



Some informal considerations on the implications of projected demographic change for the Bay of Plenty's SmartGrowth Strategy – Addendum to 2014 Review of Demographic and Labour Force Projections for the Bay of Plenty Region for the Period 2013 – 2063

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Preamble

This paper has been prepared by Natalie Jackson to provide some informal insights into what the population projections contained in the 2014 Review² mean (or may mean) for key elements of the Bay of Plenty's SmartGrowth Strategy. It has been prepared outside of the SmartGrowth Projections Brief at no charge, is written informally as an 'open letter' to the reader, and should be interpreted accordingly: at this point, very little work has been done in the New Zealand context on what population ageing actually means for the specific activities of government, corporate or commercial activity, so much of what is offered in the paper should be taken as 'considered conjecture'. At the same time it builds on broad consultation over many years with local government councils and business enterprise across both New Zealand and Australia. A key learning from those interactions has been that the way forward requires a 'bottom-up' approach whereby each Council or agency discusses their population projections with each of their divisions or branches, and together determine what they are likely to mean for day-to-day business and for planning ahead. A good example, which Natalie was involved in the early development of in 2004, was undertaken by the New South Wales Local Government and Shires Association. Demographic Profiles prepared for each of the Association's then 158 local government councils were distributed and all divisions of each council were asked to deliberate on the likely implications for them. Today's outcomes of this early initiative can be found at:

http://www.dlg.nsw.gov.au/dlg/dlghome/dlg_IntegratedPlanningIndex.asp?sectionid=1&mi=20&ml=10&AreaIndex=AGEPOP&index=1001

² 2014 Review of Demographic and Labour Force Projections for the Bay of Plenty Region for the Period 2013 – 2063 (Jackson, Cameron, and Cochrane, 2014, National Institute of Demographic and Economic Analysis, University of Waikato).



I think the main issue to be addressed is that all Bay of Plenty Territorial Authorities (TAs), and most TAs throughout New Zealand, are in the same boat—irrespective of whether they are still growing strongly or already declining. As pointed out in Section 6 of the 2014 Review (and included in this paper as Appendix A), the trends are global. That is, global population growth is projected to end around the end of the present century; zero growth and depopulation are already widespread at national level across Japan and much of Europe, and sub-nationally evident everywhere across the developed world, and well under way in the developing countries. This is the ‘inconvenient truth’ of structural population ageing: ageing-driven growth heralds the end of growth; it is on our doorstep, already evident in several New Zealand TAs, and the trends driving it are both inexorable and accelerating. There can be little respite from the global context, as New Zealand has been shielded from the ending of growth thus far by the highest birthrate in the developed world, and very high per capita net migration gains.

Importantly, the 30 per cent of New Zealand’s TAs and 33 per cent of CAUs (Census Area Units) currently experiencing depopulation (2006-2013) are largely experiencing the old form of decline – caused by net migration loss, and in the past ostensibly resolvable. Every year from this point on TAs will successively succumb to the new form of decline – the combined and self-reinforcing effects of net migration loss and natural decline driven by more elderly than children, more deaths than births. It is this **new combination** that makes the situation so different to the past, when natural increase was nearly always sufficient to conceal net migration loss and population decline. As population ageing proceeds, natural increase *will* end and natural decline *will* begin – as it has already in large swathes of our counterpart countries, and from that point on, all growth can only come from migration. This does not mean that some TAs like Tauranga City and Western Bay will not continue to grow for many decades yet, or that others currently declining will not reinvent themselves and come out of decline (at least temporarily), but rather that for the latter to occur, others will take their place in an overall slowing-growth depopulating context. We can proactively manage the sub-national process, but it will require political leadership based on an acceptance of what global population ageing really means. It implies that serious collaboration and thinking ahead will be more effective than competition.

My research points to a general lack of appreciation of what is unfolding, with continuing population growth taken as a given. There are many reasons why that is the case, including strong and personally lived memory of the neo-Malthusian arguments of Paul Ehrlich’s ‘population bomb’. The irony is that even while Ehrlich was writing the book in 1968, global fertility rates had begun to fall – and today are less than half of what they were. This decline, coupled with increasing longevity, has generated the structural ageing we are beginning to deal with today, and which is driving the end of growth. So we urgently need to understand when and where it will escalate, why and how, and when subnational

decline will tip national decline. This paradigm shift has implications for everything we care to think about – one of which has me especially intrigued is spatial equilibrium theory³, which, at least conceptually, can't work in an ageing/depopulating world. What will it mean for housing values, people's life-time investments – not just for a few rurally-residing individuals, but eventually, even for people in large urban areas? What will it mean for local government? Councils with one-quarter to one-third or more of their ratepayers over the age of 65, largely reliant on fixed superannuation incomes, will find generating the required revenue from rates very difficult, if not impossible.

Local population decline – and/or 'hyper-ageing' - are not private troubles that individual councils can resolve without—it seems to me—some sort of national plan for financing or at least responding to what is clearly a national issue. That is not an argument that central government should take over local government—far from it—it is simply an argument that the regional ending of growth is a national issue that needs to be placed on the government's agenda.

Failing acknowledgement of the issue as a national issue by central government, what may be needed is a 'clean slate' approach whereby local councils get their heads together and design completely new ways of working (suggested to me by a local analyst of local government). I would see clear, open dialogue with the community as a fundamental part of this approach. People need to understand what is ahead and why it cannot be easily resolved.

³ Spatial equilibrium theory suggests that as house prices fall, people will be attracted to the area to buy them.



2. Considering the implications of changing demographics on the environment

The environment *per se* is not my patch, so here I'm going to draw on the work of an esteemed colleague, Dr Peter Matanle of the Shrinking Regions Research Group based at the University of Sheffield, England. Peter and his colleagues work on these issues in Japan and Europe. Peter has a particular interest in the environmental aspects: see his latest article: <http://www.openpop.org/?p=813>

I quote here directly from that article, because it fundamentally challenges many naïvely utopian perceptions of the positive impacts of the ending of growth/onset of depopulation on the environment – including my own, which appear in a 2006 book chapter entitled 'When the population clock stops ticking' in *Controversies in Environmental Sociology* (R White ed.).

According to Matanle:

"Preliminary evidence emerging from Japan shows that fewer people may not automatically deliver reduced resource consumption, at least while adjustment to community shrinkage is taking place, or an improved life experience for the remaining residents of communities experiencing advanced ageing and depopulation. Although the accepted wisdom is that reduced numbers would deliver environmental benefits, Japanese data indicates that total energy consumption and carbon output rises with decreases in population size and density [Figure 2 – see the article]. There are many reasons why this may be the case, such as over-capacity in depopulated areas driving down private and public investment in capital and infrastructure, leading to falls in land and building efficiency as farms, residential properties, public buildings, and offices are abandoned. Or the closure of public facilities such as schools due to reduced demand and consequent increases in consumption of fuels in transportation by those that continue to use such facilities. Again, more research needs to be done to find out what the causes might be and to measure them, in order to develop countermeasures.

Quality of life for the remaining residents of depopulated areas has also declined substantially in many areas in Japan (Matanle, 2006). Property markets have collapsed with the increase in the number of abandoned buildings, hindering geographical and social mobility, among other things; [7.57 million homes, or 13.1% of all houses in Japan, are currently empty due to a combination of depopulation and tax incentives](#) (Otake, 2014), and the number is increasing. Many older people now live in neighbourless communities, lacking the means to effectively maintain their own safety and security. Mountain hamlets are becoming overgrown and the mostly elderly residents are at increased risk of attacks from bears, or their homes being raided and ransacked by monkeys, and their farms being torn apart by wild boars and deer (See Matanle, Rausch, et al (2011) for a comprehensive account of the impacts of ageing and depopulation in Japan's rural regions)."



Importantly, Peter has also recently proposed the plausible existence of depopulation dividends, which he refers to in the article. However while governments continue to seek growth and ignore the inevitable, we may not realise them in time. This is an area of work that I will further develop for New Zealand (with Peter) as part of my Marsden research. Peter will visit New Zealand later in the year – the Bay of Plenty Regional Council may be interested in hearing from him.

