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**The demographic forces shaping New Zealand's future.  
What population ageing [really] means.**

Natalie Jackson



**National Institute of  
Demographic and Economic Analysis**

*Te Rūnanga Tātari Tatauranga*

THE UNIVERSITY OF WAIKATO



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## Abstract

This paper outlines the key demographic forces shaping New Zealand’s future. It ranges broadly across birth rates, life expectancy and migration to show how this converging demography will result in a regionally-disparate future. It identifies a migration-driven bite in New Zealand’s age structure across the young adult ages that is pronounced in non-urban areas, and argues that while rural regions have long lost young adults and sun-belt regions gained older, what differs is that this phenomenon is now occurring alongside population ageing, rendering such age structures no longer conducive to growth. The converging trends will not only make responding to baby boomer retirement more difficult but will increase competition for workers and push up labour and consumption costs. With the exception of larger urban areas and some retirement zones, it shows that sub national growth in much of New Zealand has already ended and that this scenario will continue to unfold until zero growth or population decline embraces all but the major urban areas. This is despite a national growth rate which is currently near equal the annual global growth rate. The paper posits that it is time to re-evaluate the question ‘when does population growth ‘end’?’

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## Introduction

As elsewhere, New Zealand's population is ageing. As elsewhere, this ageing has two main drivers: increasing longevity, and declining birth rates, both outcomes of the Demographic Transition. In New Zealand's case, however, the population is also ageing 'prematurely' from another cause, the legacy of net migration loss at young adult ages (typically 20-24 years) which New Zealand experiences in most years, and at 15-19 and 25-29 years in many other years as well. The loss, compounded by the falling birth rates at the time each cohort was born, has created a deep bite in today's age structure across ages 25-39 years. This bite is not only driving up the median age faster than would otherwise be the case, given that New Zealand has the highest birth rate in the developed world, but has enormous implications for the country as it faces the retirement of its baby boomer generation.

The issues and their implications are compounded at sub-national level, as internal migration of the young to the main cities and beyond has left most non-urban areas with deeply waisted, hour-glass shaped age-structures. Such age structures not only face profound labour shortages, but are no longer conducive to growth.

This paper outlines the issues and their implications. It argues firstly that New Zealand has already entered a demographically-tight labour market that will see increasing competition for workers, and increased labour and consumption costs. This tightness will last at least 15 years, at which time a brief respite may arrive on the horizon, in the form of a modest baby blip which is currently being born. New Zealand's ability to survive to and beyond that date will depend very much on the investment it makes in these young people - and those who are currently children and youth - in the ensuing period. Secondly it argues that New Zealand is facing the permanent end of population growth in many of its regions and that this is concomitant process which is poorly understood and will make responding to baby boomer retirement and ageing even more difficult.

## Population ageing in a nutshell

In order to understand the demographic forces that are shaping New Zealand's future it is necessary to engage with what I have termed elsewhere the 'four dimensions' of population ageing: numerical and structural ageing, natural and absolute decline (Jackson 2007, see also Pool 2008).

*Numerical ageing* refers to the absolute increase in the numbers of elderly. The increase is primarily due to improvements in life expectancy and longevity. Future numbers can be projected with a very high degree of accuracy because those who will be 65+ years old in ten years time are already 55+ years, and their survival and migration rates are reliably known. These numbers will now escalate as New Zealand's baby boomers, born 1946-65, join their ranks. Numbers will double from their

present 586,000 to just on 1.2 million by 2036 (Statistics New Zealand 2009, Series 5). This projection may also be somewhat conservative, as the life expectancy assumptions in the projections allow for smaller gains than have been actually experienced over the past decade – a situation outlined below.

*Structural ageing*, on the other hand, refers to the increase in the proportion of the population that is old. Its primary cause is declining birth rates which decrease the proportion of the population that is young and thereby increase the proportion that is old. Currently the proportion sits at just over 13 per cent. This is projected to increase to 15 per cent within the next five years and to 21 per cent by 2031 (Statistics New Zealand 2009, Series 5). As the ratio of older to younger people increases, structural crossovers begin to emerge, firstly as more elderly than children, secondly as the number at labour market entry age fall below those approaching retirement age ('entrants' to 'exits').

*Natural Decline*: Once a population has more elderly than children it is a short step – typically between ten and twenty years - to it having more deaths than births. This results in a third crossover, from *natural increase*, which has been the situation for all of New Zealand's modern history, to natural decline. Natural decline is already occurring or imminently expected across much of Europe (van Nimwegan and Heering 2009), where populations are structurally older than New Zealand's, as well as in Japan. Globally it is anticipated that growth will end around the end of the present century (Lutz, Sanderson and Sherbov 2004).

*Absolute decline*: Where there is insufficient 'replacement' migration to offset the lost births and increased deaths, absolute decline will follow. This is particularly the case for local government areas which experience high net loss of young adults and/or high net gains of retirees. In the short term, population growth *per se* may appear to continue, as – for example - a large influx of retirees increases total numbers or demand for housing. But a population that has more elderly than children and/or has lost its reproductive base (15-49 years) cannot sustain that growth for long. As the process unfolds, migration will increasingly maintain, rather than increase, population size (United Nations 2000; Poot 2010: 32; Davoudi, Wishardt and Strange 2010).

Understanding the role of each of these four distinctions is critically important. Numerical and structural ageing not only have different causes and are disconnected in time (ie they occur independently of each other), but they have different implications. It is numerical ageing which drives up demand for pensions and health care, along with all elder-oriented goods and services, while it is structural ageing that is the constraining factor in terms of delivering those facilities, both fiscally in terms of the tax-take (as the proportion at working age reduces) and/or local government rates (with increased proportions seeking discounts), and physically in terms of local labour supply.

The two dimensions will of course come together as the baby boomers enter the 65+ population, beginning this year, but the 'problem' is not the increased numbers of elderly - which is actually a wonderful problem to have. Rather it is the relatively diminished proportions of young. Indeed as the *structural* crossovers emerge we will come to realise that the term population *ageing* has deflected our attention away from what may be its most profound element: the *relative* lack of young. Had the fertility rates of the baby boomers' children, for example, remained as high as those of their parents, the increased *numbers* of elderly would have been easily supported.

The shift from natural increase to natural decline, and in many regions, absolute decline, may come as a surprise to many. This is again because the term population ageing misdirects our thinking to its numerical aspects: increased longevity and the image of increasing numbers of older people. Yes life expectancy is still increasing, and greater numbers of older people are living for longer. Moreover as will be outlined below, New Zealand will have the most profound numerical ageing of any OECD country, because it had the highest and longest baby boom of the OECD countries (Teitelbaum and Winter 1985). But people cannot live forever, and as the wave that was *born* the baby boom passes into old age, it too will surely die – in ever-greater numbers, until well past mid century. Unless birth rates increase dramatically in the interim – and this is highly unlikely – neither the boomer generation nor that of its children will be 'replaced' as they pass into history.

It is also worth noting here that the children of the baby boomers are now largely in their thirties and forties, and it is their peak childbearing years - and catch-up on delayed births - that is delivering the current baby blip. That is, the current baby blip is partly a third 'echo' of the baby boom and reflects the size of the reproductive age cohort as much as the small increase occurring in birth rates per woman (Jackson 2006). Little growth is anticipated at these ages as smaller cohorts replace their larger predecessors. For these reasons the current baby blip is unlikely to be sustained.

I conclude this introductory section with a brief word on migration, since many believe that because most migrants are young, migration can resolve – or at least partially offset – population ageing. It is true that migrants are disproportionately young, a factor which does not always work positively, because it may equally convert to a net loss at those ages. That aside, the argument that migrants keep a population young has now been convincingly disproven. Kippen and McDonald (2000) showed for Australia that it is only the first few waves of young migrants which can have that impact. Thereafter, migrants also grow older and eventually add to numerical ageing. Just on 40 per cent of Australia's population aged 65+ years were born overseas, as were over one quarter of New Zealand's current older population. As regards fertility levels, today those of migrants tend to be the same as, or even lower than, those of the host population, migrants not replacing themselves and

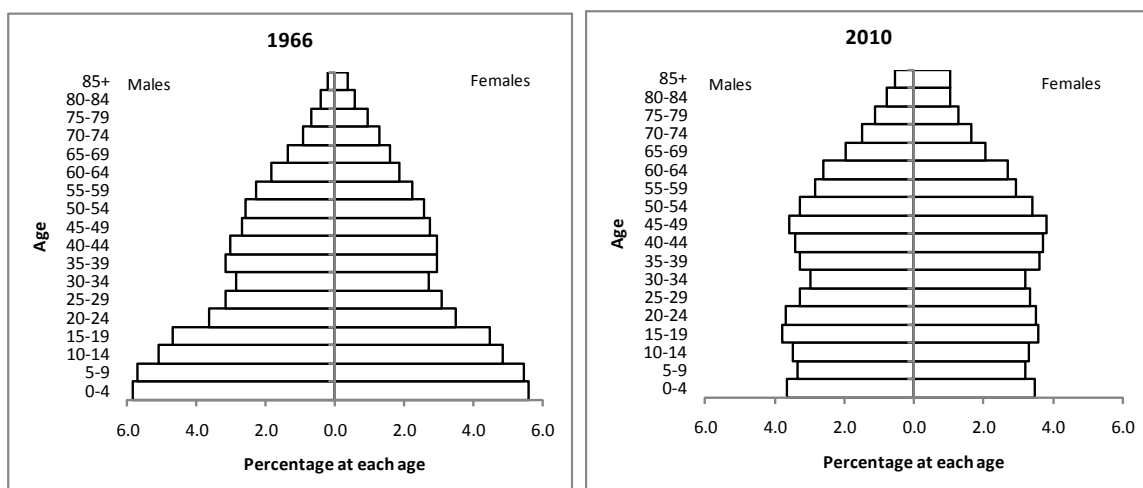
thereby adding to structural ageing (see also McDonald and Moyle 2011). Kippen and McDonald showed that after 50 years the age structure is almost identical, with or without migration. In the longer term it is primarily the size of the population that migration alters. For example, an annual net gain of 80,000 migrants to Australia reduces the proportion aged 65+ years over a 100 year period by only four percentage points, for a net gain of 10.8 million people (Kippen 1999: 19-22).

