

- 1. Global population growth will end around the end of the present century**
- 2. The cause is structural population ageing**
- 3. Growth will not end evenly**
- 4. As we transit the cusp from growth to decline there will be many subnational challenges**

The main points again

Population ageing in a nutshell

⚙️ Numerical Ageing

- Absolute increase in the number of elderly – primarily caused by increased life expectancy (*but the Baby Boomers are beginning to add to the numbers*)

⚙️ Structural Ageing

- Increase in the proportion of the population that is 'old'/decrease in the proportion young – primarily caused by declining fertility rates (the increased number of elderly become an increased proportion)

⚙️ Natural Decline

- Once a population has more elderly than children it is a short step to more deaths than births (*the end of natural increase*)

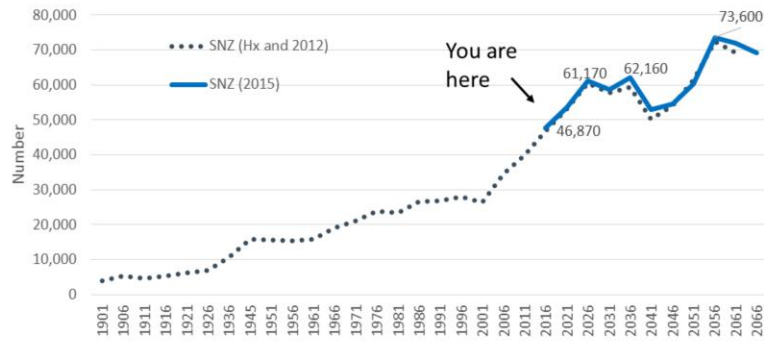
⚙️ Absolute Decline

- Once a population is declining from natural causes, migration gain will struggle to offset that loss (and migration loss will *accelerate* decline)

I have found it useful to analyse population ageing via its four main dimensions – explained on this slide. Importantly, numerical ageing (the absolute increase in the number of elderly) and structural ageing (the increased number of elderly becoming an increased proportion) are separated by time and cause, and are essentially irreversible. The increasing numbers at older ages have been heading toward old age ever since their birth. The fact that they have also been growing as a proportion of the population is due to the successively reducing birth rates of their children and grandchildren over the past half century. Seemingly still being denied by many politicians and policy makers is the fact that once a population has more elderly than children it is a short step – a decade or two - to it having more deaths than births, and to the ending of natural increase which most have simply taken for granted. With the ending of natural increase will ultimately come absolute decline – sooner in areas where net migration loss is an accompanying characteristic.

Numerical ageing is clear and present (and fabulous!)

Annual increment in numbers turning 65 years,
Observed and Projected (Total NZ)



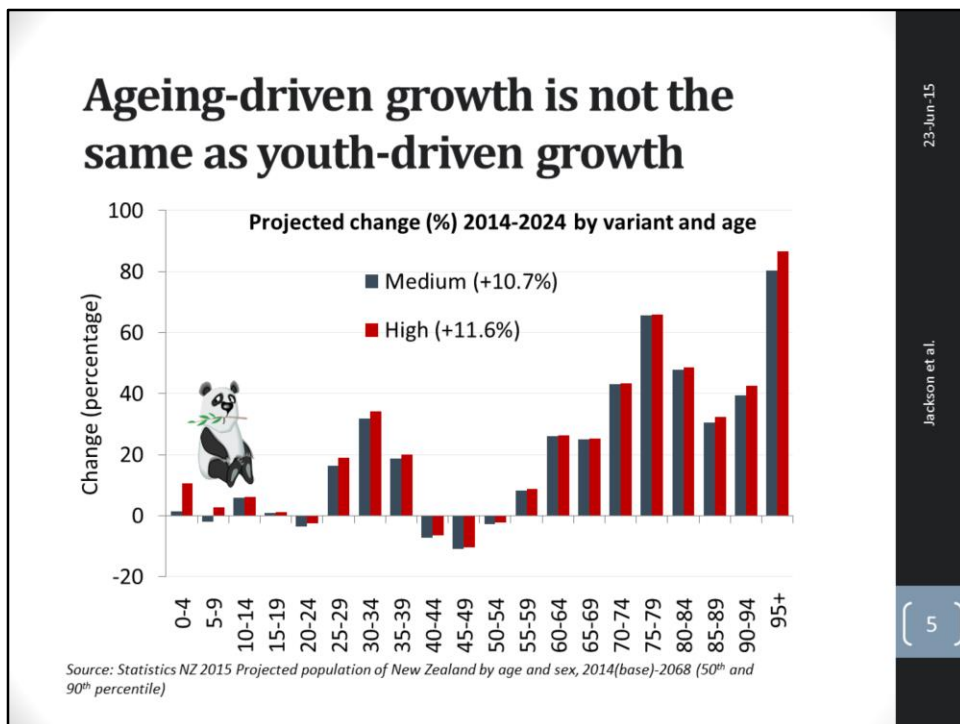
Statistics New Zealand, Estimated Resident Population and Population Projections (2012 and 2015)