3. Considering the implications of changing demographics on neighbourhoods and communities, housing, education and health needs

Some of these implications are alluded to above; others are too wide ranging for me to comment on with any expertise. I will focus briefly on four. In sum, revisiting policies and the principles on which they are based (ie undertaking an ‘environmental scan’ of each situation) is likely to be more beneficial than trying to seek solutions before the implications are fully articulated. As a colleague once said to me, ‘we can be forgiven for not knowing the answers yet, because we haven’t had to ask the questions before – and we don’t even know what the questions are’.

- a. Collaboration with the voluntary/social sector. I have done a few projects on volunteering (namely for the Tasmanian Government) and the main finding was that because volunteers tend to be middle-aged and older, there will be few problems with ‘supply’ as structural ageing progresses. However volunteers will be older on average, and are likely to face competing demands from longer working lives, the later arrival of their grandchildren (than for recent generations of grandparents), and the ageing of their own partners who may need unpaid care (extending life expectancy is keeping more older couples alive and together for longer). Recognising these competing demands will become increasingly important, as will potentially lobbying employers for more flexible working arrangements to enable those who would like to reduce their working hours to do so.
- b. Awareness of cultural diversity. Clearly the Bay of Plenty Region is strongly bi-cultural with Māori accounting for more than half of the populations of Ōpōtiki and Kawerau, 40 per cent of Whakatāne and one-third of Rotorua. I will discuss this further under ‘the implications of changing Māori demographics’ below. As structural ageing proceeds, international migrants are also likely to make up an increasing share of the population. Depopulation across our counterpart countries (especially Europe and Japan) combined with increasing competition for migrants will almost certainly see the ethnic composition of migrants change, disproportionately towards the developing countries, and relatedly the ethnic composition of most of New Zealand’s regions will change both rapidly and dramatically. Host populations need to be prepared for this and to recognise the difference between ‘acculturation’ (where all groups gain culturally from each other) and ‘assimilation’ (where newcomers are expected to fit in across all elements of society). Collaborating with newcomers to assist their integration and learn from them is likely to be more beneficial than imposing on them often myopic Anglo-Celtic ways of doing things—important when New Zealand’s Anglo-Celtic population is likely to account for less than half of the national population within a few decades.



- c. The implications of population ageing on health and education. The implications of population ageing for the health system are pretty obvious – over a million baby boomers are heading towards retirement and then old age, and the system can scarcely cope now. The Bay of Plenty will be especially challenged with its older than average age structure. However the more profound implications might be the ageing of the health workforce itself, the average age of the Bay of Plenty Region’s Registered Nurses already 47.3 years (up from 40.9 years in 1996), General Practitioners only fractionally younger, and demand for them increasing everywhere. Sizeable proportions of the Bay of Plenty hospital workforce are also overseas born. Attention to their settlement needs and ensuring that the Bay of Plenty DHB remains an attractive place to work would seem paramount. **Similar comments apply to education**, where the workforce is also older than average and for the Bay of Plenty Region almost identical to its health workforce. The one enormous difference is that demand (for education) will generally diminish as smaller cohorts are born; however in the short- to medium term there will be significant oscillations as small cohorts replace larger ones, and vice-versa. It is very important to understand these age structural transitions and how they will work through each system - both health and education, age groups at one moment growing, the next declining. Structural ageing is not a tidy linear process, and the waves have important implications for anticipating demand and providing services. I will discuss the issues for the more youthful Māori population below.
- d. Public transport, walking and cycling. It goes without saying that our current transport systems are geared towards cars. As population ageing proceeds, much more attention will need to be given to public transport and the pedestrian environment. Very little research has been carried out in this domain, especially in New Zealand (I am currently assisting with one of the rare studies), so it is difficult to comment beyond conjecture. Aside from the need for safe (preferably designated) pedestrian, mobility scooter, and cycling roadways, thought will need to be given to appropriate pedestrian-oriented signage – for example, footpath signage to hospitals, medical facilities, toilets, and accessible drinking water. Not all older people will have good hearing or sight, so signage cannot be just of the visual or audio type. (I note that it is virtually impossible for a healthy baby boomer to cross some roads in the Bay of Plenty area). Another issue—that of linking dwindling labour force supply to its transport needs and the economy in general—is covered in the following section.

4. *Considering the implications of changing demographics on the economy*

The economy *per se* is outside my area of expertise. However I will comment briefly on a few demographically-oriented observations that have arisen out of research I have undertaken, some with economist colleagues.

The first observation is that population ageing is likely to depress regional (and national) GDP, purely as larger cohorts move through and to the other side of the highest income earning age groups. Currently the single-largest (and the last) baby boom cohort is aged 50 years and is just moving out of the highest income earning age group. As it is replaced by smaller cohorts there is bound to be a negative impact on aggregate earnings. A colleague and I showed this for Australia for each state and territory (Jackson and Felmingham 2004). However, with more older people working longer, there will be some offset. In 2011 New Zealand recorded the second highest employment rate at both 50-64 and 55-64 years and fourth highest at 65-69 years, of the OECD countries. Since 2001, employment rates at older ages have doubled for the Bay of Plenty, as they have for total New Zealand. This situation may assist New Zealand—and the Bay of Plenty Region—to experience less of a negative economic effect from changing cohort size.

Secondly, with fewer young people coming through to replace the ageing baby boomers there is likely to be a reduction in unemployment, at both ends of the age spectrum. Simple Pearson's Correlations between the declining ratio of people at labour market entry age to those at exit age (ie in the retirement zone) and the unemployment rate by region are both positive and strong to very strong: as the entry: exit ratio falls, so too does unemployment⁴. Thus while labour market 'elasticity' may be tightened and labour costs increased (due to increasing competition for labour supply), there is likely to be fiscal savings in terms of reduced negative spending on unemployment and increased economic gain from higher employment rates. These propositions are, of course, vulnerable to temporal labour market cycles.

Third. Superannuation is paid nationally but is largely spent locally. As more people receive either NZ Super or private superannuation savings, money that has been tied up—often offshore—is released into the local market.

Fourth. International surveys have identified that around one-third of baby boomers are likely to change homes and move location on or approaching retirement. Local economies may benefit from

⁴ The Pearson's Correlation Coefficient measures the strength of linearity between two arrays of data on a span of -1.0 to +1.0. A perfect positive correlation of +1.0 denotes that both items moved in exactly the same direction at the same rate; a perfect negative correlation (-1.0) denotes that the two items moved in exactly the opposite directions and the same rate.



such 'churn' (which, as the 2014 Review Appendix identified, is relatively high at older ages for the Bay of Plenty). Others will renovate their homes as time is freed up for such purposes, also stimulating local industry.

Fifth. The baby boomer wave should be seen as an opportunity, not a problem. There are over one million boomers nationally, of whom 70,000 reside in the Bay of Plenty (there are a further 5 million across the Tasman, and 100 million across the 58 More Developed Countries). Boomers account for 26 per cent of the Bay of Plenty Region's population. Surely such numbers imply a raft of business opportunities.

Sixth. As populations outside of the main centres stop growing and decline, housing affordability will almost certainly increase in those areas. Connecting affordable housing outside of the main centres with the need for labour supply in those centres may require paying more attention to the transport needs of those who live outside the main centres.

5. Considering the implications of changing Māori demographics

Māori currently account for one-quarter of the Bay of Plenty population, compared with 14 per cent nationally. At TA level, population shares range from 54-55 per cent for Kawerau and Ōpōtiki to 16-17 per cent for Tauranga City and Western Bay of Plenty. However a section in Chapter 6 of the 2014 Review (appended here) drew attention to the impact of the relative youth of Māori population age structures on the overall populations of each TA, with Māori in 2013 accounting for around 70 per cent of all children (0-14 years) in Ōpōtiki and Kawerau, over half in Whakatāne, and just on half in Rotorua. Proportions reduce as age increases, but the working age populations (15-64 years) of Ōpōtiki and Kawerau are still approximately 50 per cent Māori, and of Whakatāne and Rotorua respectively above and just on one-third.

At regional level, Māori aged 15-24 years account for almost 40 per cent of the Bay of Plenty Region's total labour market entrants—and this proportion will increase as structural ageing progresses: Māori account for 50 per cent of the region's children (0-14 years). These demographic differences have significant implications for resource allocation, and particularly for the type of resources needed—and most critically point to the need to move away from simple perceptions of Māori as accounting for 'just' one-quarter of the Bay of Plenty Region's population, or 14 per cent of the total population. Indeed natural increase (the difference between births and deaths) for Māori is already greater than for European in absolute terms, despite its smaller population share.