With these dynamics in mind, we can now turn to New Zealand’s unique experience of population ageing, and its implications.

## An ageing New Zealand

Changes in New Zealand’s age structure across the past half century clearly show what is meant by structural ageing (Figure 1). In 1966 the age structure was very youthful, the baby boom having just ended. The median age (above and below which half the population falls) was 27 years. Today the youthful bulge has disappeared, and the median age has risen to 37 years – albeit as noted above, not only because of increasing longevity and declining fertility but also prematurely, because of the migration-driven ‘bite’ at 25-39 years. Some of these emigrants will have returned, of course, and some will have been replaced by immigrants, but many are not returning, having partnered, formed families, and settled. I discuss the labour market implications of this hour-glass age structure in the following section. First I outline projected demographic change over the next few decades.

Figure 1: Age-Sex Structure, New Zealand 1966 and 2010

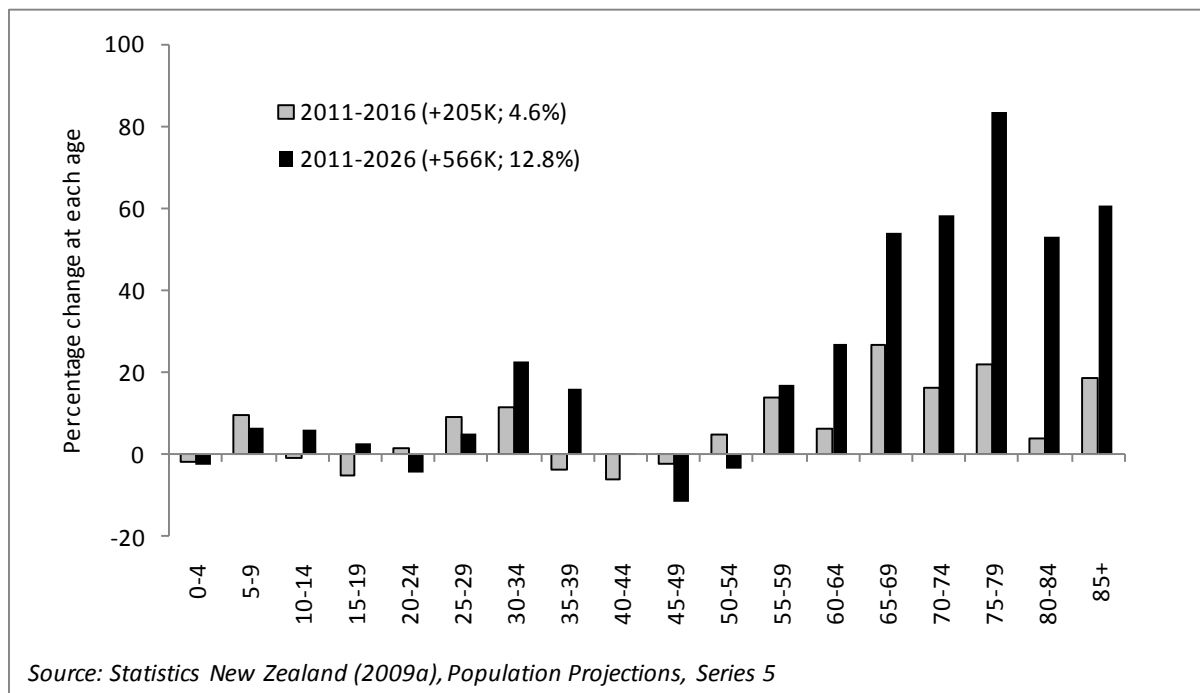


Source: Statistics New Zealand (various years), National Population Estimates

Looking ahead 5 years, the medium case projections indicate overall growth for New Zealand of 4.6 per cent (205,000 people), but with most of that growth occurring at the older ages (Figure 2). Small

declines in some younger age groups also appear – a picture which becomes more pronounced when we look out 15 years. Between now and 2026, overall growth of 12.8 per cent (566,000 people) is overwhelmingly at the older ages.

Figure 2: Projected change by age group, 2011-2016 and 2011-2026 (Medium Series).



Putting numbers to broad age groups shows the changes in stark reality. During the next five years the total NZ population will indeed grow overall by around 4.6%, but that will be 19% at 65+ years, while all other age groups combined will grow by only 2.4% (Table 1). If we look across the next 15 years (2011 to 2026), the projected growth of almost 13% conceals a 61% increase in the 65+ year population while all other age groups combined will grow by only 5.4%.

Using the high projection series doesn't greatly alter the overall scenario (Table 1). For example under the highest 'high' series assumptions (Series 9), the proportion aged 65+ years increases by 20.1 per cent between 2011 and 2016 (instead of 19 per cent), and all others combined by 3.6 per cent (compared with 2.5 per cent). Between 2011 and 2026 those percentages would be 65.2 and 9.8 per cent respectively. Achievement of these proportions would require fertility to remain at 2.1, annual net migration to average 15,000, and life expectancy at birth to be heading for 91.2 years for females and 88.6 years for males (the assumption for 2061).

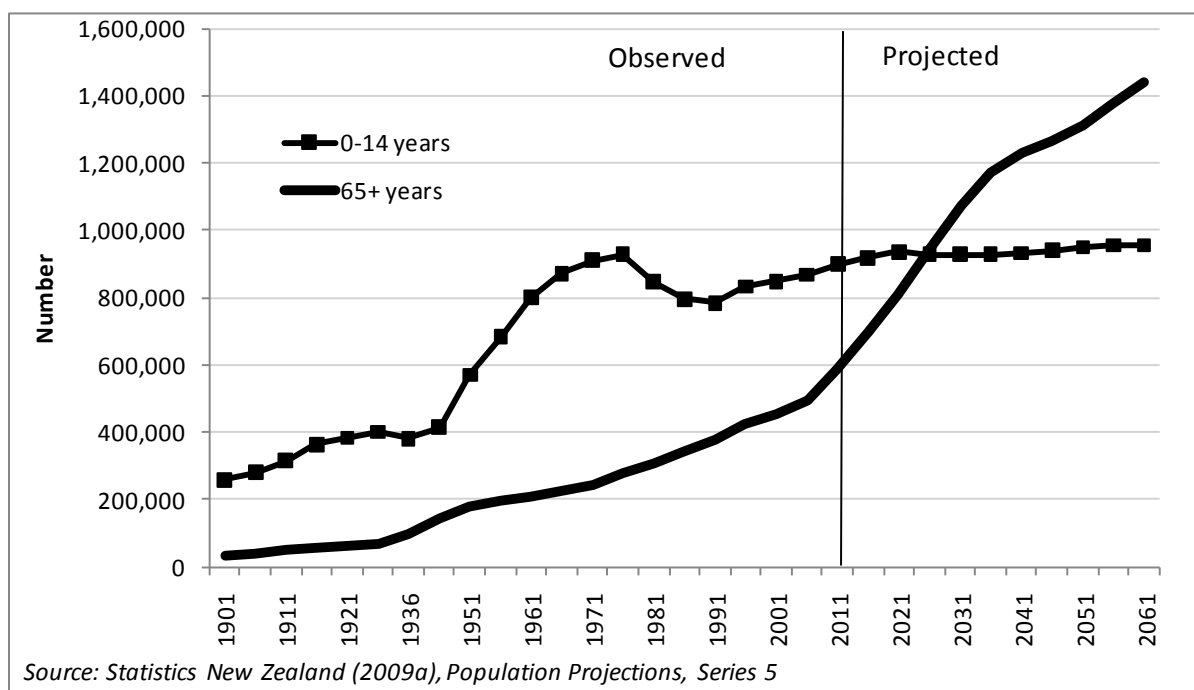


Table 1: Projected change by broad age group and projection series, 2011-2016 and 2011-2026.

