funded superannuation and the increased expenditure on health and aged-care services. Beneath the national scene, there are direct implications for planning for housing, health-related issues, provisions of aged care, transport, and community support services. Some analysts also see a need for further research on conceptualizing measures of personal well-being, and the need for social surveys to gather information on life and health satisfaction, perceived poverty, safety, social interaction, and participation in leisure activities and voluntary work.

Notes

This is a revised version of a paper presented by the authors at the 2010 Users Forum, held in Wellington on 24–25 March 2010. The forum was organised by Statistics New Zealand. The paper also benefited from comments received from an anonymous referee. Views expressed in this paper are those of the authors and do not necessarily reflect the views of Statistics New Zealand.

Appendix A

A list of research papers/reports prepared and published by Statistics New Zealand since 1970, by year of publication.

- *The influence of fertility on New Zealand's population age-structure, 1936–2006* (1977).
- *Elderly population of New Zealand* (1990).
- *Ageing and retirement in New Zealand* (1997).
- *New Zealand Now: 65 Plus* (1998).
- *Population ageing in New Zealand* (2000a).

- *The changing face of New Zealand's population* (2000b).
- *Older New Zealanders - 65 and beyond* (2004).
- *Demographic aspects of New Zealand's ageing population* (2006).
- *New Zealand's 65+ population: A statistical volume* (2007).
- *New Zealand disability surveys, 1996, 2001, 2006* (2009).
- *Labour force participation of New Zealanders aged 65 years and over, 1986-2006* (2009b).
- *Structural change and the 65+ Population*, A series of articles, incl. Impact of structural change, Ageing of ethnic groups; The legacy of past childbearing decisions; Internal migration of New Zealand's 65+ Population (2009c).

References

- Australian Government: Department of Immigration and Citizenship (2010). *Fact Sheet 17 – New Zealanders in Australia*. Retrieved from <http://www.immi.gov.au/media/>.
- Boston, J & J.A. Davey (Ed.) (2006). *Implications of Population Ageing: Opportunities and Risks*. Institute of Policy Studies, Victoria University of Wellington.
- Department of Statistics.(1977). The Influence of Fertility on New Zealand's Population Age-structure, 1936-2006. *Quarterly Population Bulletin, 1:2* (pp. 5-15). Department of Statistics, Wellington.
- _____(1979), Sub-National Differentials in New Zealand Fertility, 1971-76. *Quarterly Demographic Bulletin, Vol. 3, No. 2, Sept 1979* (pp. 4-17). Department of Statistics, Wellington.
- _____(1985), Regional Differentials in New Zealand Mortality, 1980-1982, *Demographic Bulletin, Vol. 6, No. 2, 198* (pp. 7-24). Department of Statistics, Wellington.
- _____(1990). *Elderly population of New Zealand*. Wellington.
- Khawaja, M. (2000). Population Ageing in New Zealand. *Key Statistics Jan/Feb 2000*. Department of Statistics, Wellington.
- Khawaja, M. & Boddington B. (2009). Too Early to Retire? Growing Participation of Older New Zealanders in the Labour Force. *New Zealand Population Review*, (35), 75-93.
- Koopman-Boyden, P. (Ed.) (1993). *New Zealand's Ageing Society: the implications*. Daphne Brasell Associates Press, Wellington.
- Koopman-Boyden, P. & Waldegrave, C. (Ed.) (2009). *Enhancing Wellbeing in an Ageing Society: 65-84 year old New Zealanders in 2007*. EWAS Research Programme.
- Ministry of Health (2002). *Health of Older people in New Zealand: a statistical reference*. Wellington. Retrieved from <http://www.moh.govt.nz>
- Ministry of Social Development (2001). *Positive Ageing in New Zealand Diversity, participation and change: he oranga kaumatua; Aotearoa*. Wellington.
- Ministry of Social Development (2007). *Positive Ageing Indicators, 2007*. Wellington.

- New Zealand Institute of Economic Research (2004). *Ageing In New Zealand and Health and Disability Services: Demand Projections and workforce implications 2001-2021: Discussion Document*. Wellington. Retrieved from <http://www.moh.govt.nz>
- Retirement Commission (2007). *2007 Review of Retirement Policy*. Wellington.
- Statistics New Zealand (1995). *New Zealand Now: 65 Plus*. Wellington.
- _____. (1997). *Ageing and Retirement in New Zealand*. Wellington.
- _____. (1998). *New Zealand Now: 65 Plus (1998 edition)*. Wellington.
- _____. (2000). The Changing Face of New Zealand's Population. *Key Statistics September 2000*. Wellington.
- _____. (2004). *Older New Zealanders - 65 and beyond*.
- _____. (2006). *Demographic Aspects of New Zealand's Ageing Population*.
- _____. (2007a) *National Population Projections: 2006 (base) - 2061*.
- _____. (2007b). *New Zealand's 65+ Population: A Statistical volume, 2007*.
- _____. (2008a) *National Ethnic Population Projections: 2006 (base) - 2026*.
- _____. (2008b) *New Zealand Disability Survey*. Wellington.
- _____. (2009a). *Labour Force Participation of New Zealanders Aged 65 and Over, 1986-2006*.
- _____. (2009b). *Disability and the Labour Market in New Zealand in 2006*.
- _____. (2009c). *Structural Change and the 65+ Population*
- and Ministry of Women's Affairs (2001). *Around the Clock: findings from the New Zealand Time Use Survey 1998-99*. Wellington.
- The Treasury (2008). *Economic and Fiscal Forecasts Dec 2008*. Wellington. Retrieved from <http://www.treasury.govt.nz/long-term fiscal position>.
- United Nations (2009). *World Population Prospects; The 2008 Revision. Volume II: Sex and Age Distribution of the World Population*. New York.
- Zodgekar, A. (2000). Implications of New Zealand's ageing population for human support and health funding. *New Zealand Population Review*, 26(1), 99-113

Demography, Diaspora and Diplomacy: New Zealand's Asian Challenges

ANDREW BUTCHER *

Abstract

This policy note takes a long-term view of the challenges New Zealand may face in its relationship with Asia, both domestically and internationally. Drawing on research commissioned by the Asia New Zealand Foundation, the paper discusses three main areas. First, demographic changes present challenges for New Zealand's bicultural relations, social policy, how we measure and understand ethnicity and issues of national identity. Second, New Zealand has one of the largest diaspora populations in the world, but this is largely ignored in policy especially with respect to Asia. Third, possible diplomatic challenges are outlined, including increased pressure on off-shore diplomatic posts by diaspora and tourist populations, diplomatic incidents, and the implications of shifting regional power arrangements in the Asia-Pacific region.