The differing age structures of Māori and the European-origin population also contain many potential opportunities for the region and its TAs. For example, as the significantly older European-origin population retires (or reduces its labour market attachment), Māori stand to gain from a collateral demographic dividend (outlined in Jackson 2013). The dividend (or at least, the *potential* for an *economic* dividend) arises as the bulk of the population moves into the key working age/income earning age groups, driven on the one hand by declining birth rates which reduce the proportion of the total that is still in the child age groups, and on the other, by gains in life expectancy which are increasing numbers in the middle- and upper-middle age groups, but have not yet resulted in large proportions reaching the oldest ages. During the period, the demographic structure has the potential to result in an economic windfall, because the bulk of the population is theoretically working—and as the overall labour force shrinks, young people will be in increasing demand. Converting the opportunity to reality, however, requires foresight, strategic planning, and investment: it cannot happen of its own accord. Clearly a far greater proportion of the Māori population is at the ages at which most educational qualifications are gained, family formation is begun, and home ownership is sought—to say nothing of the lifetime benefits to both the individual and the economy of early investment in health. Investment in these areas are critical for



the economic dividend to be realised, both for the Māori and all New Zealand: it lasts for one generation only.

At the older end of the age structure, Māori account for just 5.5 per cent of the nation's elderly (65+ years). However they account for 9.5 per cent of those aged 65+ in the Bay of Plenty Region, and even this is distorted by relatively low proportions in Tauranga City (4.3 per cent) and Western Bay of Plenty (6.7 per cent). Māori aged 65+ years account for one third of the elderly of Ōpōtiki, 22 per cent of those in Kawerau, 18 per cent in Whakatāne and 15 per cent in Rotorua. Again, the need to take account of these regional differences for planning and resource allocation is clear.

In terms of recognising tangata whenua interests and values it is also worth drawing attention to the extremely old age structures of some of the region's largest industries, as indicated in Chapter 6 of the 2014 Review. In 2013 the region's single-largest industry, School Education, had just four people at entry age (15-29 years) for every ten in the retirement zone (55+ years), while the four next-largest industries, Community Care Services, Hospitals and Nursing Homes, Other Health Services, and Horticulture, all had similarly low ratios (4:10, 5:10, 4:10 and 5:10 respectively). The low entry: exit ratios in the health industry can only escalate as demand for health services increases, especially in the Bay of Plenty with its older than average population. For the region's all-important Horticulture industry the low ratios raise significant questions about succession and who will buy these properties. Drawing together the foregoing sections of the present paper, both the Bay of Plenty Region and local iwi specifically would be advised to direct investment attention—not least through education—to these industries and their future labour force requirements.

Natalie Jackson

10.05.2014



Appendix A - Key Trends and Determinants Affecting Future Population Change (Chapter 6 of Projections Report)

Across the next several decades, New Zealand will face significant demographic challenges—and opportunities, some in common with other countries, such as population ageing and the end of growth/onset of depopulation in many subnational areas, and some unique, such as the disproportionate concentration of the nation's population in one region (Auckland), the relative youthfulness of the Anglo-Settler countries' largest indigenous population (Māori), and a rapidly changing ethnic composition generated by globally high per capita net international migration gains—assuming these continue. These intertwining factors are considered below under five broad headings: Global Demographic Forces; Population Ageing; Regional Diversity; Workforce Ageing, and Population (Ethnic) Composition, with comment on their implications for the foregoing projections.

With 17.6 per cent aged 65+ years in 2013, the Bay of Plenty has the 7th oldest age structure of New Zealand's 16 Regions (Marlborough being the oldest and Auckland the youngest). The disparity reflects both disproportionate net migration loss at young adult ages, which removes some of the region's reproductive (births) potential, and disproportionate gains at older/retiree ages, across all of the region's six TLAs. As this Report has identified, all six TLAs have either older-than average age structures, or are experiencing faster than average (national) rates of ageing.

By 2033, only Rotorua and Ōpōtiki are projected to have less than 40 per cent aged 65+ years, while Kawerau will have in excess of 65 per cent. Whakatāne, Kawerau and Ōpōtiki will have experienced continued decline and be considerably smaller in size, with Rotorua on the cusp of sustained decline. Western Bay of Plenty and Tauranga will still be growing, but very slowly, as the majority of growth will be at 65+ years – and in Tauranga's case, increasingly at 85+ years.

As the trends outlined below unfold, all TLAs and the region in general will experience increasing competition from other regions (and countries) for their young. If young people leave in greater proportions than assumed in the projections, and/or greater proportions of older people move in, the region's structural ageing – and that of its TLAs - will accelerate, as will depopulation in those TLAs in which it is projected.

A reduction in both net migration loss at younger ages and net migration gain at older ages would slow these projected outcomes, as would a rise in the birth rate, but for most TLAs of the Bay of Plenty will only delay the shift to the end of growth/onset of depopulation, which is already common at subnational level across both New Zealand and New Zealand's counterpart countries (and nationally across much of Europe, and Japan), and is foreshadowed in global demographic trends.



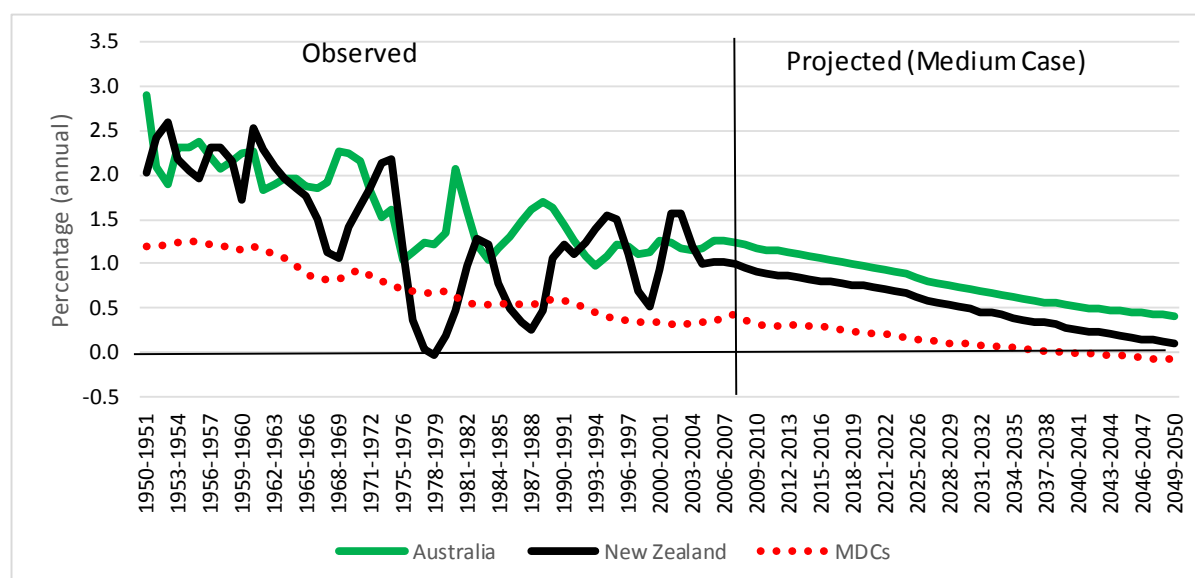
Global Context

Between 2011 and 2031, the 58 More Developed Countries (MDCs) enumerated by the United States Census Bureau's International Database are projected to grow by less than 5.0 per cent, with the aggregate annual growth rate negative by 2040 (United States Census Bureau) – see Figure 6.1. At 65+ years, growth will be approximately 49 per cent, adding around 100 million 65+ year olds to the current 200 million at these ages. All other age groups 0-64 years are projected to decline by around 41 million (-3.9 per cent).