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Here we see the annual increment in projected numbers aged 65+ years under the medium case assumptions. In 2014 alone, 46,870 New Zealanders turned 65 years of age. This is actually a marvellous achievement – but it will present us with some challenges as those numbers increase to over 60,000 per year across the 2020s and 2030s.



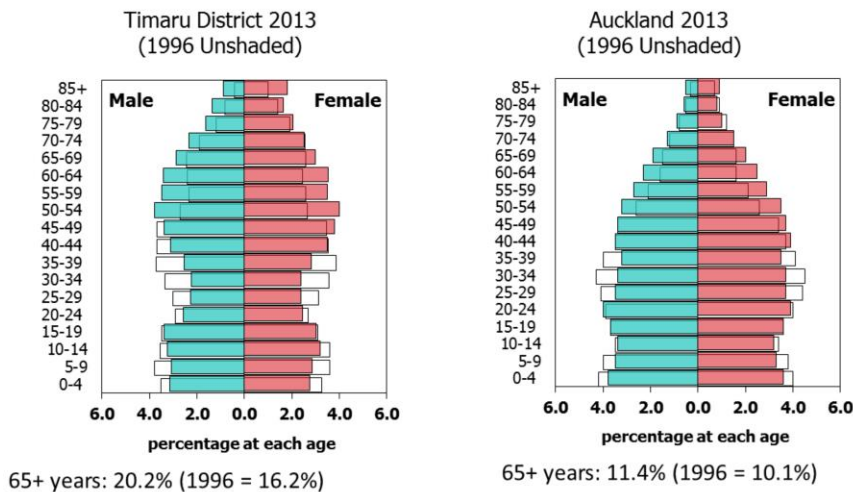
The overall message is that ageing-driven growth is not the same as the youth-driven growth of the 1940s-'60s. This slide shows projected change in numbers by five-year age group for the next ten years. The medium case projections (which include annual net international migration of 12,000 per year) differ very little to those generated under the high variant assumptions which see net migration assumptions of 33,000-34,000 per year across this period. The important point is that the high variant assumptions increase the numbers at both younger and older ages, so the ratio of young to old doesn't alter very much. Indeed it would take an enormous increase in net migration numbers to reduce the future proportion aged 65+ years by more than one or two percentage points. In 2024 the percentage aged 65+ years is identical under both the medium and high projection assumptions (around 18.5 per cent), regardless of the much higher migration numbers under the high assumptions. If we look out to 2063, the medium case projections indicate 27 per cent aged 65+ years, compared to 30 per cent under the high projection assumptions.

Ageing-driven growth also means that young people become an increasingly endangered species. It is crucially important to realise that even with increased migration, the younger cohorts are not going to grow appreciably by comparison with the older cohorts, so encouraging them to choose New Zealand as their future home is critical to New Zealand's future – as the following maps will show.