Introduction

In surveying a growing 'Asian New Zealand' population and New Zealand's future in Asia, this article considers three themes: demographic changes, diaspora opportunities and diplomatic challenges.

This paper follows Statistics New Zealand in identifying the Asian region as the part of the world that extends from Pakistan in the west to Indonesia in the east. It includes South Asia but excludes West Asia (the Middle East), Russia and its former states, and some countries that are on the Pacific Rim (such as the United States, Australia and New Zealand, which are all considered part of a broad 'Asia-Pacific area in some forums such as the Asia-Pacific Economic Cooperation (APEC) and the East Asia Summit).

* Director, Policy and Research, Asia New Zealand Foundation: AButcher@asianz.org.nz

Asian peoples are usually defined in two ways: people born in the countries of Asia, or people who identify with one or more Asian ethnicities. Generally, this article refers to those in the second category, who are of Asian ethnicity (whether New Zealand-born or overseas-born).

Statistical projections suggest that 'Asian New Zealanders', i.e. people born in New Zealand who identify with an Asian ethnicity, will be a growing population in New Zealand over the next few decades (Bedford and Ho, 2008). This raises questions such as how this group might be presented in the New Zealand media, which tends to resort to the lowest common denominator in their reportage? What connections they will have with other ethnic groups? What role might they play politically? How might they distinguish themselves and be distinguished by others from migrant populations from Asia? What about those who share Asian-Pacific ethnicities, such as New Zealand's current Governor-General (at the time of writing) Sir Anand Satyanand, who is of Indo-Fijian ethnicity? These questions are significant for New Zealand in these first decades of the 21st century. They are unique to New Zealand's history, central to New Zealand's identity, crucial for the measure of New Zealand's various ethnicities and necessary to both ask and answer to understand New Zealand's place in the world.

New Zealand's place in the world is represented not just geographically as a series of islands in the South Pacific, but also through the dispersed nature of its population, its diaspora. One estimate puts New Zealand's diaspora population – that is, the population of New Zealand citizens and permanent residents who live outside New Zealand – as one of the highest in the world, at one-fifth (one million people) of its total population (refer to Gamlen, 2011 for a discussion on definitions of diaspora; Bedford, 2001). New Zealanders overseas predominately live in Australia, the United Kingdom or the United States of America. However, an increasing number are living in Asia, particularly if a broader definition of diaspora is used, which encompasses returned migrants and students alongside New Zealand-born citizens and permanent residents.

Scholarly literature is divided on the meaning of diaspora and, like other well-worn academic terms, it risks meaning all things to all people. Inasmuch as there is a common understanding, 'diaspora' is taken to include an ongoing orientation towards a homeland and the maintenance of a group identity over time (Gamlen, 2011 page 5). However, there is no significant,

large-scale research measuring New Zealand's diaspora populations, so while we may subscribe to a common understanding there is no way (yet) in which we can be assured we are using it correctly. In this field, for New Zealand, we have to make do with a certain amount of interference, supposition and speculation.

Regardless of the precise figures, increasing numbers of New Zealanders abroad (as both diaspora and tourist populations) can put increased strain on New Zealand's diplomatic posts, particularly in instances of natural disasters, terrorist attacks or self-inflicted troubles (Blue Ribbon Panel Report, 2009).

The ubiquity and ease of mass communication can also inflame diplomatic headaches, as was experienced after controversial comments towards the Governor General of New Zealand were made on air by a former Television New Zealand broadcaster Paul Henry in early 2011. Incidents of these kinds may occur both off-shore and in New Zealand. For example, as seen in 2008 when it hosted the Olympic Games, China can use its own diaspora – i.e. its overseas ethnically Chinese population (including those in New Zealand), to rally to its nationalist causes (Butcher, 2009a; Ayson & Taylor, 2008). In 2008, this took the form of counter-protests to anti-China rallies held in many Western capitals. These protests and counter-protests then become part of the complex and shifting bilateral relationship between New Zealand and China, amplified by the significant minority of ethnically Chinese New Zealanders descent.

To further complicate these bilateral relationships, the changing regional power shifts in Asia may require some fancy diplomatic foot-work as New Zealand seeks to negotiate trade and other deals with countries who are not traditional allies or strategic partners, such as the United Kingdom, the United States of America and Canada (see White, 2009; 2010 for discussion of the same in the Australian context and the New Zealand Government's Defence White Paper, 2010, for discussion for the New Zealand context). Political disruption, natural disasters, fragile states, climate change and 'rogue states' all further contribute to a fraught region of which New Zealand is a part, not just by virtue of its geography as a Pacific Rim country, but also because of its own significant Asian population.

Demographic Changes

The 2006 Census recorded 354,552 persons of Asian ethnicity living in New Zealand, 9.2 percent of the total usually resident population, up from 6.6 percent in 2001. Population projections prepared by Statistics New Zealand (medium series) suggest that the numbers of people of Asian ethnicity could reach 790,000 by 2026, and that this growth will be driven in large part by net migration (Statistics New Zealand, 2010). Figures 1 and 2 show age sex structure of the Asian population against the total New Zealand population (Figure 1) and Maori (Figure 2) across the period 1986 to 2026 (see also Friesen 2008a, 2008b, 2009a, 2009b; Bedford and Ho (2008)). New Zealand's Asian population is projected to eventually exceed that of Maori.

Several implications arise from these demographic projections. The relative growth among New Zealand's Asian population compared with Maori presents some challenges to New Zealand's bicultural framework. Some commentators have raised concerns about the implications of a growing Asian population on bicultural relations between the Crown and Maori, the understanding and goodwill around the Treaty of Waitangi and related claims and the secure place of Maori as tangata whenua. Twelve years ago Fleras and Spoonley (1999) set out a challenge that Aotearoa New Zealand needed to "rethink [its] core institutions and values in a way that now encompasses the pluralistic nature of contemporary New Zealand" (p.252) and that

At the core is a distinction between the circumstances and rights of indigenous peoples and those of immigrants and their descendants, whether they are part of a majority or minority ethnic group (p.253).

With a projected Asian population that may equal or exceed New Zealand's Maori population, the need for a distinction between tangata whenua (indigenous New Zealanders) and tauwiwi (foreigners, or non-indigenous New Zealanders) seems all the more salient.