Developing countries are also beginning or are well into the structural ageing process, with the currently-largest, China, expected to reach the end of natural growth in 2026. Accounting for over 20 per cent of the global population, China's shift to natural decline will have a marked impact on the global growth rate, which at just over 1.0 per cent per annum at present is now half of what it was in the 1980s, and is expected to be below 0.5 per cent per annum by mid-century (United States Census Bureau). The global fertility rate is now around 2.4 births per woman, also below half of what it was in the 1950s (5.4 births per woman), and only marginally above the replacement level fertility rate of 2.1 births per women (Wilson 2001). Globally, population growth is projected to end around the end of the present century (Lutz, Sanderson and Scherbov 2004; Reher 2007).

Observed and projected trends for New Zealand, Australia and the MDCs are depicted in Figure 6.1.

Figure 6.1: Observed and Projected Annual Growth Rates, New Zealand, Australia, and the More Developed Countries, 1950-2050.



Source: United States Census Bureau International Database

Implications for the projections: The global trends provide both New Zealand and the Bay of Plenty with a salutary warning. As well as indicating that significant growth is unlikely as time proceeds, the diminishing pool of youth in the other 57 OECD countries is the pool within which New Zealand competes for many of its skilled migrants. Increasing competition for these migrants (United Nations 2000) - within and between countries, regions and industries - will make it increasingly difficult for New Zealand (and the Bay of Plenty) to achieve its desired migration targets. Attention is increasingly turning to the developing countries where there is still – and will remain for the foreseeable future - a significant excess supply of young people. However, attracting them to, and retaining them in New Zealand/Bay of Plenty will require more attention to settlement issues, including where migrants might most usefully settle, and education and equity in terms of the recognition of equivalent qualifications. As one of the youngest of the developed countries, those migrants who New Zealand attracts and trains will be of ever-greater interest to our structurally older counterparts – as will young New Zealanders themselves, including young people from the Bay of Plenty.

Population Ageing

With one of the highest birth rates in the developed world, New Zealand has a relatively youthful population, with 14.2 per cent aged 65+ years in 2013 compared to 16.8 per cent average for the 58 More Developed Countries referred to above. However as elsewhere, New Zealand's population is also ageing numerically, as more people live longer, and structurally, as declining birth rates cause the increased numbers of elderly to also increase as a proportion. The number of New Zealanders aged 65+ years is projected to more than double by 2031, from around 615,000 at present to 1.2 million, and to 1.5 million by 2061, while the proportion aged 65+ years will increase from its present 14.2 per cent to around 21 per cent by 2031, and 26 per cent by 2061⁵. These trends mean that while the New Zealand population will continue to grow for the foreseeable future, reaching around 520,000 by 2031 (+18 per cent over 2011), two-thirds of that growth will be at 65+ years.

Implications for the projections: The trends for the Bay of Plenty described in this Report are entirely consistent with national picture, and indicate that there will be little departure from them; if anything, the Bay of Plenty may gain more at older ages from other New Zealand regions than indicated by the projections, if the historical rates of net inflow at older ages increases.

⁵ All projections referred to here are based on Statistics New Zealand (2012) medium case (50th percentile) assumptions. At national level these are: an international net migration gain of 12,000 per year from 2015 and then remaining constant; the Total Fertility Rate falling to 1.9 births per woman by 2036 and then remaining constant; and life expectancy at birth increasing by 2061 to 88.1 and 90.5 years for males and females respectively.



Demographic Drivers

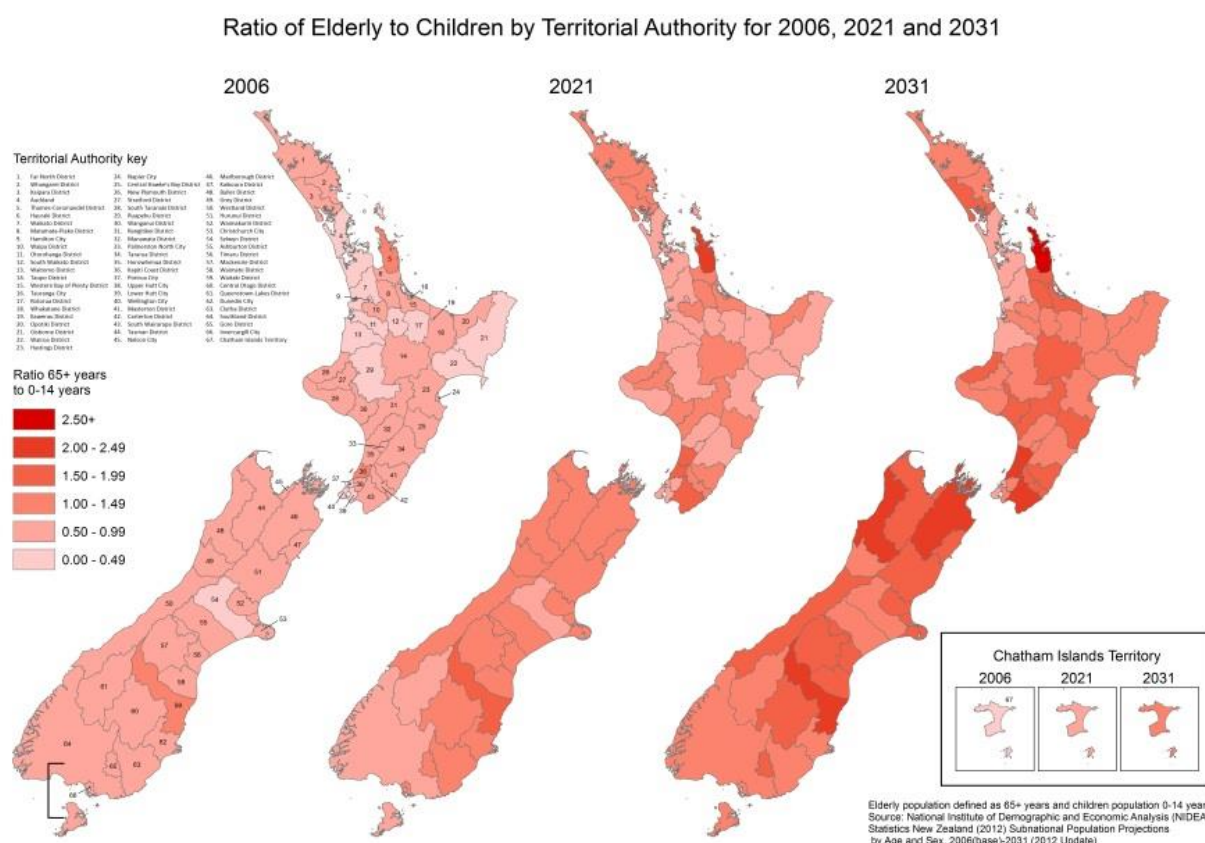
As has been outlined in this Report, population ageing is unfolding at markedly different rates across New Zealand. This diversity is caused by different mixes in the drivers of population ageing: birth rates, longevity (survivorship) and migration (e.g., Jackson 2007):

- Declining birth rates decrease the proportion of the population that is young and concomitantly increase the proportion at older ages (known as structural ageing).
- More people living longer adds to the numbers at older ages (numerical ageing), and in the process further swells the proportion at those age (structural ageing is accelerated).
- When an area experiences net migration loss, which occurs mainly at 20-39 years, it removes both the young people themselves and their reproductive potential, further pushing up the median age (structural ageing is further accelerated).
- Where an area experiences net migration gains at retiree ages, both the numbers and proportions at those ages are further augmented, further accelerating structural ageing.

The overall outcome of these processes is an incremental—and in some cases rapid—shift to more elderly than children, more deaths than births (natural decline), and to the end of growth and onset of what is expected to be permanent population decline, something not seen in modern populations until its recent onset in Japan and much of Europe.

Figure 6.2 provides a national overview of the first of these trends (more elderly than children) for New Zealand at TLA level. In 1996, no TLA had more elderly than children. By 2006 that had become three TLAs (4.5 per cent); by 2021 it is projected to be the case for 41 TLAs (61.2 per cent); and by 2031, for 61 TLAs (91.0) per cent. Supporting these projections, the June 2013 Estimated Resident Population data indicate that 15 TLAs (22 per cent) now have more elderly than children. Among them is Western Bay of Plenty; by 2033 all six Bay of Plenty TLAs will be in this situation.