Structural ageing differs greatly across the country

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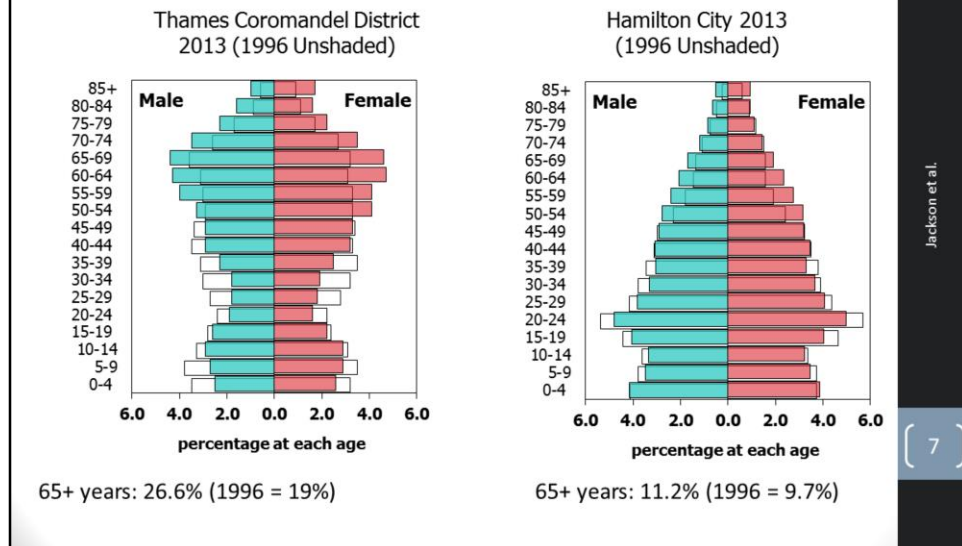


Recall that structural ageing refers to the changing proportions at each age, not just to the numbers at older ages. Here we see how structural ageing differs across the country – for example, the very youthful Auckland on the right compared with Timaru District on the left. As noted previously, the shaded bars show the age structure for 2013; the unshaded bars, for 1996. As elsewhere, the population of Auckland has aged, but very slowly, due primarily to its disproportionately high net migration intake of youthful migrants, especially students and young and middle-aged business people.

With 20.2% aged 65+ years in 2013, Timaru District is 9th oldest of the 67 TAs on this indicator. Passing 20% aged 65+ years is in a way a ‘watershed’ moment for such TAs as it brings them into the ‘hyper-ageing’ group, where the number of elderly are either greater than or close to being greater than the number of children, and the end of natural increase is close. Timaru still has natural increase, but it has experienced natural decline on three or four occasions over the past decade, and is projected to enter permanent natural decline from around 2023.

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Structural ageing differs within regions



Structural ageing also differs within regions – here we see the age structures of the Thames Coromandel District and Hamilton City populations, respectively oldest and 5th youngest of New Zealand’s 67 TAs in terms of percentage aged 65+ years.

(Youngest is Wellington City, followed by Porirua, Selwyn, and Queenstown-Lakes district)

Increasingly, hyper-ageing age structures will bring about the end of natural growth



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Old form of decline

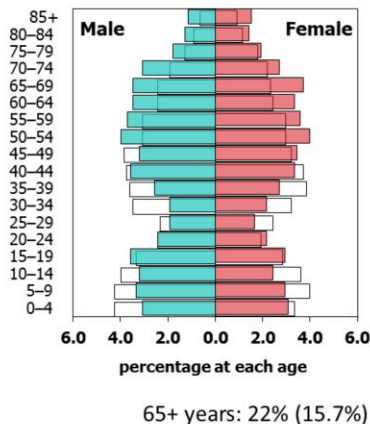
Net migration loss
– mainly of
reproductive age
people >> hollows out
the age structure



New form of decline

Net migration loss +
natural decline
– the loss of
reproductive potential
becomes self-
reinforcing

Waimate 2013
(1996 Unshaded)



Once a population has more elderly than children – as indicated earlier, usually when it reaches around 20% aged 65+ years – its potential to replace itself from natural causes (ie births minus deaths) rapidly diminishes. Here the argument is illustrated for the South Island’s Waimate District, which in 2013 had 22% of its usually resident population aged 65+ years, up from 15.7% in 1996, and is now regularly experiencing natural decline (but is not yet permanently at that stage, and projections indicate may well stave it off until around 203)

The shaded bars on the graph show the age-sex structure in 2013; the unshaded bars, 1996. It can be readily seen how the age structure has aged – although it must be noted that this rate of ageing is very similar in a large proportion of New Zealand’s TAs; most show similar loss at the youngest and middle age groups, and gain at older ages.

In Waimate’s case (as in many similar TAs), successive years of net migration loss at young adult ages has hollowed out the age structure across the all important reproductive age groups, resulting in fewer children being born into the population. Increasing longevity, ‘ageing in place’, and some in-migration at older ages has added to the numbers at older ages, where needless to say, births are uncommon.