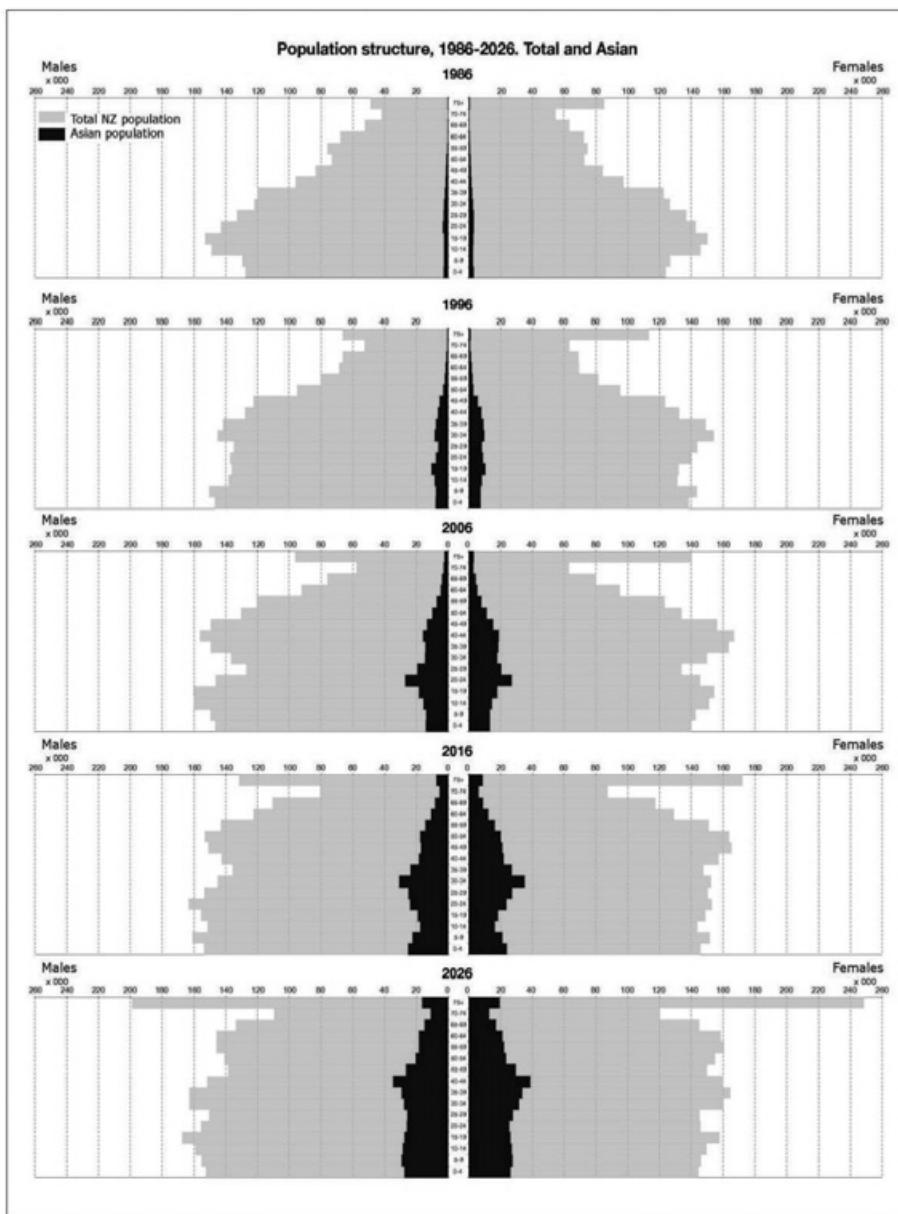
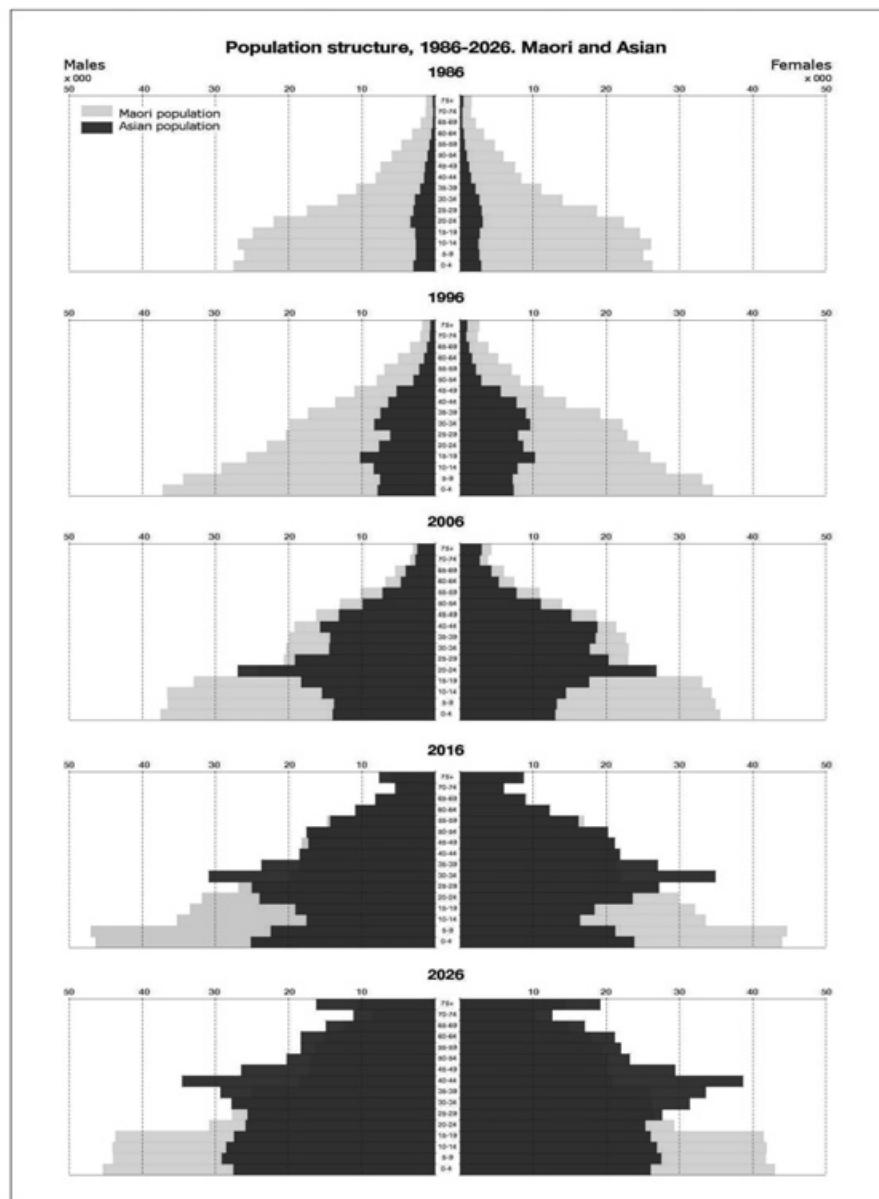
Figure 1: Population structure Total and Asian 1986 – 2026

Figure 2: Population structure Maori and Asian 1986 – 2026



The context of Fleras and Spoonley's comments, made in 1999, was very different twelve years ago to now. As they noted, there was at that time a sympathetic Treaty Negotiations Minister (Sir Douglas Graham), significant steps had been taken to address Maori grievances and a bicultural framework was being deeply and successfully embedded in New Zealand discourse and governance. It is argued here not that those successes have unravelled, but rather that they have stalled. New Zealand's arrangement with Maori might be unique amongst similar settler societies (Pearson, 2001), as is its relatively high proportion of Asian immigrants, especially in Auckland (Spoonley and Butcher, 2010), but that does not isolate it from strong anti-immigrant rhetoric (e.g. Lynch, 2011; see also Butcher & Spoonley, 2011). Some of this anti-immigration rhetoric in New Zealand is from Maori commentators (see Walker, 2004b; also see Spoonley, 2010), but certainly not all.