Figure 0.2: Ratio of Elderly (65+ years) to Children (0-14 years), 2006, 2021 and 2031



Implications for the projections: The shift to more elderly than children in the Bay of Plenty Region shown in this Report is entirely consistent with national trends, either already in existence (such as in the Western Bay of Plenty), or projected to occur between 2013 and 2033, again indicating that there is likely to be little departure from the projected situation.

Diminishing Role of Natural Increase

Despite New Zealand's reputation as a country of high international immigration, the primary driver of growth remains natural increase (the difference between births and deaths), and this is the case even for the peak international migration destination of Auckland. However as population ageing progresses, natural increase will diminish, becoming negative in 16 TLAs (23 per cent) by 2031 (compared with just one at present). Kawerau will join this group around 2031 with the remaining Bay of Plenty TLAs entering natural decline across the following two decades. In regions where there is net migration loss of people of reproductive age and net gain at older ages, as is the case for all Bay of Plenty TLAs, natural increase will decline quite rapidly. Nationally, only two TLAs, Selwyn and Auckland, are expected to see a growth in natural increase across the period.

Implications for the projections: The trends described in this Report are consistent with the national picture at TLA level and thus unlikely to differ markedly from the projected situation. However, the contribution to natural increase by Māori is somewhat greater in absolute terms than for the European-origin population, despite the latter's larger size (Jackson et al 2013: 59-60). If young Māori became less likely to leave the region, their higher than average birth rates and earlier age at childbearing would assist in keeping natural increase relatively high for a longer period.

Increasing Role of Migration

Although regionally differing birth rates and life expectancy are involved, New Zealand's subnational diversity is primarily driven by differences in migration trends and patterns. Where net migration is negative, the loss is mostly concentrated at the key reproductive ages, 20-39 years; this removes both the young people and their reproductive potential, and accelerates structural ageing. Between 2011 and 2031, 33 TLAs (49 per cent) are projected to experienced net migration loss, among them Rotorua, Whakatāne, Kawerau and Ōpōtiki. By contrast, net migration gains at retiree ages are projected to continue for many coastal sun-belt areas, such as Northland, the Bay of Plenty (particularly Western Bay of Plenty and Tauranga), Kapiti Coast and Marlborough. Gains at these ages add to the increased numbers deriving from longer life expectancy, and further increase the proportions at older ages. In some cases, such as Rotorua, the joint effects of migration loss at younger ages and gains at older ages (from both increased longevity and migration) will accelerate the shift to natural decline, at the same time as the population initially grows.

Implications for the projections: As natural increase declines, it is likely that the New Zealand Government will increase both its migration targets and its activities in attracting international migrants. Any increase in international migration could see an increase in ethnic diversity for the Bay of Plenty Region. However as structural ageing increases, migrants will increasingly replace natural increase (i.e., offset natural decline), rather than greatly augment and grow the population.

Changing family size and structure

Declining birth rates and an increasing age at childbearing over the past half-century have seen New Zealand's average family size decline from four to two children. Between 1981 and 2013 the proportion of New Zealand women with three or more children fell from 29 to 17 per cent. By 2013, 44 per cent of women of reproductive age had no children, up from 39 per cent in 1981, and the proportion with just one child rose from 11 to 15 per cent. This means that in 2013, more than half of New Zealand women of reproductive age had on average less than half a child. At the same time, New Zealand's fertility rate

remains one of the highest in the developed world, and is held up by a small increase in the proportion having two children, and by Māori fertility rates which are slightly higher and occur at somewhat younger ages than for non-Māori (peak ages 23 and 31 years respectively). Accompanying these trends, and contrary to popular opinion, teenage fertility is today less than half its 1970s levels, with less than 3 per cent of teenage girls having a child.

New Zealand's household structure has changed as a result of these trends, with two-parent households declining (from 37 to 27 per cent), sole parent households plateauing, and households without children (both couple-only and single-person) increasing across the period 1986 to 2013.

In the Bay of Plenty Region there has been an overall increase in single person households; however this is primarily due to an increase in men living alone at ages 40-64. The increase is not due—as many might expect—to an increase in widow/widower-hood: at older ages there has been a notable decline in single person households at ages 65-84, in part reflecting a decreasing gender gap in life expectancy which is seeing more older couples living together for longer. This factor is also plausibly due in part to a decline in women aged 65-74 living alone, from 77 per cent in 2001 to 69 per cent in 2013, while there has been a small increase in men of this age living alone, from 26 to 29 per cent. There has also been a decline for men under 40 living alone, suggesting an increase in other household type arrangements.

Implications for the projections:

Changing family size and structure (*per se*) do not have implications for the underlying population projections, but may have a bearing on the household projections in terms of subtle changes in distribution. For example if life expectancy continues to increase at a greater rate for men than women (than allowed for in the underlying baseline projections), it is plausible that single person households will not increase to the same extent as popularly conceptualised. At national level, the slowing and reduction of growth in single person households at older ages has been observable since 2001, but further data are required before making definitive pronouncements on this situation. The older ages at which people are now partnering and having children is also (theoretically) associated with a stabilising of the 'two parent' and 'single parent' household types, as indicated in the projections.

Regional Diversity

Ageing-Driven Growth

Between 2011 and 2031, the trends will see the majority of growth in 56 (84 per cent) of New Zealand's 67 Territorial Local Authority areas (TLAs) occur at 65+ years, including all six Bay of Plenty TLAs. In 33



TLAs (nationally), that growth will offset decline in most other age groups (as will be the case for Rotorua), but in 23 TAs it will be insufficient to prevent overall decline (as will be the case for Whakatāne, Kawerau and Ōpōtiki).

Nationally only 17 TLAs (25 per cent) are projected to see growth at 0-14 years (notably none of the Bay of Plenty TLAs are among these), and 23 (34 per cent) at 15-39 years, among them Western Bay of Plenty and Tauranga City. In all other TLAs (including Rotorua, Whakatāne, Kawerau and Ōpōtiki), numbers at these ages are projected to decline. At Regional Council level, only Auckland is projected to see an increase in numbers aged less than 39 years.

Implications for the projections: The trends projected in this Report are consistent with national trends at TLA level. One factor that could make a difference for the Bay of Plenty would be the expansion of the University of Waikato and/or Bay of Plenty Polytechnic campuses. Such developments would plausibly see greater retention of some young adults seeking higher education. However the situation of Hamilton suggests that young educated people move away once they have completed their studies, the city typically experiencing a net migration loss at 20-24 years of age.

Geographic Mal-Distribution of the Population

While Auckland currently accounts for one-third of New Zealand's population, the region's share of annual growth is projected to increase from just over 50 per cent between 2006 and 2013 to two-thirds by 2031, taking Auckland's share of the national population to 38 per cent. Of the remaining Regional Council areas, only Canterbury is projected to see an increase in population share, driven largely by the rebuild of Christchurch and related immigration. Other regions will also continue to grow, but at a decelerating rate. Data from the 2013 Census supports these projections, showing that between 2006 and 2013, Auckland and 11 of New Zealand's 12 cities accounted for 75 per cent of growth, with the remaining growth spread thinly across 30 Districts, while 20 Districts failed to grow or declined. Only five Districts each gained more than 2 per cent of growth.

Implications for the projections: The spatial changes in projected population share indicated in this Report for the Bay of Plenty and its TLAs, i.e., an increasing concentration of both the total population, and all broad age groups, in Tauranga City, are consistent with the national picture of concentrating growth in large urban areas. It is not possible to comment on the extent to which the Bay of Plenty, and Tauranga City particularly, could see an increase in share of the national population, but the overall trends suggest that any increase would most likely be at older ages.



The Subnational Ending of Population Growth

The different rates of natural increase, migration and population ageing across the country are ushering in the permanent end of growth for many regions—a trend which has to be understood in the broader context of global population ageing noted above. Between 2011 and 2031, 23 TLAs (34 per cent) are projected to experience absolute decline, among them Whakatāne, Kawerau and Ōpōtiki. This is a similar proportion to that for the period 1996-2011.

Supporting the proposition, Figure 6.3 provides a snapshot of observed changes in the Usually Resident Population (URP) at Census Area Unit (CAU) level for the two periods 2001-2006 and 2006-2013. The usually resident population of New Zealand increased by 5.3 per cent over the seven year period 2006-2013. However the pattern of change was not distributed evenly. Almost one-third of CAUs with a population of over 10 residents declined in number across the period (affecting 613 of the total 1,869 CAUs). This is a notable increase from the 475 CAUs (25.4 per cent) which recorded a decline in population over the previous inter-censal period (2001-2006).