When the trends are considered together it can be seen how the situation is coming to differ fundamentally from even the recent past. In the past, young people also left (the ‘old’ form of population decline), but the age structure was usually young enough to replace those who left, from natural increase. As populations age and reach the point of natural decline (more deaths than births), we will see a new form of decline which will for many become self-reinforcing: net migration loss combined with natural decline.

Migration will *not* solve 'the problem'

Projected Pop. 2011-2031	Change at 65+ Years	Change - all other age groups combined
MDCs (58*) (<5%)	49% (+98 million)	-4% (-41million)
Auckland (33%)	112%	23%
The Rest (NZ) (11%)	88%	-1.5%

*US Census Bureau International Database; Statistics NZ 2012 Projected subnational population of New Zealand by age and sex, 2006(base)-2031 [2012 Update]

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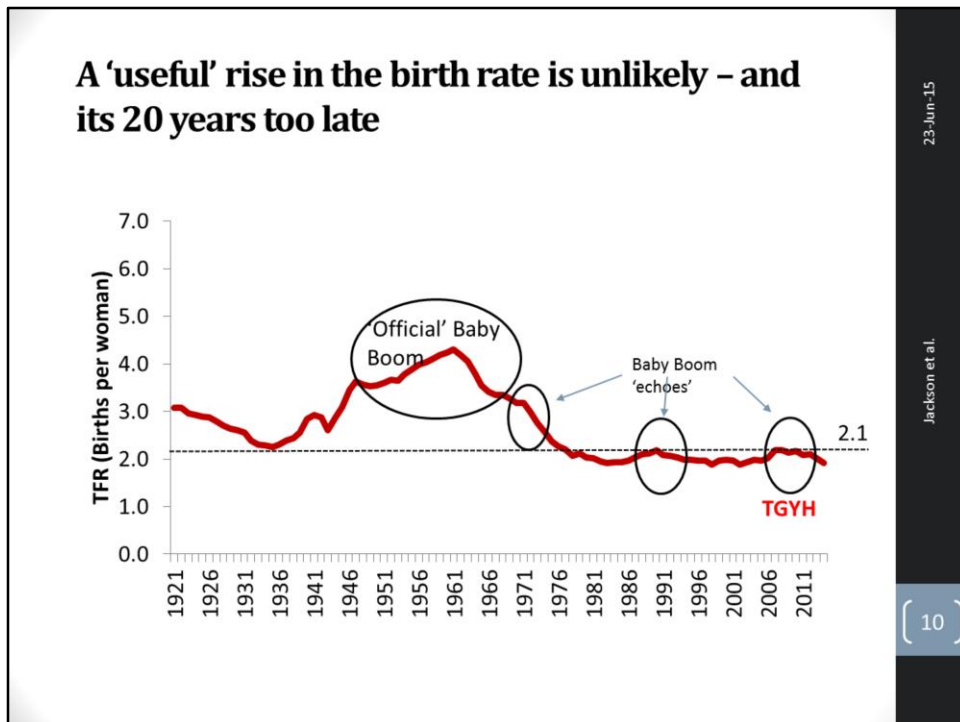
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The fact that migration will not solve 'the problem' (of ageing-driven population decline) – and I hasten to add it need not be a problem if the issue is engaged with early enough – is a long story, but overall it is that the numbers required are simply enormous, and there will be increasing competition for them – especially skilled migrants. Migrants also grow old, and over the longer term add to the numbers of elderly (35% of New Zealand's current 65+ population are migrants). The data in the slide show that across the 58 More Developed Countries (MDCs), overall growth between 2011 and 2031 is projected to be less than 5 per cent. At 65+ years, numbers increase by around half, adding around 98 million to the current 200 million. At all other age groups combined, 0-64 years, numbers are projected to decline by some 41 million. It is this top right hand cell in which New Zealand and all other ageing countries compete for most of their skilled migrants, so competition is certainly going to increase.

It should also be noted that while these are of course projections, and some people view projections with much caution, only people aged less than 16 years are not yet born – they have been added in at the current average birth rate. The MDC future will thus look very much like this.

The picture is very different for Auckland, where numbers aged 65+ years will more than double, but all other age groups are projected to grow by around 23%. For the rest of New Zealand the picture is very much like that for the MDCs: substantial growth at 65+ years and decline at all other ages combined.