Alongside the government-imposed deadline for Treaty settlements, a subterranean argument to do away with Maori seats in Parliament, led initially by former National Party leader (and now Act Party leader) Dr Don Brash (Pearson, 2004; Walker, 2004a), a successful omission of Maori seats in the new Auckland Council (Spoonley, 2009; n.d.) and a recession that is negatively impacting Maori (Department of Labour, 2009), the projected increase in numbers of Asian residents may unsettle some.

Of course, the issue of Asian immigrants is not as clear-cut as the anti-immigration rhetoric might suggest. As Bedford and Ho (2008) note, increasing numbers of Asian peoples in New Zealand will identify with more than one ethnicity, including Maori. As Ip (2008, 2009) has shown, Maori-Asian relationships have a long and intimate history. But this history and ethnic mix does not in itself deal to the concerns highlighted here, nor does it necessarily ameliorate animosity by Maori toward Asian migrants. Should the economy recover to pre-recession levels, should Maori seats in Parliament be kept as sacrosanct, should the social and political needs of Maori be successfully and sympathetically addressed, then we might share the optimism with which Fleras and Spoonley ended their 1999 book. But none of those possibilities is guaranteed and a very different future could occur instead. Whichever of these alternative futures eventuates, however, the needs of New Zealand's tangata whenua over those of Asian and other immigrants cannot be ignored.

Second, the increase in Asian populations may have significant public and social policy implications. Across all spheres of policy – justice, welfare, health, tax, the labour market, immigration, education, retirement – an increase in Asian populations could place a strain on systems that: (a) are largely well-equipped for the needs of European, Maori and Pacific peoples, but not necessarily for Asian peoples and (b) are based on assumptions about an individual's adherence to a particular rule of law, understanding of judicial and political processes, health needs and previous experiences of health-care, prior educational knowledge, and expectations around retirement age, savings and where people may live in retirement.

Much of New Zealand's social policy has been concerned with the various outcomes of Maori and Pacific peoples in particular across a range of policy frameworks. Significant steps have been made in developing culturally sensitive policies and practices that both respect the unique place of Maori in New Zealand and address their social needs. The needs of Asian immigrants to New Zealand have not been ignored, least of all in health, but the public policy debate – across all social policy areas and within a broader narrative of social policy for a rapidly ethnically diversifying nation – is largely piecemeal and reactive. It is not that Asian migrants and peoples generally should be treated as a “special case” and isolated from other social and ethnic groups in New Zealand, nor is it that they should be understood as homogenous and therefore “treatable” in a universal way. Rather, they should be seen as an important and growing part of New Zealand society and therefore as valuable contributors to and a topic for discussions in public policy. The public policy implications of Asian peoples in New Zealand need to extend beyond discourses of trade and diplomacy.

Third, increasing numbers of New Zealanders identifying with more than one ethnicity (Bedford and Ho, 2008) presents a challenge to how we measure and understand ethnicity. A great deal of work has been undertaken by Paul Callister and his colleagues (e.g. see Callister et al., 2007; Callister et al., 2008; Callister & Didham, 2009; Brown et al., 2010) around the implications of changing ethnicities on the collection, measurement and reporting of Census data.

Fourth, related to issues of what it means to be a New Zealander, these demographic changes also provoke questions of New Zealand's national identity. Asia:NZ has commissioned a series of reports looking at New Zealand's place in Asia (Cook; 2010; Sato, 2011; Panda and Jha, forthcoming;

Singh, forthcoming). While these reports largely take a political and diplomatic perspective, the issue of New Zealand's changing demography and increased Asian populations will inevitably shape New Zealand's understanding of its place in the Asia-Pacific region and thus its national identity as presented externally. Indeed, New Zealand's large Pacific populations, alongside its geographical proximity to Pacific Island nations, means it serves a significant role in that region (Cook, 2010, p.9). However, New Zealand's role in Asia for the same reasons is not as clearly defined. Rather, it is New Zealand's small size, population and thus (limited) strategic weight that means New Zealand is often excluded from any significant engagement with Asia, particularly vis-à-vis Australia (Cook, 2010).

But while New Zealand's total population might be comparatively small, the proportion of its Asian population is not. Its largest city, Auckland, for example, is already a 'super-diverse' city, alongside Vancouver, Sydney and London; one-third of Aucklanders' are born overseas. New Zealand has proportionately more Asians in its population than does Australia (Spoonley and Butcher, 2010). We can draw on Canada and Australia for conceptual frameworks, but New Zealand's response to the question of its national identity and place in the world will be determined by its unique circumstances, in particular the relationship between the Crown and Maori, and the significant minority Asian population. The growing political weight of New Zealand's Asian populations can be seen in the number of Members of Parliament of Asian ethnicity (one of whom, Pansy Wong was, until late-2010, New Zealand's first Cabinet Minister of Asian ethnicity).² Prospective parliamentary candidates are being eagerly courted by the major political parties ahead of the 2011 General Election.³ That, at one level, is a positive effect.

Diaspora Opportunities and Challenges

The second major theme to consider is that of the opportunities and challenges of diaspora, in this case New Zealand citizens or permanent residents who live outside New Zealand. New Zealanders living in Asia have been variously described as "untapped resources" (Ho, Ip & Lewin, 2010), "future potential", and "invisible" (Didham 2010).

Given New Zealand's increasing Asian populations, many of whom will be first or second-generation migrants, we can expect that Asian New

Zealanders will constitute a growing part of New Zealand's diaspora population generally and in Asia specifically. In that respect, as Bedford and Ho (2008) note, young Asian New Zealanders are no different to other young New Zealanders in wanting to have their 'overseas experience'.

There is still far too little work on quantitatively measuring or tracking New Zealand's diaspora populations, and here is patchy quantitative data available on New Zealanders living overseas. New Zealand's Ministry of Foreign Affairs and Trade hold limited data, as do other government agencies with an international component. A survey in 2006 by the organisation Kiwi Expats Abroad (KEA) (Kiwi Expats Abroad, 2006) provided some insights though is limited in its methodology. One methodological problem, that much of what we know about New Zealanders in Asia is through self-reporting, will continue to be a hindrance to understanding – let alone developing any policy around – New Zealand's diaspora populations.