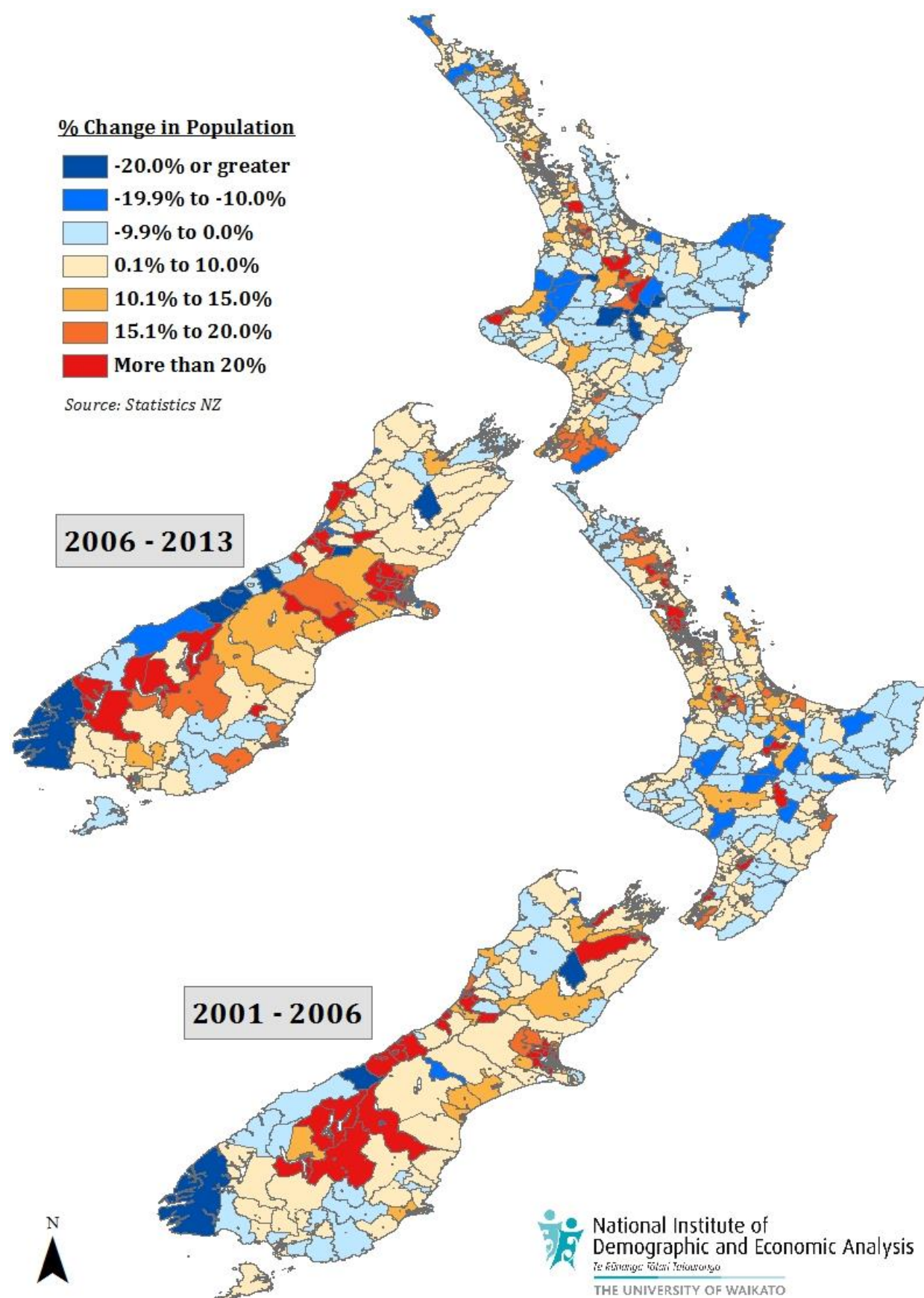
In keeping with the national picture, the Census Usually Resident Population of the Bay of Plenty Region grew by 4.0 per cent between 2006 and 2013, a little lower than the ERP growth of 4.8 per cent—the discrepancy likely to reduce when the 2013 Census-based ERP data are released (see Section 1.2 of Jackson, Rarere and Pawar 2013 - *Bay of Plenty Region and Districts Demographic Profile*). At the same time, over two-fifths (52 CAUs, 44.1 per cent) of the region's 127 CAUs declined in size, and as also occurred nationally, the decline was more widespread than between 2001 and 2006, when 33 of the region's CAUs declined (28.0 per cent). These trends resulted in Kawerau, Ōpōtiki, Rotorua and Whakatāne experiencing decline between 2006 and 2013, whereas between 2001 and 2006 only Kawerau and Ōpōtiki had declined.

This increase in the number/proportion of Bay of Plenty CAUs recording a decline in population numbers between 2006 and 2013 compared to the previous period is most significant for Rotorua district, where 25 CAUs (64 per cent) declined in size between 2006 and 2013, compared to 15 (38 per cent) between 2001 and 2006, Whakatāne (12 CAUs compared to eight; 63 cf. 42 per cent), and Tauranga City (five CAUs compared to two; 14 cf. 6 per cent). For Ōpōtiki the situation was essentially a continuation of the previous trend (4 of the 5 CAUs declining in both periods).

Implications for the projections: The observed trends at CAU level for the Bay of Plenty and its TLAs across the 2001-2006 and 2006-2013 periods are consistent with those occurring nationally and support the projected declines presented in this Report.



Figure 0.3: Percentage Change in the Usually Resident Population of Census Area Units (CAU), 2001-2006 and 2006-2013: Total New Zealand