|  | <b>65+ Years</b> | <b>0-64 Years</b> |
|--|------------------|-------------------|
| <b>Medium Series (5)</b>   |                  |                   |
| 2011-2016 (4.6%)   | 19.1 %           | 2.4 %             |
| 2011-2026 (12.8%)  | 61.0 %           | 5.4 %             |
|  |                  |                   |
| <b>High Series (9)</b>   |                  |                   |
| 2011-2016 (5.8%)   | 20.1 %           | 3.6 %             |
| 2011-2026 (17.2%)  | 65.2 %           | 9.8 %             |
| <i>Source: Statistics New Zealand (2009a) Population Projections, Series 5 and 9</i> |                  |                   |

These trends mean that the numbers of elderly New Zealanders to children (0-14 / 65+ years) will cross over in approximately 12 year's time (Figure 3). While this first 'structural crossover' may occur a year or two earlier or later, depending primarily on birth rates over the next five years, this future is not optional. Even under the high assumptions, the crossover occurs just five years later, in 2029. It is not optional because the forthcoming increase in the number of elderly was set in motion many decades ago, first when the boomers were born and secondly when they experienced improving health and greater longevity as they aged. It was set in motion thirdly when the boomers began to have fewer children than their own parents, and reinforced when the boomers children began to have their own children at lower rates again. The first two years worth of the children who will be in the 0-14 year age group in 12 years time have already been born, and, as will be argued below, their numbers are unlikely to increase by any great margin. With New Zealand's current birth rate being the highest in the developed world, it is unlikely that future rates will greatly (if at all) exceed current levels. Moreover, as noted above, future birth numbers depend not only on birth rates per woman, but also on the size of the reproductive age cohort. Across the next 12 years (and beyond), much will depend on the extent to which the current 15-24 year old cohort is retained, or travels and returns to, New Zealand. Finally it is clear that the crossover does not come about because of *declining* numbers of young, but rather, the guaranteed increase in the numbers of elderly associated with numerical ageing.

Figure 3: Numbers 0-14 and 65+ years, Observed and Projected, New Zealand 1901-2061

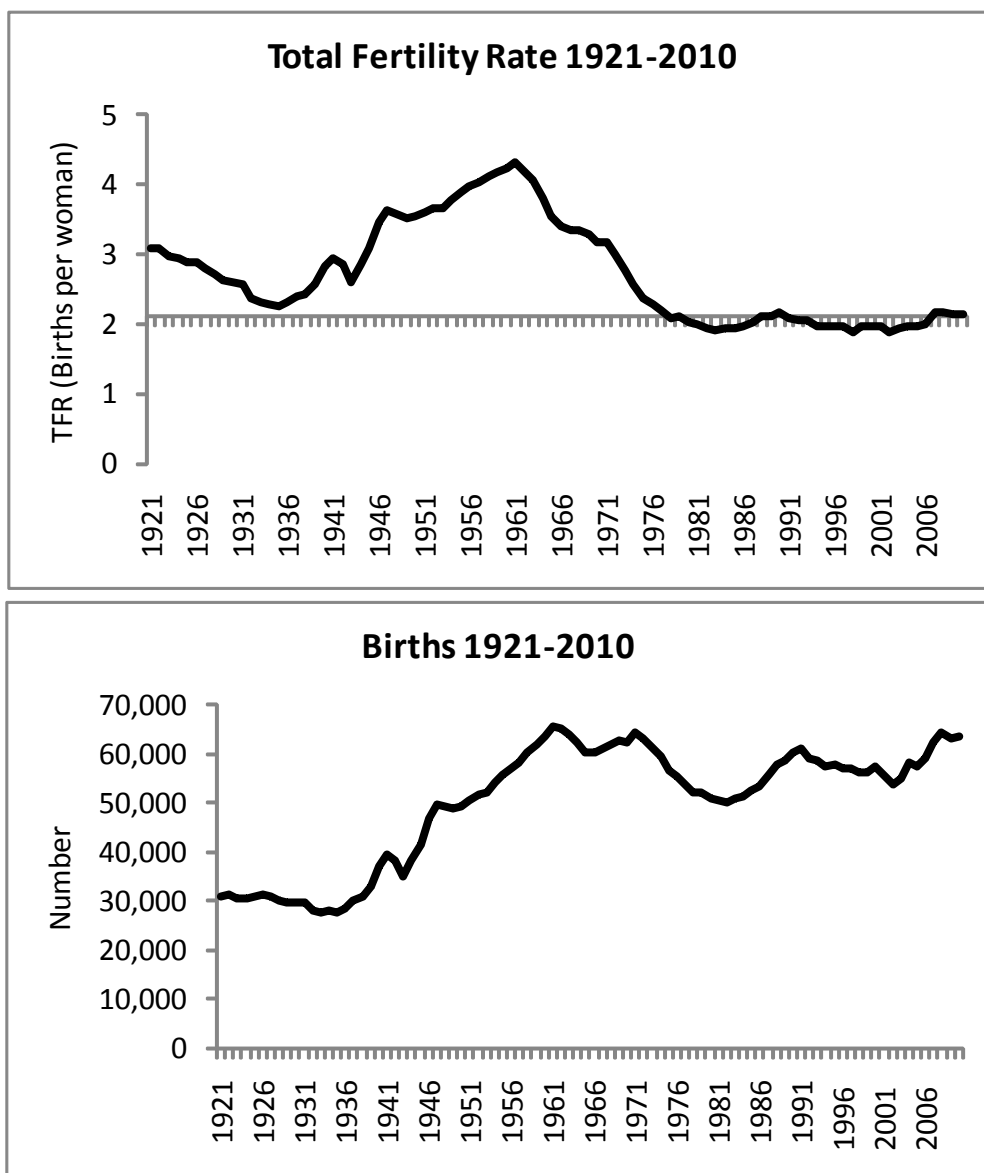


Before turning to the labour market implications of these trends, we might pause to ask to what extent the medium case projections might be ‘wrong’? As noted there is currently a baby *blip* - not a ‘boom’- occurring and media commentary at least implies that it will ‘save the day’. Figure 4 shows that the birth rate has indeed recently gone up, and with it birth numbers, but by only a small margin – it is definitely only a baby ‘blip’ if we compare it with the fertility rates of the 1960s and ‘70’s, the true baby boom. It is also a little smaller than the baby blip born around 1990.

Nevertheless when looked at in terms of birth numbers, the recent increase (2002-2010) converts to about 52,000 additional births over that 8 year period and has generated a wave of children who will become teenagers and eventually young labour market entrants over the next two decades. Their arrival at labour market entry age around 2022 will be very welcome, as it will occur just as the largest baby boom cohorts (those born 1955-60) begin to retire. For this reason we might call them Gen TGYH (‘Thank God You’re Here’ – Churchill and Jackson forthcoming). However they will be far too late to offset the swell in numbers of baby boomers leaving the labour force from *this* year – even if the latter extend their working lives for a few years. In the interim it must be understood that, while they will add to New Zealand’s ‘dependency burden’ in the short term (those notionally dependent at 0-14 years plus 65+ years to those aged 15-64 years), investment in these children is critical for New Zealand’s future. Indeed it has been argued that the best way of ensuring New

Zealand's ability to pay for its broadly cherished universal superannuation scheme is to invest more deeply in the children it has. The 'dividend' would be paid twice: first as better educated and employed young people generate greater increases in productivity and taxation to pay for the boomers retirement, second as the same people save for their own retirement (Pool 2007).

Figure 4: Birth Rates 1921-2010 and Birth Numbers 1994-2010, New Zealand



Statistics New Zealand (various years) Births, Demographic Trends

We might also ask whether the projected numbers of those aged 65+ years is likely to be accurate. The data in Figure 3 above are based on the medium case projections, which assume an increase in life expectancy at birth by 2061 of 7.6 years for males and 6.5 years for females. Several sets of

projections in fact exist, three based on higher life expectancy assumptions (Series 7, 8, and 9). However it would appear that all might be a little conservative. Table 2 shows the extent to which life expectancy at birth has increased over the past decade, converted to months of life expectancy gained each year, and compares it with the three mortality assumptions. Between 1995-97 and 2000-02, life expectancy for New Zealand males increased by 4.6 months per year, and for females, by 3.4 months per year. Between 2000-02 and 2005-07, the increase was 4.1 months per year for males and 2.6 months per year for females. Yet the highest assumption for the most recent set of population projections is an average 2.4 months per year for males and 2.1 months per year for females. Arguably the projections are to 2061, when the assumed levels of life expectancy are reached, so we might simply anticipate that the gains will be greater in the early part of the period and lower towards the end. Either way it might be sensible to think in terms of the highest assumption when considering future numbers of elderly, rather than the medium assumptions used above.