The KEA survey, for example, was undertaken online with participants volunteering themselves to participate. There was no set sample frame. This survey did not capture those who did not: know about the survey, have online access or have the time or inclination to participate. Additionally, the sample was biased toward those who lived in Australia and the United Kingdom and who were actively engaged with New Zealand. That in itself may be a finding, of course, but that would be inferring too much of those who did not participate in this survey. Poor survey design aside, this survey illustrates the greater challenge of adequately and robustly capturing data about New Zealand's diaspora abroad.

While organisations like KEA engage with New Zealand's diaspora populations there is little, if any, systematic or strategic government or policy debate on this issue in New Zealand. The extent to which engaging with New Zealand's diaspora populations is off the radar seems to contradict the current government ambitions about a 'New Zealand Inc' approach offshore. With no responsible government ministry charged with considering New Zealand's diaspora, it is liable to continue as something of a political football, kicked around in debates about the 'brain-drain' and 'catching up with Australia' rather than in any more substantive or meaningful way (Bedford, 2000; Cook, 2010).

Diplomatic Challenges

New Zealand's growing Asian population and growing numbers of New Zealanders living in Asian countries sometimes present diplomatic challenges. Relations with China are one example.

As was seen in 2008 in the lead-up to the Beijing Olympics and the controversy about the torch relay, the Chinese government is able to encourage its citizens overseas, including students, to rally to its support (Butcher, 2009a). Beijing had expected that the Olympic torch relay, which has preceded most other Olympics, would be a fitting prelude to the 29th Olympiad. However, the passage of the torch was heavily disrupted by demonstrations in the early portions of its relay, notably in London, San Francisco, Paris and Seoul, even Wellington and Auckland, though the torch was never intended to come to New Zealand. The protests weren't only remarkable for what were being protested against (various causes, including China's human rights record) and the scale of those protests, but that there were also counter-protests by Chinese diaspora populations in these cities (Ayson and Taylor, 2008, pp.5-6). The torch relay provided a lightning rod for those with a range of grievances against China to gather and express those grievances publicly. Many of the protestors saw this as the opportunity to take China to task in a way that international leaders were neglecting to do. However, the relay also provided a show of China's power and willingness to respond aggressively to global criticism of its internal issues. If anything, these protests against China and especially the counter-protests gave further credence and legitimacy to a growing ambivalence toward China.

We should expect to see more of this, as China grows in economic and political might. The lightning rod could be any number of other factors about which China feels strongly and wants to assert its national position and strengthen nationalism generally.

In Asia:NZ's annual survey in 2010, respondents attributed their negative feelings toward China to China's interest in acquiring the large portion of dairy farms owned by the Crafar family, leading to the Prime Minister to say that New Zealanders do not want to be "tenants on their own land" (cited in Hickey, 2010). The anti-China sentiment expressed by media and politicians through this episode of the farm purchase was rarely explicitly racist, though was understood to be about Asians – and Chinese –

in particular. In this way, politicians could claim “plausible deniability” if challenged they their rhetoric was racist; they followed a method frequently used by Winston Peters (Liu and Mills, 2006; Spoonley and Butcher, 2010).

The irony of this particular debate, however, was that there are significant American and Australian investments and other financial interests in New Zealand’s agricultural sector other than Chinese and yet no one was suggesting that New Zealand should prevent these countries or people of those nationalities from buying up New Zealand land. As New Zealand Herald columnist Bernard Hickey (2010) asked:

Why is it worse than, say, the Australian banks owning 91 percent of our financial system or an Australian retailer owning one of our two grocery chains, Progressive, or Australian media companies owning our three biggest media companies, APN, Fairfax and Mediaworks?

Ultimately, the Overseas Investment Office declined to allow the sale of these farms to the Chinese consortium bidding for them (Wilkinson and Williamson, 2010; Land Information New Zealand), though there was a prospective new bid from a different Chinese-based company for the same farms in April 2011 (Scherer, 2011). This issue of foreign (and especially Chinese) investment mirrors similar debates in Australia (Shearer, 2009; O’Sullivan, 2010) and in the Pacific (Hanson & Fifita, 2011).

Second, as a report by the Lowy Institute for International Policy in Sydney on Australia’s diplomatic deficit illustrates, an increasing number and more vocal diaspora can put strain on diplomatic posts abroad (Blue Ribbon Panel Report, 2009). This can happen either through New Zealand citizens and permanent residents getting themselves in trouble in Asia (or elsewhere) and expecting the embassy or high commission to at least help, if not bail, them out. For example, as seen in demands by New Zealand tourists in Thailand at the time of protests that closed the international airport (TVNZ, Dec 1, 2008) and in India following the 2008 terrorist attacks in Mumbai (New Zealand Herald, Tuesday April 12, 2008). Or it can happen, regrettably, through natural disasters, which has already been an experience for the New Zealand government, notably through the Boxing Day tsunami in 2008 or through terrorist attacks, as has twice happened in recent years in Bali. None of these can be controlled, but diplomatic offices are expected to help out their citizenry. Given what we expect will be an increasing New Zealand diaspora in Asia, and the increased likelihood of

natural disasters or terrorist events in that region in which New Zealanders might be caught up, there are going to be significant pressures on New Zealand's diplomatic staff abroad. To that end, greater resourcing of its off-shore posts might be required, which will be a challenge at a time where the Minister of Foreign Affairs, Murray McCully, is making budgetary cuts and other reorganisation to the Ministry of Foreign Affairs and Trade (McCully, 2011).

Third, the issue might not just be one of New Zealand diplomats coming to the aid of their fellow citizens. It might also be New Zealand diplomats apologising on behalf of its government to other countries for events that happened in New Zealand, as occurred in October 2010 following comments made on air by Paul Henry, at the time a Television New Zealand breakfast television host. Henry asked the Prime Minister on air whether the next Governor-General of New Zealand would 'look and sound like a New Zealander', directly referencing the Indo-Fijian ethnicity of the then Governor-General Sir Anand Satyanand. We could assume that had Henry worked for a private broadcaster, rather than the government-owned TVNZ, his ridiculing comments may not have created as many international waves, nor required a diplomatic apology. Regardless, that an apology was required at all suggests that a combination of New Zealand's large and influential Indian community, and technology that enabled the television clip to be (re) broadcast around the world, meant that unlike earlier similar media events (such as the 'Inv-Asian' articles in Auckland community newspapers, about the large-scale Asian immigration to Auckland's Eastern suburbs (Booth & Martin, 1993) and the North & South cover article by Deborah Coddington titled 'Asian Angst: Is it time to send some back?' about apparent criminal behaviour by Asian immigrants and students (Coddington 2006), Henry's comments could not just be treated as an isolated or domestic issue. New Zealand's relationship with one of the largest and increasingly important countries in the world was potentially put in jeopardy. Of course, the negative coverage of the New Delhi Commonwealth Games, which went well beyond Henry's comments, added to the context, and may also have been a factor in a decrease of warmth by New Zealanders toward India in 2010 (Asia New Zealand Foundation, 2011).