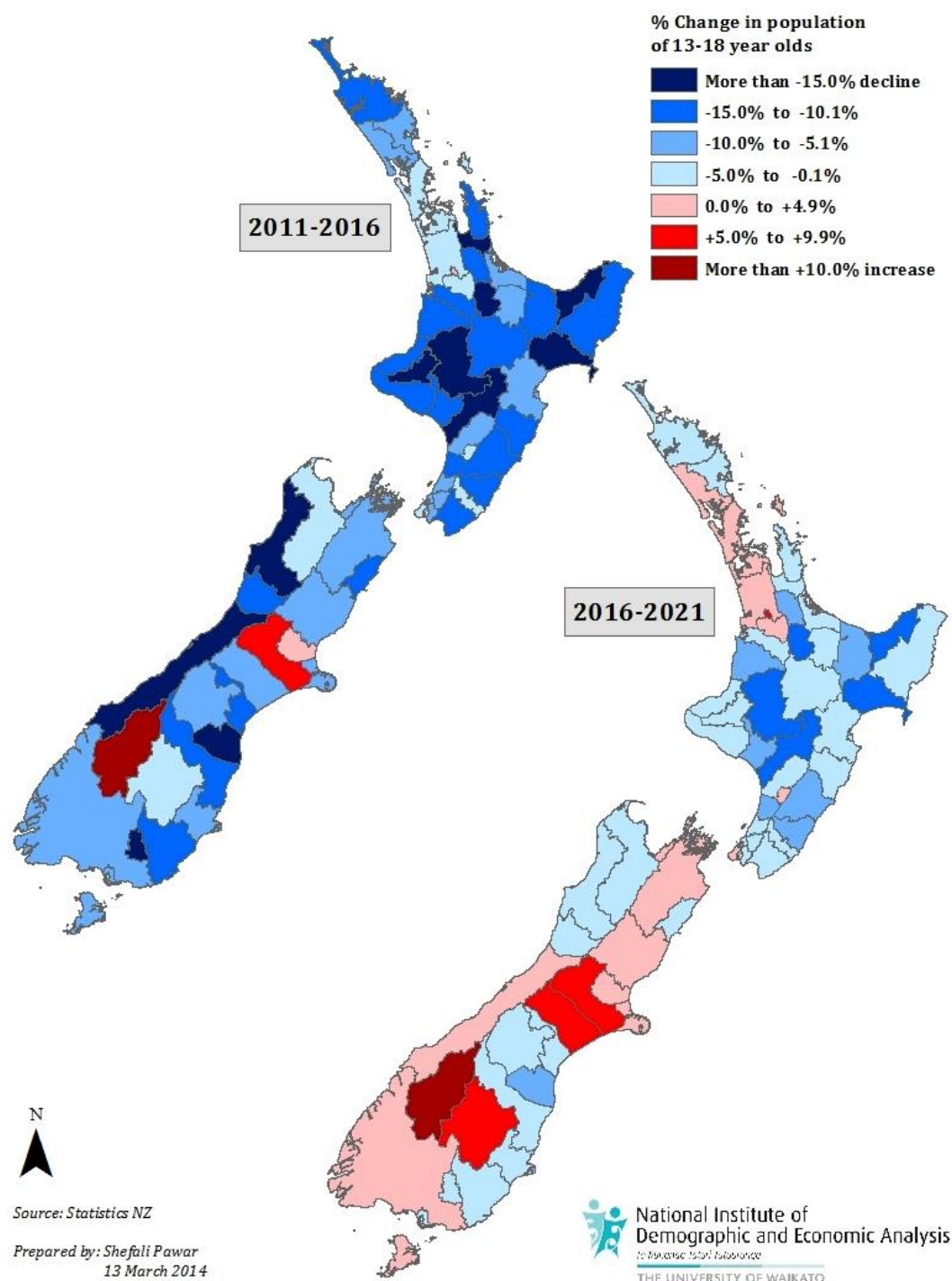


Workforce Ageing

Age structural transitions

The trends are also generating significant oscillations in the numbers (and proportions) in each age group, and these have significant implications for a broad range of factors, among them the size and age structure of the labour force, the delivery of services, and related policy development. For example, while the number of New Zealanders aged 65+ years will grow at an accelerating annual rate until the late 2020s, the annual increment will then begin to reduce. At the other end of the age spectrum, New Zealand is facing a decline of some 20,000 school-leavers over the present five year period (2011-2016), and a further 8,000 the following five years, the legacy of falling birth rates during the 1990s. Around 2021, school-leaver numbers will again surge, albeit only temporarily, as a recently born baby blip reaches those ages. In the interim, this extended cohort will work its way through New Zealand's schooling system, generating waves and troughs as it passes through each age group (Figure 6.4). However as Figure 6.4 indicates, the resurgence will be geographically patchy, and none of the Bay of Plenty TLAs are expected to see a return to growth at these ages.

Figure 0.4: Projected Change (%) at 13-18 years by TLA, 2011-2016 and 2016-2021



Workforce Ageing and Participation Rates

These demographic trends are causing New Zealand's workforce to age quite rapidly. The prime working age population aged 15-64 years has recently peaked at 66 per cent of the population and is projected to shrink to 60 per cent by 2031 and 58 per cent by 2061. The ratio of those in the general population at

labour market entry age (15-24 years) to those in the main retirement zone (55-64 years) has fallen from 18 per ten in 1996 to 13 per ten today. The trend is even more profound in the employed workforce, which by 2013 had just six people at entry age (15-24 years) for every ten in the retirement zone (55+ years), down from 16 per ten in 1996.

Notably, these low ratios are occurring despite a trebling of labour force participation at 65+ years across the period 1986-2011. In 2011 New Zealanders recorded the second highest employment to population rates in the OECD at 55-64 years and 4th highest at 65-69 years. The Bay of Plenty Region is part of this trend, with the employment rate (employment to population) for those aged 60-69 years increasing from 34.8 per cent in 2001 to 54.7 per cent in 2013, almost 70 per cent of that employment in 2013 being full-time employment (up from 65 per cent in 2001). Employment rates are lower at 70-79 years, but have nevertheless doubled since 2001, and those at 80+ years have increased by 50 per cent.

The declining labour force entry: exit ratios are particularly pronounced in key industries. Here we use a ratio of those aged 15-29: 55+ years to allow for the gaining of appropriate qualification levels in some industries/occupations. In 2013, New Zealand's single-largest industry at 3-digit level (School Education) had just four people at entry age (15-29 years) for every ten in the retirement zone, down from eleven per ten in 1996; and the second-largest industry, Government Administration, just six per ten, down from 19 per ten in 1996.

For the Bay of Plenty, School Education was similarly the region's single largest industry, with just four people at entry age (15-29 years) for every ten in the retirement zone (55+ years), down from 11 per ten in 1996. The region's four next-largest industries, Community Care Services, Hospitals and Nursing Homes, Other Health Services, and Horticulture, all have similarly low ratios (4:10, 5:10, 4:10 and 5:10 in 2013 respectively). The low entry: exit ratios in the health industry can only escalate as demand for health services increases, especially in the Bay of Plenty with its older than average population. For the region's all-important Horticulture industry the low ratios raise significant questions about succession and who will buy these properties.

Implications for the projections: Labour force participation at 60+ years in both New Zealand and the Bay of Plenty is already relatively high in global terms, suggesting that employment rates at these ages are unlikely to undergo further dramatic increase. The declining ratio of labour market entrants to exits may on the other hand see a decline in unemployment rates, especially at younger ages; however unemployment rates (and thus those currently unemployed) are included in labour force projections. These trends suggest that in numerical terms the future workforce of the Bay of Plenty and its TLAs is unlikely to greatly exceed that indicated in Scenario's 3 and 4 of Chapter 5.



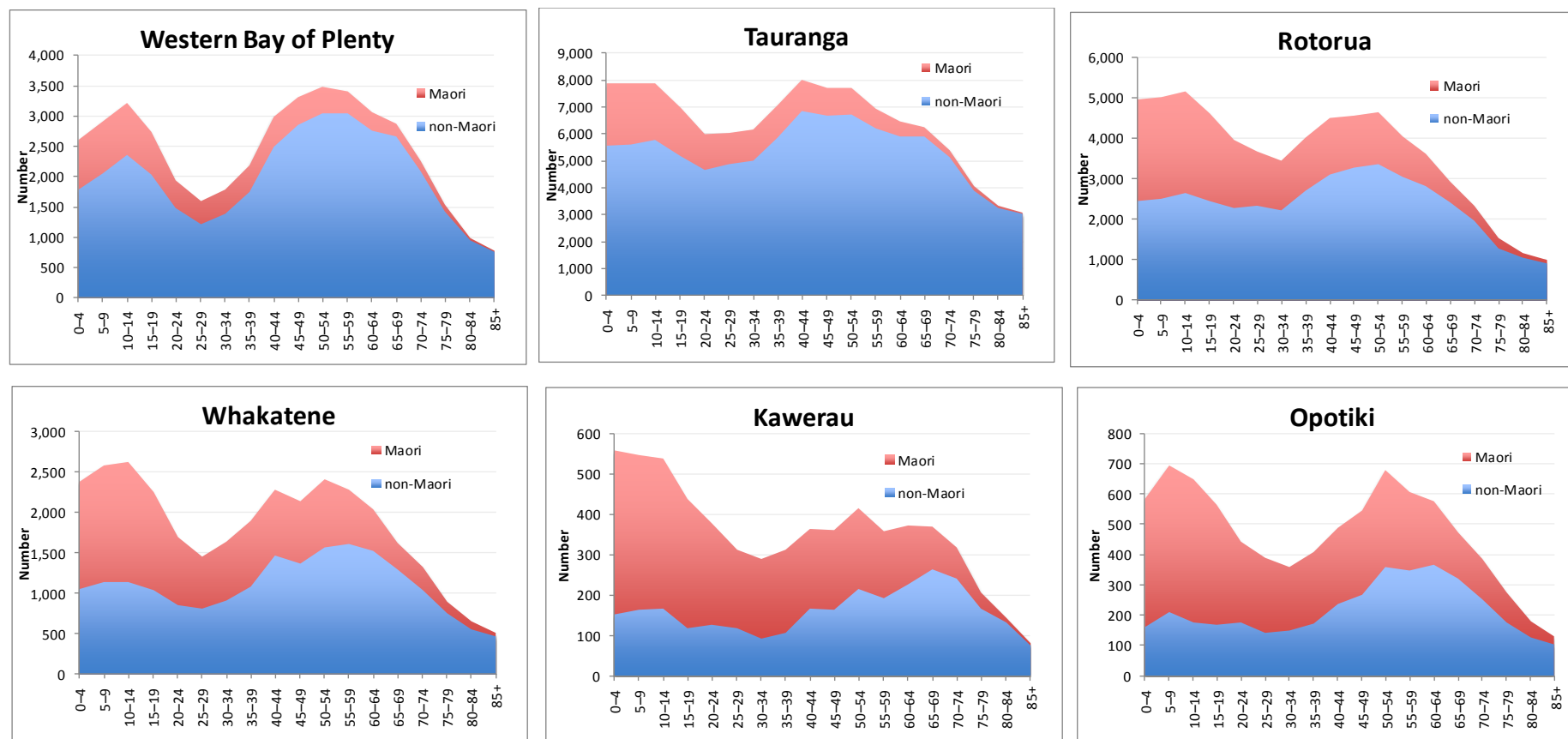
Population Composition and Contribution to Growth by Ethnicity