Table 2: Life Expectancy Assumptions, New Zealand, 2005-07 - 2061

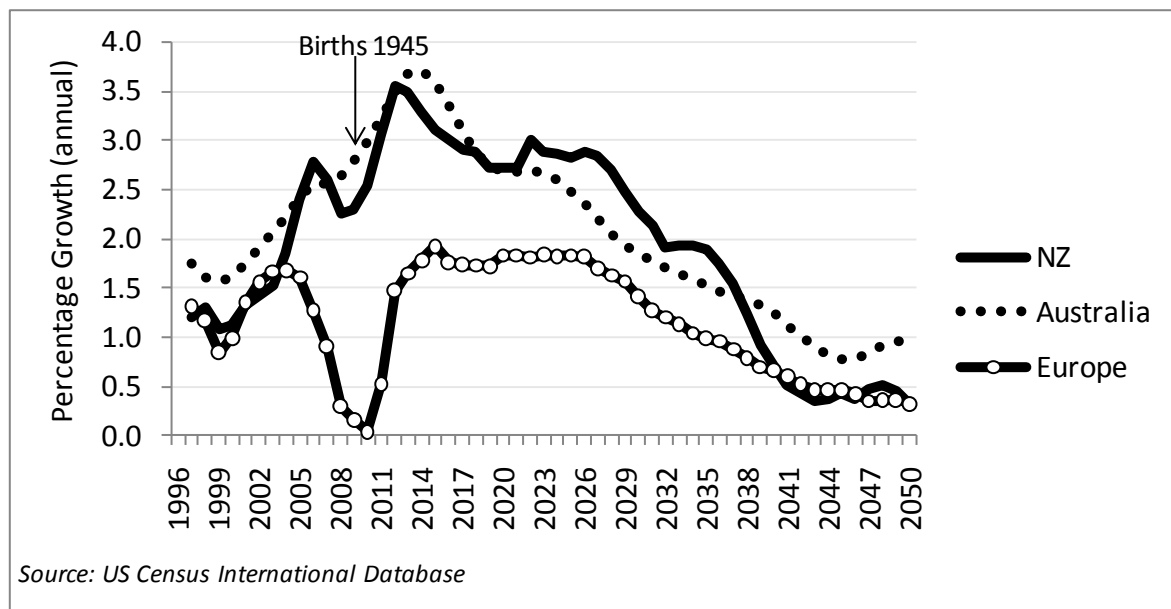
|  | Average months life expectancy gained each year |         |
|--|---|---------|
|  | Males   | Females |
| <b>Actual Gains</b>  |   |         |
| 1995-97 – 2000-02  | 4.6   | 3.4     |
| 2000-02 - 2005-07  | 4.1   | 2.6     |
| <b>High</b>  |   |         |
| Males: 88.6 years, Females: 91.2 years   | 2.4   | 2.1     |
| <b>Medium</b>  |   |         |
| Males: 85.6 years, Females: 88.7 years   | 1.8   | 1.5     |
| <b>Low</b>   |   |         |
| Males: 82.6 years, Females: 86.2 years   | 1.1   | 0.9     |
| <i>Actual: Calculated from Statistics New Zealand (various years) Abridged Life Tables<br/>Projection Assumptions: NZ Demographic Trends 2009 Table 4.15</i> |   |         |

One other point about New Zealand's forthcoming numerical ageing is that New Zealand (closely tracked by Australia) will face the most profound annual increment in numbers aged 65+ years of the OECD countries. At its peak in 1961, New Zealand's total fertility rate of 4.2 births per woman was higher than anywhere else. Canada came second at 3.9, the United States third at 3.8, and

Australia fourth at 3.6. The booms in each of these countries lasted 19-20 years. By comparison, most European countries saw birth rates rise to little more than 3.0, and ‘boomlets’ which comprised 3-4 year ‘spikes’ followed by two decades of relatively unchanging fertility levels (Teitelbaum and Winter 1985: 68). This is the main reason that those countries are today so much structurally older than the four ‘true boom’ countries. In these, the original birth numbers have also since been disproportionately augmented by migration, somewhat altering the above line-up.

Figure 5 provides a comparison of the projected annual percentage growth in numbers aged 65+ years for New Zealand, Australia and Europe. The data show the annual increment peaking for New Zealand in 2012 at 3.6 per cent, for Australia in 2014 at 3.7 per cent, and for Europe in 2015 at 1.9 per cent. Rates of growth then drop away, but the decline for New Zealand halts in 2020 and returns to just above 3 per cent in 2022, by which time the annual increment for Australia will have dropped to 2.7 per cent and for Europe to 1.8 per cent. Rates for New Zealand then exceed those for Australia through to 2038. Also of particular – and sobering - note from Figure 5 is the almost zero increase in numbers aged 65+ years that was recently experienced by Europe, in 2008, a powerful reminder of the fertility-depressing events of 1939-45.

Figure 5: Projected annual increment in 65+ year old population, New Zealand, Australia and Europe



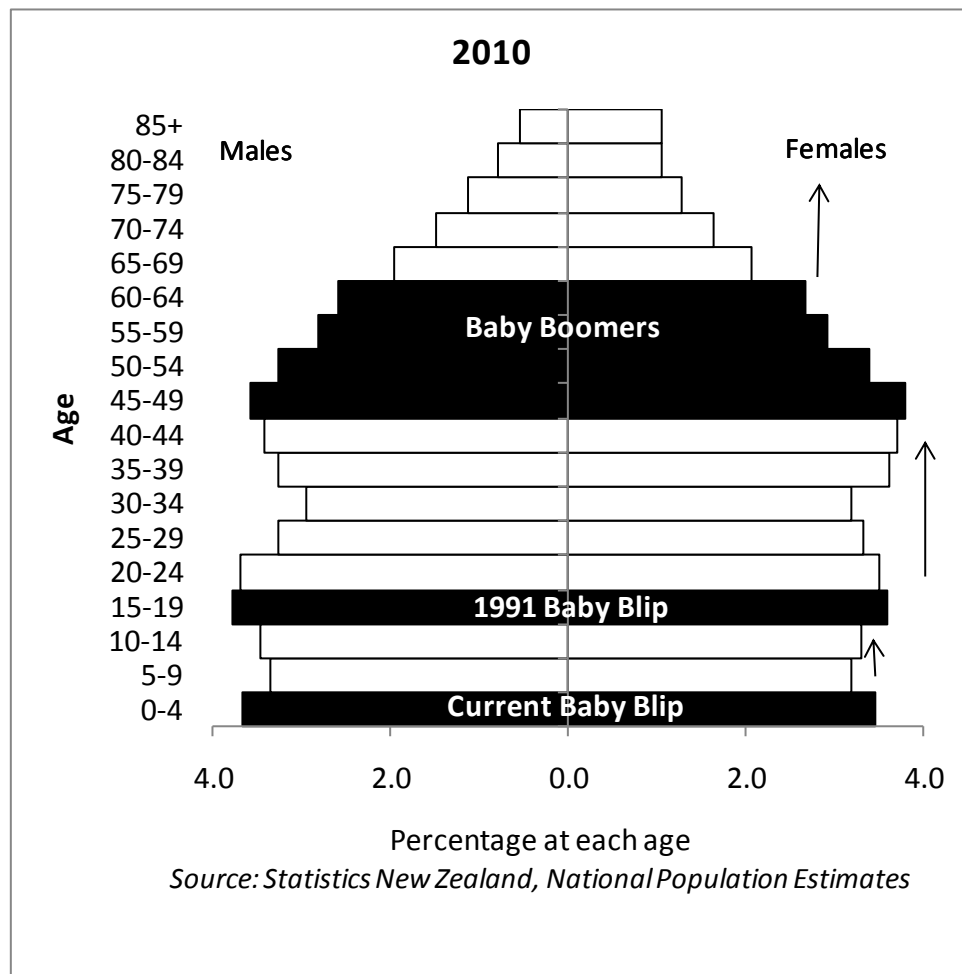
## A prematurely ageing New Zealand and its labour market implications

Alongside these dynamics I have been arguing that New Zealand's structural ageing is not [only] of the conventional kind. Rather, it is being accelerated through a bite in the age structure at young adult ages which is causing the median age to increase at a faster rate than would be expected given New Zealand's relatively high birth rate. This bite in the age structure – which in many sub-national areas is taking on a pronounced hour-glass shape - ushers in a very profound problem. The baby boomers start entering the retirement zone *en masse* this year. While this does not mean immediate retirement for all or even most, there is good reason to believe that few will work on past age 70 (eg a national survey of Australia's baby boomers found that about half plan to work beyond age 65, but relatively few will go much beyond age 67 – Jackson and Walter 2010). Thus the story is not one of 'if the boomers retire, but rather that even if some substantially delay that retirement, it will happen.

Figure 6 illustrates the scenario that is unfolding. As the first large baby boom cohort retires it will be more than replaced by the cohorts currently aged 20-29 years and the even larger 15-19 year old 'blip' that was born around 1991. However the deep bite *above* those cohorts will also move north in the age structure, in all likelihood creating a vacuum that will reinforce an already demographically tight labour market. Thereafter, as each successively larger wave of boomers retires, it will be 'replaced' by a successively smaller cohort. There will be little excess labour supply. If realised, the assumption of a net international migration gain of 10,000 per year in Statistics New Zealand's medium case projections will to some extent offset these dynamics at the national level, the numbers of 'entrants' to 'exits' not expected to reach one for one until the mid 2020s. But it may scarcely be noticed in the non-urban areas, where – as will be outlined below - 42 per cent of New Zealand's Territorial Authorities (TA's) already have fewer labour market entrants than exits.