Another example, familiar to Australia, is the diplomatic leg-work that had to go into mending relations between it and India after what was

perceived as racist and offensive treatment of Indian students in Australia. Lowy Institute's Michael Wesley (2009) refers to these students as 'poisoned alumni'. The diplomatic fall-out may well extend beyond just a few weeks or months. One interlocutor remarked to the author that the bilateral relationship between India and Australia had been set back ten years because of Australia's perceived ill-treatment of Indian students. With a tight focus on the revenue-generating aspects of export education policies it is easy to neglect the long-term aspects of how New Zealand's alumni might both view and treat New Zealand in the future and, indeed, if recent media coverage is anything to go by, New Zealand might share the unfortunate experiences of Australia with respect to its own international students (Editorial, 2010; Laxon, 2010).

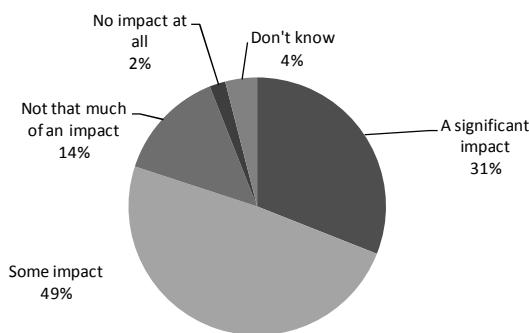
Fourth, these diplomatic challenges are also likely to increase because of the political shifts in the Asian region. For example, China has a rapidly growing economy and with that is asserting political weight. The Association of Southeast Asian Nations (ASEAN), which consists of the ten countries of Southeast Asia, is one of the older regional groupings, but is also asserting its centrality to the region (especially over against suggestions for diplomatic regional 'architecture' by the then Rudd and Hotoyama governments in Australia and Japan respectively). In Southeast Asia, Indonesia is one of the strongest economies as well as being the fourth largest country in the world by population, with the largest Muslim population in the world. (Inexplicably, Indonesia still remains absent from public and official consciousness in New Zealand (Asia:NZ, 2009; New Zealand Government, 2010; Butcher, 2010)). Japan is the third largest economy in the world, slipping from second largest in 2010. Its economy and domestic politics are not in the best shape and it is losing some of the influence it used to have in the region (Sato, 2011), all of which was compounded by the devastating earthquake of March 2011. Then, there's the pariah state, North Korea and its bellicose ways; India, the largest democracy in the world; and Australia, whose previously foreign-focused Prime Minister is now its foreign minister while its new Prime Minister is domestically-focused as she tries to maintain stable government.

All of these countries are mentioned by way of highlighting the fluctuations of the broad Asian region and to remind us that we are not immune from the consequences of these fluctuations. As economies grow they seek to extend their influence, strengthen their hand, and move from a

peaceful rise to a more assertive one. It is in New Zealand's interests that it has a stable neighbourhood because without stability in the Asian region, New Zealand's trade suffers, as does its ability to plan and predict (cf. New Zealand Government, 2009). The risk of terrorism increases and so does the likelihood that New Zealanders will be called to contribute either militarily or as peace-keepers in the Asia-Pacific region. The strategic outlook is not that bright and, in an understated way, the recent New Zealand Defence White Paper (New Zealand Government, 2009) reminds us that the next 25 years will not be like the last 25 years (which might not be saying much in itself, but is probably more accurate than not in the current climate).

For the first time in its annual survey, Asia:NZ asked in 2010 "how much of an impact do you think conflicts, threats and instability in Asia could have on New Zealand?" and, as represented in Figure 3 below, 80% of New Zealanders think it will be some or a significant impact.

Figure 3: How much of an impact do you think conflicts, threats or instability in Asia could have on New Zealand? (n=1,000)



Source: Asia:NZ 'New Zealanders Perceptions of Asia and Asian peoples in 2010' survey.

The consequences of political and regional shifts will inevitably provoke migration, which might present challenges to national security, as porous borders in much of the region combine with the ease of travel generally. The movement of people might be the most ubiquitous form of globalisation, but that does not mean it is universally a welcome trend. There are some within immigration departments and intelligence agencies who see immigration in terms not of economic growth, but national security and therefore are inclined toward tighter borders rather than open doors.

Some of these regional changes will be brought about by climate change-related events. Climate change and the South Pacific is the focus of a recent book by the Institute of Policy Studies (Burson, 2010) and undoubtedly climate change events in that region will impact New Zealand. But impacts further afield, in Asia, will also impact us including, perhaps, through increased migration to New Zealand as a result of climate change-events and natural disasters or political instability brought about by climate change.

Conclusion

Demographics, diaspora and diplomacy are all connected. Demographic changes present challenges for New Zealand's national identity and its public policy. An increasing diaspora population in Asia presents opportunities for engagement in that region, but it also presents challenges in the face of terrorism, natural disasters and self-inflicted troubles. Both of these add to several diplomatic challenges that New Zealand will face in the near and medium-term future, all underlined by shifting and more assertive powers in the Asian region. These three themes cannot be considered in isolation, as too often occurs. New Zealand's future in Asia will be partly driven by its geographical proximity to the region, which will be further strengthened as New Zealand loosens its historical ties to England. But geography alone will not be the cause of future engagement. With 2011 as a General Election year, we could assume that such anti-immigration rhetoric will increase, particularly if New Zealand First tries to re-enter Parliament, as we can reasonably suppose they might. New Zealand's significant and increasing minority of Asian populations will also feature strongly in New Zealand's future engagement with Asia. These Asian populations will variously engage politically with their countries of origin as well as New Zealand, will have the 'overseas experience' as many young New Zealanders already do, and will shape, in profound and yet undetermined ways, how New Zealand as a nation relates to the Asian region and its peoples within its own borders.

Acknowledgements

An earlier version of this paper was presented at the Pathways Circuits and Crossroads Conference, Wellington, December 2010. I am grateful to Brittany Chellew, Professor Paul Spoonley, Dr. Ward Friesen and the anonymous reviewer for their helpful comments on an earlier version of this paper and to Andrew Robertson for preparing the graphs on Maori attitudes toward Asians.