New Zealand is rapidly transitioning from a predominantly European-origin population to a multi-ethnic society, although this trend differs markedly by region. In 1996, the European-origin population accounted for approximately 75 per cent of the national population; by 2026 it is projected to account for 62 per cent, and for just above half of all children (0-14 years), down from 65 per cent in 1996. Māori are projected to remain at around 14-15 per cent share of the population, due to the impact of international migration which will see the proportion of people born in the Pacific Islands increase by 2026 to around 14 per cent, and Asian to around 9 per cent, up from 6.0 and 5.0 per cent respectively in 1996. However because of marked differences in the age structure of each population, the share at younger ages is significantly greater for the Māori and Pacific island populations. The 2013 Census indicated a median age of 41 years for the European-origin population and just 24 and 22 years respectively for the Māori and Pacific Island populations (Statistics New Zealand 2014, Table 6). People of Asian origin fall somewhere between these extremes, with a median age of 31 years. These differences disproportionately expose each population to different life course 'risks', such as seeking education, beginning family formation, and entering the labour market for the younger populations. They also present New Zealand – and the Bay of Plenty particularly - with a unique opportunity as the older European-origin population disproportionately retires. Over the next two decades, young Māori and Pacific adults will together account for around one-third of the nation's labour market entrants, and young people of Asian-origin will swell that to almost half. **NB.** All data and percentages given here pertain to Statistics New Zealand's 'multiple ethnic count' method of enumeration, which means that many people are counted more than once. A more detailed analysis and implications are outlined for the Bay of Plenty and its TLAs in the background paper to this Report (*Bay of Plenty Region and its Territorial Authorities Demographic Profile 1986-2031* (Jackson, Rarere and Pawar 2013)).

The potential demographic dividend arising from the relatively youthful Māori age structure is considerable for the Bay of Plenty and its TLAs, with their somewhat greater than average proportions of Māori. In 2013, 25.7 per cent of the Bay of Plenty Region's population was of Māori origin, compared with 14.1 per cent nationally. Focusing just on Māori/non-Māori data, Figure 6.5 provides an overview of the impact of the youthful Māori age structure on the overall population structures of each of the Bay of Plenty Region's TLAs, and Table 6.1 shows the percentage of each age group in each TLA that is Māori. As indicated in Jackson et al. (2013), these differences mean that the demography of the Māori population (higher fertility, younger age at childbearing, and lower life expectancy) have a sizeable impact on the total projections provided in this Report, particularly for the Rotorua, Whakatāne, Kawerau and Ōpōtiki Districts.



Appendix Figure A-1: Share (Number) of each age group that is Māori or non-Māori*, by Territorial Authority Area (Bay of Plenty Region), Census Usually Resident Population, 2013



Source: NIDEA/Statistics New Zealand (2014) Age Group and Sex by Territorial Authority Area, 2006 and 2013

Note: Statistics New Zealand multi-ethnic method of enumeration; note also different scales on Y-axis



Appendix Table A.1: Percentage of each age group that is Māori, by Territorial Authority Area (Bay of Plenty Region), Usually Resident Population, 2006 and 2013

	Western Bay of Plenty		Tauranga City		Rotorua		Whakatane		Kawerau		Opotiki		Bay of Plenty Total	
	2006	2013	2006	2013	2006	2013	2006	2013	2006	2013	2006	2013	2006	2013
0–4 Years	28.2	31.5	30.2	29.3	51.1	50.5	54.5	55.5	78.3	72.6	71.4	72.3	42.6	41.2
5–9 Years	26.3	29.6	28.4	29.1	49.0	49.8	55.9	56.0	77.1	70.3	72.9	69.8	41.0	40.8
10–14 Years	23.5	26.7	25.4	26.3	45.9	48.6	54.1	56.7	78.0	69.3	68.2	73.1	38.8	38.9
15–19 Years	23.4	26.1	24.2	25.6	45.9	47.0	50.4	54.1	73.3	73.3	66.8	70.2	36.6	37.7
20–24 Years	29.8	24.3	22.7	22.0	43.2	42.5	50.5	49.8	75.0	66.7	65.5	59.9	35.0	33.6
25–29 Years	25.6	23.5	21.5	19.3	40.6	36.5	47.1	44.3	70.2	62.5	61.5	63.8	33.4	29.5
30–34 Years	19.6	22.4	18.0	18.8	36.0	35.6	43.5	43.9	67.4	67.7	63.0	58.0	29.1	28.8
35–39 Years	16.5	19.3	14.8	17.1	32.8	32.7	38.9	43.0	55.7	66.3	55.8	58.1	25.2	26.7
40–44 Years	13.9	16.6	14.2	14.3	29.7	31.3	37.0	35.8	52.9	54.5	53.6	51.5	23.3	23.2
45–49 Years	12.8	14.0	12.9	13.3	28.4	28.6	34.4	35.9	57.6	55.0	46.6	51.1	21.8	21.8
50–54 Years	11.8	12.8	10.6	12.8	24.6	27.8	30.3	35.0	49.2	47.8	42.7	47.3	18.9	21.2
55–59 Years	9.1	10.7	8.1	10.6	20.4	25.0	26.4	29.9	42.2	46.2	37.8	42.6	15.6	18.3
60–64 Years	8.6	9.8	6.4	8.5	17.9	21.9	21.4	25.3	34.7	39.5	32.0	36.5	12.9	15.6
65–69 Years	8.9	7.6	5.8	5.8	18.0	17.3	22.6	20.4	28.6	28.5	35.9	32.3	12.4	11.6
70–74 Years	6.2	7.2	4.2	5.0	15.7	16.2	20.0	20.9	15.4	24.5	38.5	34.9	10.2	10.8
75–79 Years	6.2	7.0	2.7	4.1	12.1	15.5	14.0	16.7	10.0	20.3	30.4	35.9	7.2	9.4
80–84 Years	4.1	4.9	2.1	2.9	9.4	10.8	8.8	14.4	10.7	8.3	18.5	30.0	4.9	6.7
85 Years And Over	4.3	3.4	1.4	1.8	5.6	8.7	4.6	8.1	5.9	7.4	16.2	18.6	3.4	4.4
Total All Ages	16.5	17.3	16.0	16.3	34.5	34.3	39.7	39.9	58.5	54.6	54.4	53.6	26.3	25.7

Source: NIDEA/Statistics New Zealand (2014) Census Usually Resident Population by Territorial Authority Area and Age Group, 2006 and 2013



Reflecting these age structural differences alongside regionally differing trends in migration, Māori are projected to account for over one-quarter of the growth of the Bay of Plenty Region 2011-2021, the European-origin population for one-half, the Asian-origin population for 14.7 per cent, and the Pacific Island population 9.5 per cent (Jackson et al. 2013). These contributions differ significantly at TLA level. As noted above, natural increase (births minus deaths) for Māori in the Bay of Plenty is already greater in absolute terms than for the European-origin population, and this difference is projected to increase (Jackson et al 2013: 59-60).

Implications for the projections: As structural population unfolds, the Bay of Plenty and its TLAs will have some advantages over many other regions because of their relatively high proportions of Māori. Strong affiliation to whanau and turangawaewae may see young Māori less desirous of moving than non-Māori. Employment opportunities opening up with the ageing and retirement of the disproportionately older European-origin population could see young Māori encouraged to remain in the region and thus reduce the negative age-specific migration rates underlying the population projections.

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