In the interim, the forthcoming youth deficit - as smaller cohorts replace the currently larger 15-19 year old cohort - needs to be paid much more attention. If just a small proportion of the current 15-19 year cohort leaves New Zealand and doesn't return, New Zealand employers will be faced with a labour shortage of crisis proportions. We are not talking about 20 years hence when new technology may require fewer workers (a scenario often proposed when this story is outlined), but rather, a situation that has already begun, is significant outside of the main centres, and will become painfully evident within the next five years. The smaller cohorts following the 1991 Baby Blip – the labour market entrants of 2016-2026 - can only be enlarged by strong positive family-stream migration. It is 15 years before the next large cohort – currently being born - arrives at labour market entry age.

Figure 6: Age-Sex Structure, New Zealand, 2010



Accompanying – or in essence driving these changes – is that the young will be in ever shorter supply and ever-greater demand. Their relative deficit will increase competition for them – between industries (including between the labour market and the educational institutions), and between regions and countries – most obviously across the Tasman where more than half of Australia’s local government areas (LGA’s) have similar hour glass age structures and already have fewer labour market entrants than exits (Jackson 2009). As competition increases it is not difficult to imagine that labour costs will go up, and if labour costs go up, so too will services and consumption items. Moreover, as competition increases, we might imagine a return to a labour market similar to that of the 1960’s and ‘70s, where unemployment will fall to very low levels.

It should also be remembered that on a daily basis, labour supply is needed locally, not nationally. The following section illustrates that population ageing is unfolding most unevenly across the country, and that current arguments such as the importing of health care workers from the

Philippines is less likely to be a reflection of 'jobs that New Zealanders don't want' (TV 3, *The Nation*, May 2011), as much as it is a lack of New Zealanders where many such jobs are.

## **A prematurely ageing non-urban New Zealand and its labour market implications**

First, an indication of the marked differences in age structure across New Zealand can be seen in Figure 7, which represent nine of the country's 67 Territorial Authorities (TA's)<sup>2</sup>. Reading from left to right across the two top rows compares a selection of relatively 'young' to relatively 'old' age structures (Matamata-Piako being around the middle, and Thames Coromandel being one of the oldest). Across the bottom row are the considerably younger populations of the new Auckland Super City, Wellington, and Christchurch.

In each case the data are compared with that for total New Zealand (shown by unshaded bars). Most non-urban populations have taken on the same hour-glass shaped age structure depicted above, but as the top two rows of Figure 7 show, in these the bite is significantly deeper due to internal migration loss (young people moving to the cities and/or overseas). In some cases – e.g., Thames-Coromandel – the situation is further exacerbated by the immigration of older retirees, who are adding to both the increased numbers and proportions at older ages. There, one finds less than six people at labour market entry age (15-24 years) for every ten in the retirement zone (55-64 years), compared with 13.2 for every ten at national level.

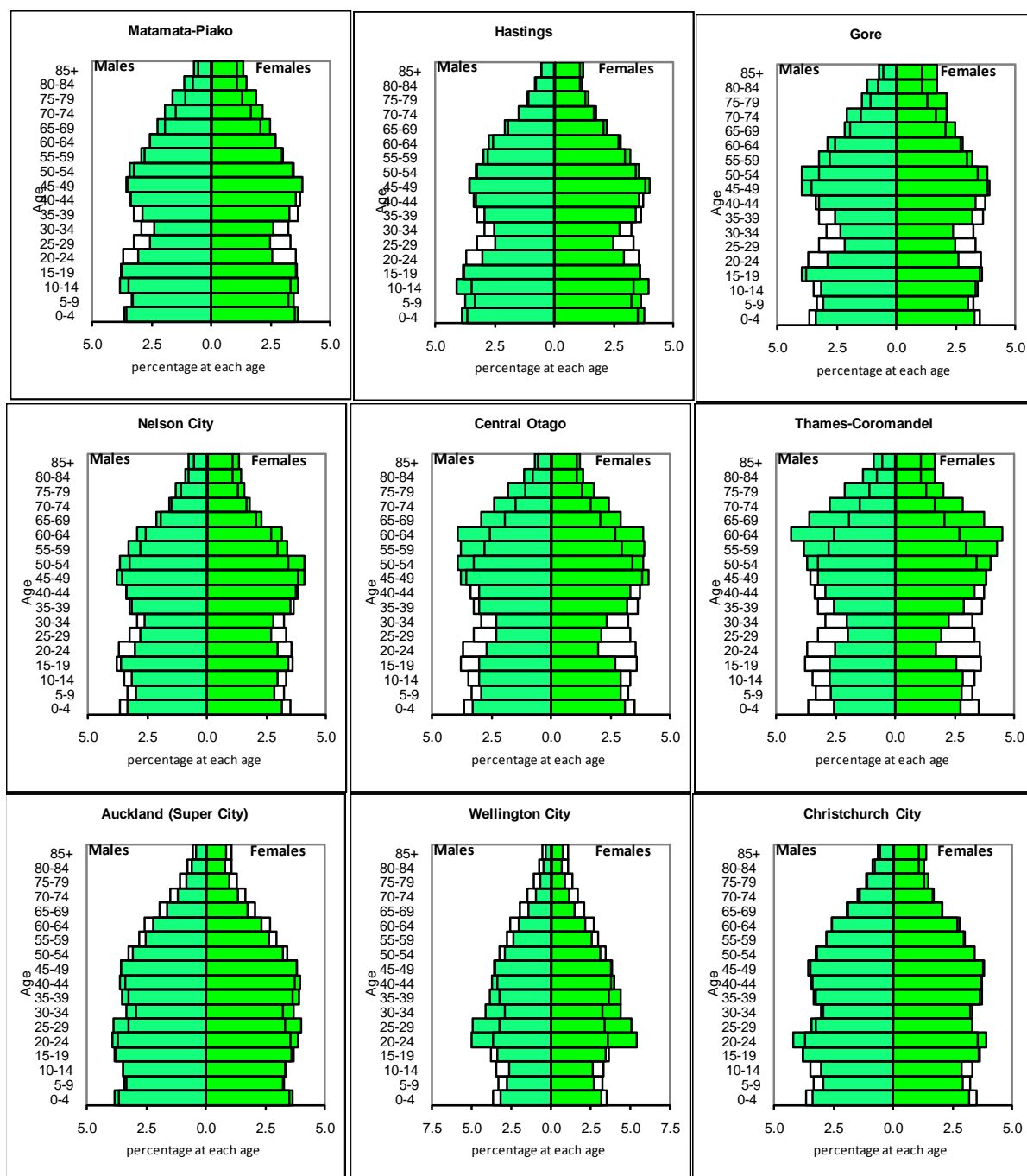
By contrast, as the bottom row of Figure 7 indicates, the major cities and urban areas are the recipients of most young immigrants, whether internal or international (see also Newell 2002; Zodgekar and Khawaja 2002; Pool, Baxendine and Cochrane 2004; Pool, Baxendine, Cochrane and Lindop 2005a, 2005b, 2005c, 2005d; 2006a; Poot 2005).

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<sup>2</sup> Until 2010 there were 73 Territorial Authorities – the number being reduced with the recent amalgamation of Auckland and six TA's surrounding the city into one.



Figure 7: Age-Sex Structure, Selected Territorial Authorities compared with Total New Zealand, 2010

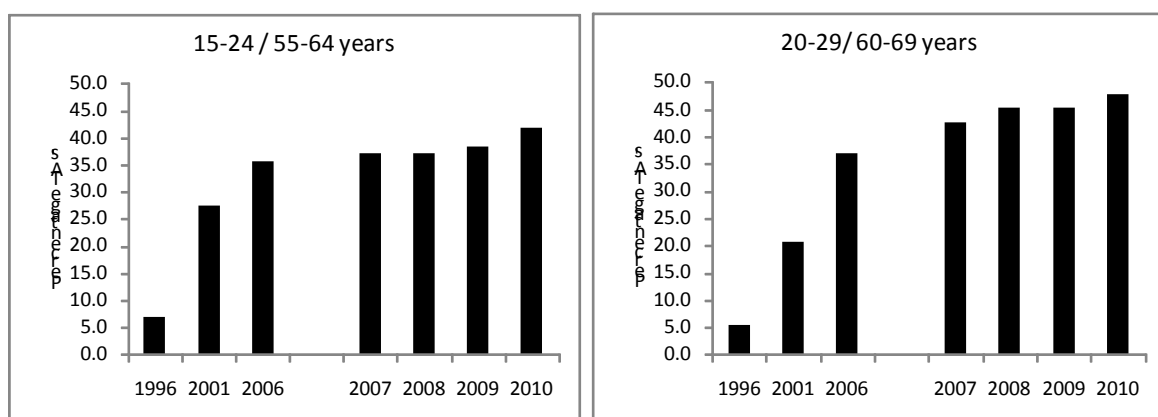


Source: Statistics New Zealand (2011), Subnational Population Estimates

The differences by region can be summarised through the use of various ‘ageing indices’. Figure 8 shows the proportion of New Zealand’s Territorial Authorities with fewer people at labour market entry age (again 15-24 years) to those in the retirement zone (55-64 years). In 1996, only five per cent of New Zealand’s TA’s had fewer people at labour market entry than exit age. By 2001 that had increased to 21 per cent and by 2006 to 25 per cent. By 2010, 42 per cent of TA’s had fewer entrants

than exits. If we shift attention to an older 'entry/exit' ratio, that between entrants aged 20-29 and exits aged 60-69 years and thereby capture the desired increase in labour market participation of older workers (which is definitely occurring), we find that the picture is the same but the proportions are greater: increasing from four per cent in 1996 to almost 50 per cent in 2010. In all cases the incremental or sequentially unfolding nature of the shift is observable. The end to excess labour supply in the non-urban regions is spreading inexorably and is unlikely to reverse.