Notes

1. Henry was employed by the state-owned broadcaster Television New Zealand (TVNZ) as host of their popular breakfast show and was well-known for his controversial and provocative comments. In a separate incident, Henry made fun of the surname of an Indian Commonwealth Games official, Shelia Dikshit. Both of these broadcasts were re-played frequently on New Zealand and international media (including in India), and online. In response to both these broadcasts, TVNZ received a large number of complaints from the public and companies who had booked advertisements during the breakfast show. After an initial weak apology “[Paul Henry is] prepared to say the things we quietly think but are scared to say out loud” (cited in Johnston, 2010), TVNZ put Henry on leave before he then subsequently resigned, under duress. Both these incidents, one explicitly and the other implicitly directed toward Indians, also prompted the then New Zealand High Commissioner to New Delhi to offer a diplomatic apology to the Indian government. Henry and TVNZ were subsequently criticised and fined by New Zealand’s Broadcasting Standards Authority (BSA, 2011).

In April 2011 Henry was employed as a broadcaster/presenter by Television New Zealand’s main competitor, Mediaworks, which owns the RadioLIVE stations and TV3.

2. In December 2010, Wong was forced to resign from Parliament as a result of an expenses and conflict-of-interest scandal which involved her husband’s business interests.
3. The Labour Party, which released its party list on Monday April 11, 2011, has two sitting Asian Members of Parliament within the top twenty-two, and a third Asian at number 44 (of 45). It is reasonable to assume that Rajen Prasad, MP (at number 20) and Raymond Huo, MP (at number 21) will be back in Parliament after the November 2011 General Election. The Green Party, which was the only other political party to have released its list for the 2011 election at the time of writing had no Asian candidates standing for Parliament.

Bibliography

- Asia New Zealand Foundation (2009). *Perceptions of Asia, 2009*. Wellington: Asia New Zealand Foundation.
- Asia New Zealand Foundation (2011). *Perceptions of Asia and Asian Peoples in 2010*. Wellington: Asia New Zealand Foundation.
- Asia Pacific Foundation of Canada. (2010). *National Opinion Poll: Canadian Views on Asia*. Vancouver: Asia Pacific Foundation of Canada.
- Ayson, R. & Taylor, B. (2008). Carrying China's torch. *Survival*, 50 (4): 5-10.
- Bedford, R. (2001a). *Reflections on the spatial odysseys of New Zealanders*. Briefing Paper No. 2, New Directions Seminar, April.
- _____. (2001b). *Perspectives on International Migration, Urban Transformation and the Research/Policy Interface*. Population Studies Centre Discussion Paper, No. 36.
- _____. & Ho, E. (2008). *Asians in New Zealand: Implications of a Changing Demography*. Wellington: Asia New Zealand Foundation. Retrieved from <http://www.asianz.org.nz>
- Blue Ribbon Panel Report. (2009). *Australia's diplomatic deficit. Reinvesting in our instruments of international policy*. Sydney: Lowy Institute for International Policy.
- Brown, P., Callister, P., Carter, K. & Engler, R. (2010). Ethnic mobility: is it important for research and policy analysis? *Policy Quarterly*, 6(3), 45-51.
- Burson, B. (2010). *Climate change and migration: South Pacific perspectives*. Wellington: Institute of Policy Studies, Victoria University of Wellington.
- Butcher, A. (2009a). The Olympic Effect: New Zealanders perceptions of China in 2008. *The New Zealand Journal of Asian Studies*, 11(2), 1-18.
- _____. (2009b). The Asia New Zealand Foundation and its research programme. *New Zealand Sociology*, 24(2): 102-112.
- _____. (2009c). Friends foreign and domestic: (re)converging New Zealand's export education and foreign policies. *Policy Quarterly* 5(4): 64-70.
- _____. (2010). *New Zealand: Different, in important ways*. The Interpreter: The weblog of the Lowy Institute for International Policy. Retrieved from <http://www.lowyinterpreter.org>
- _____. & McGrath, T. (2011). A sin of omission: New Zealand's export education industry and foreign policy. In C. Holden, M. Kilkey & G. Ramia (Eds.). *Social Policy Review 23: Analysis and debate in social policy 2011*. Bristol: The Policy Press
- _____. & Spoonley, P. (2011). 'Inv-Asian': Print media constructions of Asians and Asian immigrants'. In J. Leckie and P. Voci (Eds.). *Localizing Asia in Aotearoa*. Wellington: Dunmore Press.
- Callister, P. & Didham, R. (2009). Who are we? The Human Genome Project, race and ethnicity. *Social Policy Journal*, 36, 63-76.
- _____. & Kivi, A. (2008). *Who are we?: The conceptualisation and expression of ethnicity*. Report commissioned by Official Statistics Research. Wellington: Statistics New Zealand.

- _____. Newell, J. and Potter, D. (2007). 'Family ethnicity': Knitting a jumper using two woolly concepts. *Social Policy Journal*, 32, 32-48.
- Cook, M. (2010). *Standing Together in Single File: Australia Views of New Zealand in Asia*. Wellington: Asia New Zealand Foundation.
- Didham, R. (2010). *Future potential and the invisible diaspora: New Zealand and South Asia diaspora*. Wellington: Asia New Zealand Foundation.
- Editorial (2010, November 16). Rogue English schools risk NZ's reputation. *New Zealand Herald*. Retrieved from <http://www.nzherald.co.nz>
- Fleras, A. & Spoonley, P. (1999). Recalling Aotearoa: Indigenous Politics and Ethnic Relationship in New Zealand. Auckland: Oxford University Press.
- Friesen, W. (2008a). *Diverse Auckland: The Face of New Zealand in the Twenty-First Century?* Wellington: Asia New Zealand Foundation.
- _____. (2008b). *Asians in Christchurch: The most British city diversifies*. Wellington: Asia New Zealand Foundation.
- _____. (2009a). *Asians in Wellington: Changing the ethnic profile of the capital city*. Wellington: Asia New Zealand Foundation.
- _____. (2009b). *Asians in Dunedin: Not a new story*. Wellington: Asia New Zealand Foundation.
- Fullilove, M. & Flutter, C. (2004). *Diaspora: The world wide web of Australians*. Sydney: Lowy Institute for International Policy.
- _____. (2008). *World Wide Webs: Diasporas and the International System*. Sydney: Lowy Institute for International Policy.
- Gamlen, A. (2011). *Engaging Asia: The role of the diaspora*. Wellington: Asia New Zealand Foundation.
- Gendall, P., Spoonley, P. & Trlin, A. (2007). *The Attitudes of New Zealanders to Immigrants and Immigration: 2003 and 2006 compared*. New Settlers Programme Occasional Publication No.17. Palmerston North: New Settlers Programme, Massey University.
- Glass, H. & Choy, W.K. (2001). *Brain drain or brain exchange?* Treasury Working Paper 01/22. Retrieved from <http://www.treasury.govt.nz/>
- Hanson, F. (2010). *Australia and the World: Public Opinion and Foreign Policy*. Sydney: Lowy Institute for International Policy.
- _____. & Fifita, M. (2011). *China in the Pacific: The New Banker in Town*. Policy Brief. Sydney: Lowy Institute for International Policy.
- Hickey, B. (2010, 24 August). The myopia of 'Save our Farms'. *New Zealand Herald*. Retrieved from <http://www.nzherald.co.nz/>
- Ho, E., Ip, M. & Lewin, J. (2010). *New Zealand's diaspora in China: Untapped resources*. Wellington: Asia New Zealand Foundation. Retrieved from <http://www.asianz.org.nz/>
- Ip, M. (2008). *Being Maori-Chinese: mixed identities*. Auckland: Auckland University Press.
- _____. (2009). *The Dragon and the Taniwha: Maori and Chinese in New Zealand*. Auckland: Auckland University Press.
- Johnston, M. (2010). 'TVNZ sides with angry viewers over Henry'. *New Zealand Herald*, October 19, 2010.