Figure 8: Towards the end of excess labour supply: percentage of TA's with fewer people at labour market entry than exit age, by differing age bands, 1996-2010



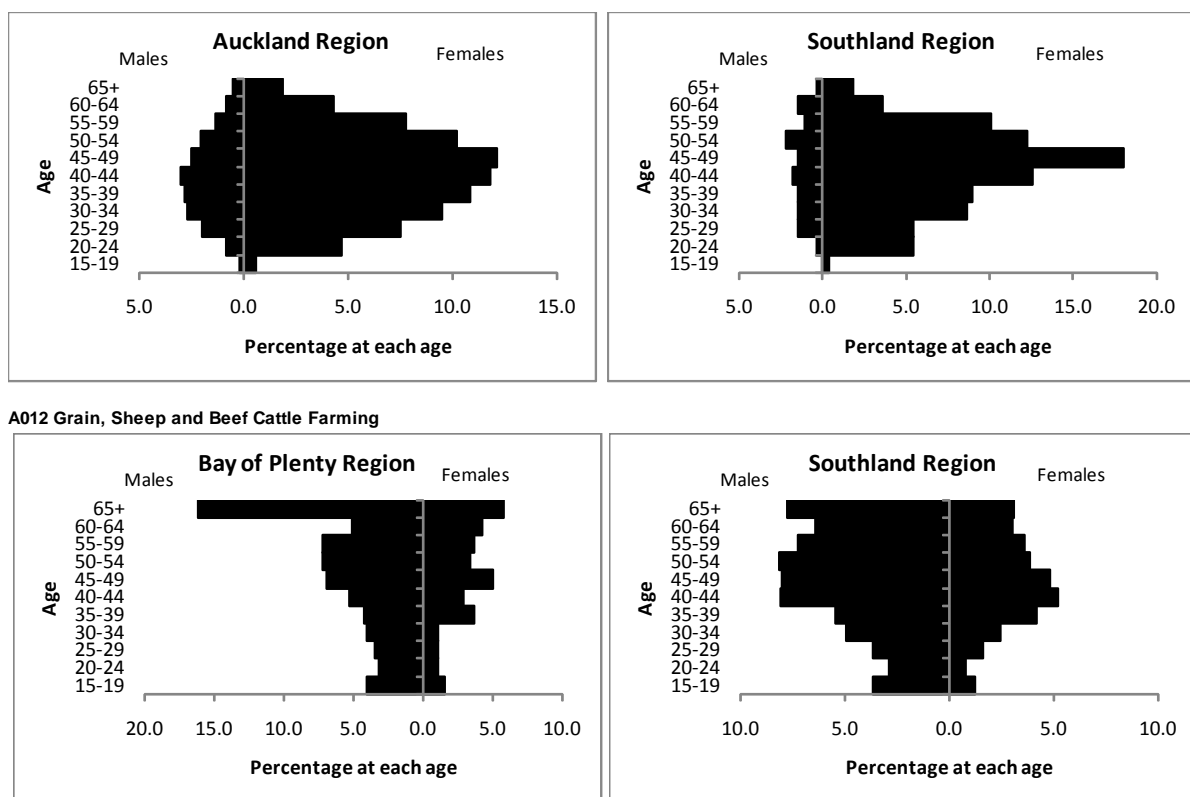
Source: Statistics New Zealand (various years), Sub-National Population Estimates

These trends have major implications for the different industries that comprise each region's economic base – and of course to some extent will also reflect past changes in those industries. It is impossible here to illustrate the argument for more than a few, but Figure 9 does this with 2006 Census data for Hospitals and Nursing Homes, and Grain, Sheep and Beef Cattle Farming. In the former case data are shown for the Auckland and Southland Regions, and in the latter, for the Bay of Plenty and Southland Regions. It should be noted that these data are now five years old and that all five year age bands will now have moved up one age group, making the following ratios conservative.

Figure 9 indicates that in the Auckland Region in 2006 there were 11.4 people aged 15-29 years employed in the Hospital and Nursing Home industry, for every ten employed at 55+ years, while in Southland there were only six for every ten. Not shown here, in the West Coast Region it is three for every ten. These data suggest that if there are indeed labour shortages occurring in the industry necessitating the importation of workers (TV3 *The Nation* 2011), it may not be because New Zealanders don't want the jobs, but rather, because there may be fewer New Zealanders available for such jobs in such areas.

Similarly if we look at the Grain, Sheep and Beef industry we find in the Bay of Plenty Region fewer than four employed people at 15-29 years for every ten at 55+ years, while in Southland the ratio is closer to five to ten. Not shown here, in Taranaki it is three for every ten. These ultra low ratios raise many questions, for example who will buy (or inherit) the farms as their older owners relinquish them? When disaggregated by employment status (self employed, employer, paid worker etc), not shown here, it is clear that a crisis of succession is facing New Zealand's farming industries.

Figure 9: Age-Sex Structures for Selected Industries and Regions, 2006 Census

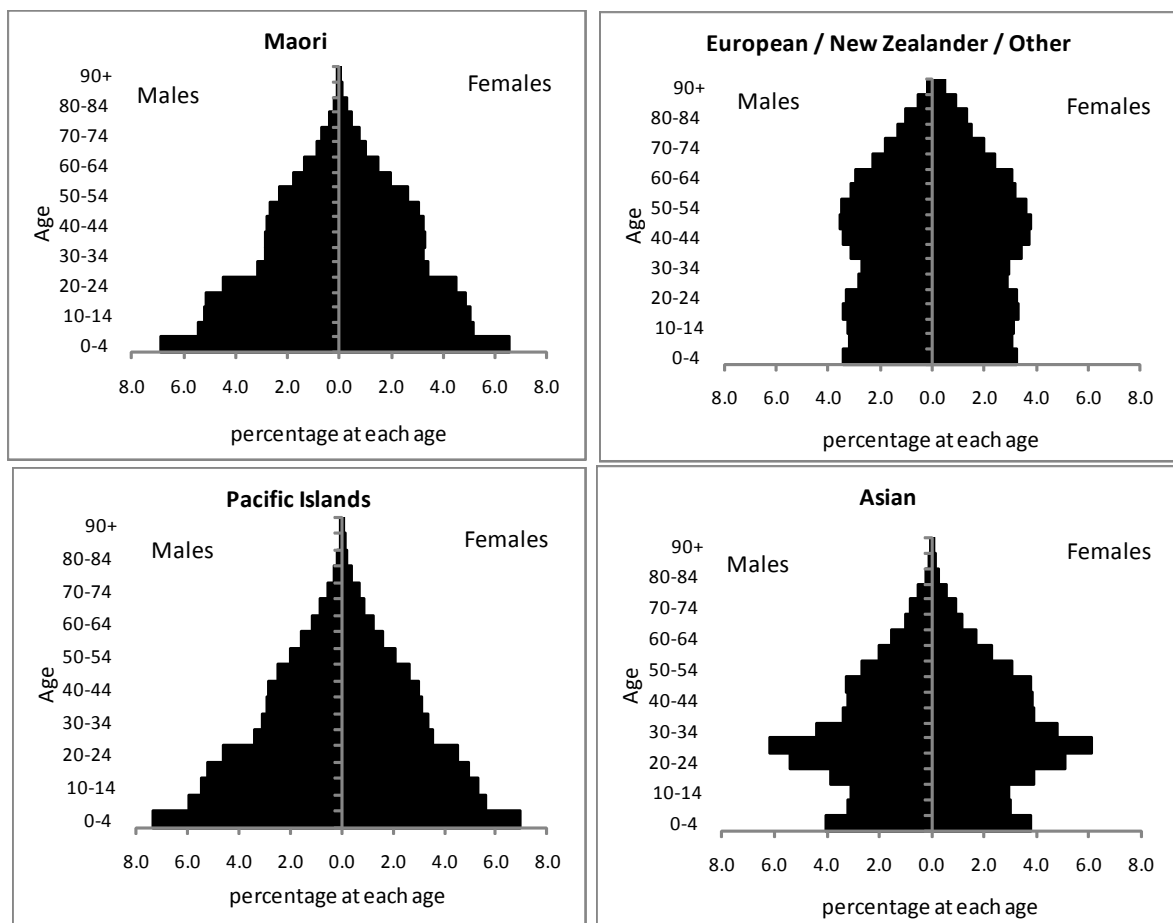


Source: Statistics NZ Customised Census Database, Industry (ANZSIC96 V4.1) and Status in Employment by Age Group and Sex  
 Note: Different scales on X-Axis

Finally while on the subject of future labour supply, a word is needed regarding the vast differences in age structure between Maori and European New Zealanders (Figure 10). In stark contrast to the ageing structure of the European-origin population, with its 2006 median age of 38 years, we observe an incredibly youthful Maori population, its median age just 23; that is, 50 per cent of the Maori population is aged less than 23 years. This disparity converts into significantly different proportions of the total population accounted for by Maori at different ages, compared with their 14 per cent national share. Maori at 0-14 years for example account for 21 per cent of all 0-14 year olds,

and at 15-24 years, for 18 per cent of all 15-24 year olds (Table 3). Clearly young Maori will play a significant role in New Zealand’s future labour force, and attention to their specific educational, training, and social needs must be a paramount consideration. It is more difficult from these data to make a call on the extent to which the youthful bulge at 20-29 years in the Asian-origin population will remain a disproportion, as it can be expected that many are students and may return home. More certain is that many of the 0-14 year old Pacific Island children, who today comprise approximately 11 per cent of all 0-14 year olds, will look to a future in the New Zealand workforce.

Figure 10: Age-sex structure by major ethnic group\* (2011 on 2006 Base)



Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update

\*Multiple count ethnicity

Table 3: Population Share (percentage) by Ethnic Group\* and Broad Age Group, Projected 2011

|                    | European/ New Zealander | Maori | Pacific Island | Asian | Total |
|--------------------|-------------------------|-------|----------------|-------|-------|
| <b>0-14 years</b>  | 58                      | 21    | 11             | 9     | 100   |
| <b>15-24 years</b> | 61                      | 18    | 9              | 13    | 100   |
| <b>25-54 years</b> | 68                      | 13    | 6              | 13    | 100   |
| <b>55-64 years</b> | 80                      | 9     | 4              | 7     | 100   |
| <b>65+ years</b>   | 87                      | 5     | 2              | 5     | 100   |
| <b>Total</b>       | 69                      | 14    | 7              | 10    | 100   |

*Source: Statistics New Zealand (2006) Projected Ethnic Population of New Zealand, by Age and Sex, 2006 base - 2026 Update (\*multiple count ethnicity)*

## A prematurely ageing non-urban New Zealand and its growth implications

As outlined above, the net migration loss of young people from many non-urban areas is resulting in an accelerated or 'premature' structural ageing. That loss is also strongly associated with a slowing and in some cases ending of growth in severely affected regions. Between 2006 and 2010, 15 of New Zealand's 67 Territorial Authorities (22 per cent) either stopped growing or declined in size (see also Poot 2005 for the period 1986-2001 which shows one-third of New Zealand's 15 Regional Councils had declined, and projections to 2026 which show 40 per cent declining). Table 4 shows that all had proportions aged 20-39 years lower than the national average, and thereby severe 'hour-glass' shaped age structures.

There is also a strong correlation in Table 4 between zero or negative growth and proportions aged 65+ years, all but four of these TA's having higher proportions at 65+ years than the national average. While only one (Waitaki District) yet has more elderly than children in absolute terms, five have higher than the national proportion. Waitaki is also experiencing natural decline.

Table 4: Sub-national areas that stopped growing or declined, 2006-2010

|                           | Size in 2010 | Change<br>2006-<br>2010 (%) | % 20-39<br>years<br>(2010) | % 65+<br>years<br>(2010) | Elderly /<br>Children<br>(2010) | Natural Increase<br>(2010) |
|---------------------------|--------------|-----------------------------|----------------------------|--------------------------|---------------------------------|----------------------------|
| Chatham Islands territory | 640          | -1.5                        | <b>26.6</b>                | 12.1                     | 0.55                            | 0.15                       |
| Gore district             | 12,300       | -0.8                        | <b>20.7</b>                | <b>17.9</b>              | <b>0.92</b>                     | 0.17                       |
| Kawerau district          | 7,000        | -2.2                        | <b>22.0</b>                | <b>15.0</b>              | 0.60                            | 1.07                       |
| Opotiki district          | 8,990        | -2.2                        | <b>18.7</b>                | <b>15.4</b>              | 0.63                            | 0.40                       |
| Otorohanga district       | 9,290        | -0.2                        | <b>25.1</b>                | 11.5                     | 0.50                            | 0.89                       |
| Rangitikei district       | 14,850       | -2.0                        | <b>21.7</b>                | <b>16.2</b>              | <b>0.76</b>                     | 0.68                       |
| Ruapehu district          | 13,500       | -3.6                        | <b>24.1</b>                | 11.8                     | 0.50                            | 0.90                       |
| South Taranaki district   | 26,800       | -1.1                        | <b>24.0</b>                | <b>14.3</b>              | 0.63                            | 0.84                       |
| South Waikato district    | 22,800       | -1.3                        | <b>22.2</b>                | <b>14.3</b>              | 0.58                            | 0.90                       |
| Taranua district          | 17,700       | -1.7                        | <b>21.0</b>                | <b>15.2</b>              | <b>0.67</b>                     | 0.69                       |
| Wairoa district           | 8,430        | -3.2                        | <b>20.8</b>                | <b>13.9</b>              | 0.55                            | 0.90                       |
| Waitaki district          | 20,700       | 0.0                         | <b>17.4</b>                | <b>21.9</b>              | <b>1.23</b>                     | <b>-0.04</b>               |
| Waitomo district          | 9,640        | -0.4                        | <b>23.4</b>                | 12.5                     | 0.50                            | 1.00                       |
| Wanganui district         | 43,500       | -0.7                        | <b>21.3</b>                | <b>18.0</b>              | <b>0.89</b>                     | 0.37                       |
| Whakatane district        | 34,500       | -0.3                        | <b>22.0</b>                | <b>13.8</b>              | 0.60                            | 0.57                       |
| Total (these areas)       | 250,640      | -1.2                        | ...                        | ...                      | ...                             | ...                        |
| As % of Total New Zealand | 5.3          |                             |                            |                          |                                 |                            |
| New Zealand               |              |                             | 26.9                       | 13.0                     | 0.64                            | 0.80                       |

Source: Statistics New Zealand, *Estimated Resident Population for TA's at 30 June (1996+)*, Table DPE052AA

Notes: Totals revised to reflect 2011 boundaries

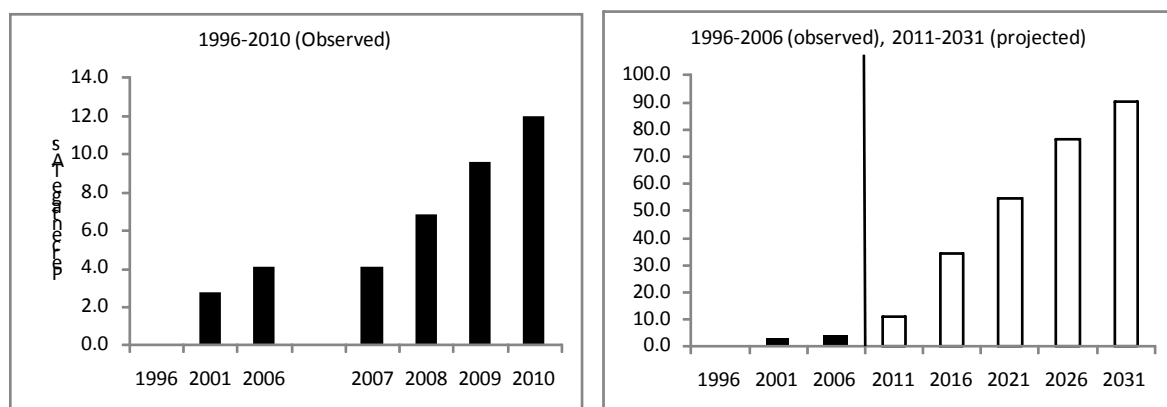
These various permutations to the ending of growth are very important because they remind us that population ageing is not the only pre-requisite for population decline. Indeed in the past, population declines were regularly experienced through emigration, wars and epidemics. What differs is that the migration losses are now accompanied by population ageing, making the modern form of decline 'novel' (Reher 2007; van Nimwegan and Heering 2009: 15).

Notably *not* among these TA's are many like the structurally very old Thames-Coromandel, mentioned earlier. In these, growth is still occurring, mainly due to the in-migration of large numbers of older people, but the proportions at the youthful working ages and key reproductive age are very low, as is natural increase. Natural increase in Thames-Coromandel, for example, has been negative since 2001, the region's growth occurring from its disproportionate influx of retirees.