- Kiwi Expats Abroad. (2006). *Every One Counts: KEA New Zealand's Global Survey of Expatriate New Zealanders*. Auckland: KEA.
- Land Information New Zealand (2010). *Decision Summary Case: 201010030/201020032*. Retrieved from [http://www.lnz.govt.nz/](http://www.linz.govt.nz/)
- Laxon, A. (2010, November 13). Failure is not an option with pass-for-cash scams. *New Zealand Herald*. Retrieved from <http://www.nzherald.co.nz/>
- Liu, J. & Mills, D. (2006). Modern racism and neo-liberal globalization: The discourses of plausible deniability and their multiple functions. *Journal of Community and Applied Social Psychology*, 16, 83-99.
- Lynch, K. (2011, 12 January). White supremacist flyers offend. *The Press*. Retrieved from <http://www.stuff.co.nz>
- McCully, M. (2011, 5 April), Speech to the New Zealand Institute of International Affairs. Wellington. Retrieved from <http://www.beehive.govt.nz/>
- New Zealand Government (2010). *Defence White Paper*. Wellington: Ministry of Defence. Retrieved from <http://www.defence.govt.nz/>
- NZPA. (Thursday November 27, 2008). Mfat tries to contact New Zealanders in Mumbai. *New Zealand Herald*. Retrieved from <http://www.nzherald.co.nz/>
- O'Sullivan, F. (2010, July 28). Fears grow we're selling the golden goose. *New Zealand Herald*. Retrieved from <http://www.nzherald.co.nz/>
- Pearson, D. (2004). Rethinking Citizenship in Aotearoa/New Zealand. In P. Spoonley, C., Macpherson & D. Pearson (Eds.), *Tangata Tangata: The Changing Ethnic Contours of New Zealand*, pp. 291-314. Victoria: Thomson/Dunmore Press.
- Pew Research Centre for People and the Press (2011). *Public's focus turns from Europe to Asia: Strengthen Ties with China but get tough on trade*. Retrieved from <http://people-press.org/>
- Scherer, K. (2011, 13 April). New China bid to buy Crafar dairy farms. *New Zealand Herald*. Retrieved from <http://www.nzherald.co.nz/>
- Shearer, A. (2009, 19 August). The China Paradox. *The Wall Street Journal Asia*, p.13.
- Spoonley, P. (2010). *Mata Toa: The life and times of Ranginui Walker*. Auckland: Penguin.
- _____ & Butcher, A. (2009). Reporting superdiversity: The mass media and immigration in New Zealand. *Journal of Intercultural Studies*, 30(4), 355-372.
- _____, Gendall, P. & Trlin, A. (2007). *Welcome to our World: The Attitudes of New Zealanders to Immigrants and Immigration*. New Settlers Programme Occasional Publication No. 14. New Settlers Programme, Massey University, Palmerston North.
- Television New Zealand (TVNZ), (1 Dec, 2008). *Efforts to get Kiwis out of Thailand*. Retrieved from <http://tvnz.co.nz/>
- Walker, R. (2004a). State of the nation. *The Listener*. 192(3828). Retrieved from <http://www.listener.co.nz/>
- _____ (2004b). *Ka Whaiwhai Tonu Matou: struggle without end*. Auckland: Penguin.

- Wesley, M. (2009). *Australia's Poisoned Alumni: International Education and the Costs to Australia*. Policy Brief. Sydney: Lowy Institute for International Policy.
- White, H. (2009). *A focused force: Australia's defence priorities in the Asian century*. Lowy Institute paper 26. Sydney: Lowy Institute for International Policy.
- _____ (2010). Power Shift: Australia's future between Washington and Beijing. *Quarterly Essay*, September.
- Wilkinson, K. & Williamson, M. (2010, 22 December). Ministers turn down Natural Dairy application to buy Crafar Farms. Media release. Retrieved from <http://www.beehive.govt.nz/>

INSTRUCTIONS TO CONTRIBUTORS

The *New Zealand Population Review* is a peer reviewed journal carrying articles on many aspects of population, mainly relating to New Zealand, but in some cases dealing with issues in the Pacific, Australia, Asia or elsewhere. These articles may be based on new empirical research, theoretical perspectives or policy-related analysis. The Review is normally published once a year and solicits substantive articles of 5,000 to 8,000 words, as well as shorter research notes and commentaries.

Papers should be submitted in electronic form and must follow the referencing format as published in this issue (APA (American Psychological Association) referencing system). This system is widely used and is available on all major referencing software systems (e.g. Endnote), but contact the editors if you have any questions.

An abstract of 50-100 words, along with a note on the author's affiliation, should also be submitted.

Papers need to have been proofed for spelling, typos and grammatical errors before sending.

Please notify the Editors of any accompanying background papers to the work that may be published elsewhere.

References are cited in the text with the author's name and date of publication (as in this issue) and are listed alphabetically at the end of the article following the conventions of the APA. Endnotes should be employed only where essential; they should be referenced in the text and placed at the end of the paper under the title NOTES.

Please refer to our website for further information.

Manuscripts or books for review should be submitted to:

Dr Wardlow Friesen
Senior Lecturer in Geography
School of Environment
The University of Auckland
Email: w.friesen@auckland.ac.nz

Views expressed in articles and reviews published in the *New Zealand Population Review* are those of the contributors and do not necessarily reflect the views of the Population Association of New Zealand. Except for short quotations for review or educational purposes, material must not be reproduced without the written permission of the author. Permission to reproduce entire articles for publication must be obtained from the editor.

ISSN 0111-199X (Print)
ISSN 1179-8149 (Online)