This situation means that many more regions than are shown in Table 4 contain within them an 'internal momentum of decline'. That is, hour-glass shaped age structures not only lack excess labour supply and reproductive potential, but they are no longer conducive to long-term growth because the more elderly there are, the more deaths there are, while older people do not have children and so natural increase comes to an end faster than it otherwise would.

Moreover various 'ageing indices' provide evidence that the ending of growth is a *sequentially* unfolding process. Figure 11 (left hand panel) shows that as recently as 1996 no TA's had more elderly than children. By 2001 this situation was evident in three per cent of TAs; by 2006 and 2007, in four per cent, and by 2010, in 12 per cent. Now these are not high proportions, so it is understandable that little attention has thus far been paid to them. However, as each successively larger cohort of baby boomers passes into the older age group across the regions, and age structures continue to hollow out from the loss of young adults, the projected proportions with more elderly than children take a massive jump. As the right hand panel shows, in just five years time, more than 30 per cent of TA's are anticipated to have more elderly than children, by 2021, above 50 per cent, and by 2031, fully 90 per cent. Placing the observed data from the left hand panel in the context of the projections in the right hand panel clearly indicates the nature of the course that is unfolding.

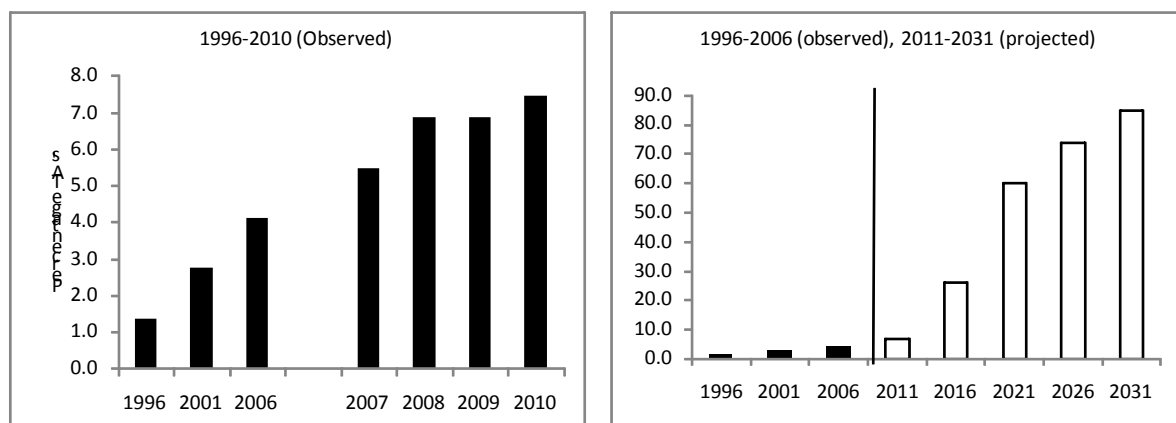
Figure 11: Percentage of TA's with more elderly than children, observed 1996-2010 and projected 2011-2031



Source: Statistics New Zealand (various years), Subnational Population Estimates, and (2009b) Projected Sub-National Population  
 Note: Different Scales on Y-axis

If we shift attention to a different index, 'greater than 20 per cent over the age of 65 years', we observe a similarly inexorable increase from one to seven per cent over the period 1996-2010 (Figure 12, left hand panel). The medium case projections presented in Figure 12 (right hand panel) indicate a trebling of that proportion by 2016, the proportion of TA's with greater than 20 per cent aged 65+ years reaching almost 60 per cent by 2021 and above 80 per cent by 2031. Again, the magnitude of the recent trends pales into insignificance when placed alongside the projections.

Figure 12: Percentage of TA's with greater than 20 per cent aged 65+ years, observed 1996-2010 and projected 2011-2031



Source: Statistics New Zealand (various years), Subnational Population Estimates, and (2009b) Projected Sub-National Population  
 Note: Different Scales on Y-axis

In stark contrast to these trends are those for just a few areas of New Zealand, led by Auckland (Super City) which accounted for 49 per cent of the nation's growth between 2006 and 2010.<sup>3</sup> A further seven TA's shared 29 per cent of the growth: Christchurch City (8.1 per cent), Wellington City (5.5 per cent), Hamilton City (4.9 per cent), Tauranga City (4.0 per cent), Selwyn District (2.5 per cent), Waikato District (2.1 per cent) and Queenstown-Lakes (2.0 per cent). The remaining 25 per cent of all growth was spread thinly across the remaining 44 TA's which grew across the period, but none of which received more than 2 per cent.

Of import is that these trends are not something that New Zealand is doing 'wrong'; quite the contrary. They are a little further advanced across the Tasman (Jackson 2002, 2004, 2009, 2010), and significantly more so across Europe, where the population ageing-driven end to regional population growth has for some time been asserted (Eding 1999; van der Gaag 1999; van Nimwegan and Heering 2009; Reher 2007; Davoudi 2010; Lee and Reher 2011). What is of concern is how little attention has yet been paid to the implications of these disparities at sub-national level, particularly the longer-term picture they foreshadow. Population ageing and the end of growth it foreshadows is not an optional future, but it is one about which we still have many options as to how to respond.

## Discussion

This paper has outlined the key demographic forces shaping New Zealand's future. It has ranged broadly across birth rates, life expectancy, and migration, arguing that future birth numbers are unlikely to rise appreciably, while future numbers of elderly may be under-estimated, at least in the near future. The paper shows how these dynamics are coming together to determine New Zealand's

<sup>3</sup> Revised to reflect July 2011 boundaries - Statistics New Zealand, Estimated Resident Population for TA's at 30 June (1996+), Table DPE052AA



future and argues that they will not only make responding to baby boomer retirement difficult, but that the future will be one of increasing regional disparity. With the exception of larger urban areas and some retirement zones, it has shown that sub-national growth in New Zealand has all but ended. This is despite a national growth rate which is currently near equal the annual global growth rate (1.2 per cent) and reflects the force of agglomeration in Auckland. The burning question we might ask ourselves then is 'when does population growth 'end''? Is it only when an entire population has stopped growing, or is it perhaps when growth in many sub-national regions has stopped? What are the implications of this situation?

The question is not merely academic. Two internationally renowned demographers have recently proposed that regional population decline does not present a problem (Coleman and Rowthorn 2011: 219). They argue that '[u]nless accompanied by concomitant decline at the national level, the internal shifting balance is devoid of strategic or major political consequences of adjustment to changed realities of comparative regional advantage'. They defend their position by arguing that, while important, 'regional and urban decline, relative or absolute, has always accompanied regional and urban growth in other parts of the same country; ... that 'it is not a novelty in the context of the last two centuries.' Yet in the same volume they reference the work of another distinguished demographer, who argues exactly the opposite – that regional decline *is* now novel, because it is now accompanied by population ageing (Reher 2007 in Lee and Reher 2011: 222).

The jury is thus only beginning to form on this emerging reality, which we might well believe will not be without strategic and political consequences to local businesses, or local governments struggling to provide adequate services to their ageing populations, and thus to have national implications.

Lack of a cohesive understanding at this stage makes it unlikely that the New Zealand government will be provoked into action in the short term, which is when responses to population ageing need to be made. But to assist; in my view, New Zealand's ability to chart a successful course through the storm that is unfolding depends on looking at the age structure 'whole' and acting [urgently] on the following four understandings:

- In the short to medium term, young New Zealanders will be in ever-shorter supply and ever-greater demand, as each successively larger cohort of baby boomers retires and is replaced by a successively smaller cohort of labour market entrants. The 'bite' in the age structure between the two groups will see an ensuing competition for labour market participants (both here and globally) that will arguably result in higher wages, causing labour and consumption costs to increase.

- These factors will come into play first and most profoundly in the non-urban regions, where the diminishing of labour supply and the population-ageing driven end of population growth will for most be a *permanent* end. These dynamics can be shown to have been unfolding sequentially and inexorably over the past 15 years (although they have been gestating for much longer), and will continue to unfold more rapidly from this year as population ageing accelerates, until zero growth or population decline embraces all but the major urban areas.
- The social realities of population ageing will also be played out at the local level, which is where labour has to be found, services delivered and much revenue gathered. Many responses to population ageing thus need to be directed at the local level, and all need to take account of the specific drivers of each region's demography: numerical ageing potentially exacerbated by an influx of retirees, structural ageing potentially exacerbated by net migration loss of youth, natural and/or absolute decline hastened by either or both.
- Finally, New Zealand's ability to respond to its *ageing* population depends very much on its investment in its *youthful* population. The currently 'larger' youthful cohorts (aged 15-19 years and also being born) are the last that New Zealand is assured of. The size of future birth cohorts – even if fertility *rates* increase – will depend very much on the size of the reproductive age population, which stands to be further diminished by emigration. Future fertility levels will also be potentially reduced if the taxation burden on young New Zealanders is greatly increased, thereby accelerating structural ageing. Investment in New Zealand's particularly youthful Maori population will be critical on all counts.

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