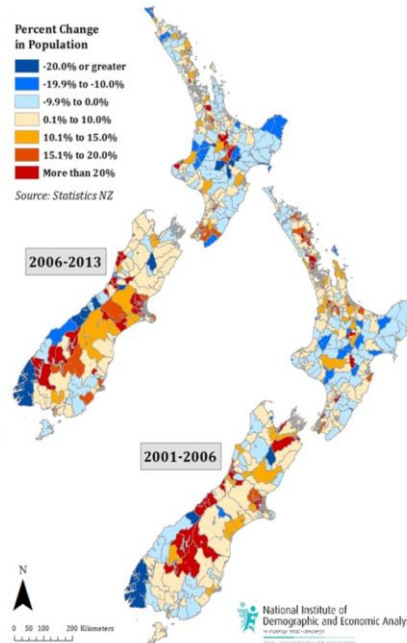
The 'problem' for rural TAs is that gain in one will increasingly be at the expense of loss in another.



A useful rise in the birth rate is also unlikely. To illustrate – here is the TFR (total fertility rate) for NZ going back to 1921. As elsewhere in the developed world, New Zealand experienced ultra-low fertility during the Great Depression (1930s) and then had a baby boom (officially between 1946 and 1965). The fertility rate peaked in 1962 – then, with the arrival of the pill, plummeted and has remained low ever since. A few points are noteworthy. First, while the baby boom was experienced across all developed countries, it was really only profound in four: NZ, Australia, the USA and Canada. In these countries it reached higher peaks and lasted longer than in all other countries – and we are seeing the result today with the true boom countries not being as 'old' as the others (because the baby boom made the population younger, and having a higher and longer boom kept it younger for longer). Second, the baby boom was measured in terms of birth rates per woman (ie as we see here), while actual cohort size – the number of babies actually born in each year – rose steadily throughout both the boom and the so-called 'baby bust' years (mid '60s to mid'70s). This seeming anomaly occurred because while the birth rate per woman had fallen, there were more women arriving at reproductive age to *have* those babies (the first of the baby boom babies starting having their own children in the 1970s). The combined effect of birth rate per woman and number of women at reproductive age has generated three main 'echoes' of the baby boom, the most recent of which was between 2002 and 2008, when New Zealand's birth rate also rose slightly due to people who had delayed their childbearing until their late 30s, 'catching up'. I (and two Australian colleagues) have named this mini boom (or 'baby blip') 'Generation TGYH – Thank God You're Here') because it will arrive at the labour market in the 2020s, exactly as the largest baby boomer cohorts begin to retire – a story which I will shortly outline in maps.

New Zealand's population growth has never been shared evenly

- North Island: 2006-13, 32% **Census Area Units (CAUs)** declined
 - (2001-06 = 25%)
- South Island: 2006-13, 36% CAUs declined
 - (2001-06 = 27%)
- Auckland accounted for 52% of growth 1996-2013 (47% 2006-2013)
- 1996-2013: Auckland plus 5 TAs (4 = cities) accounted for 75% of growth; Auckland plus 12 TAs accounted for 90% of growth
- Remaining growth spread very thinly across 32 TAs while 22 (1/3) declined



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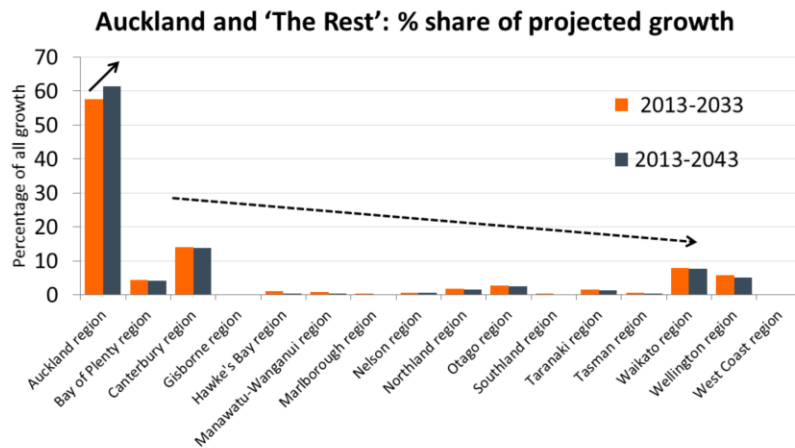
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It is important to acknowledge that New Zealand's population growth has never been shared evenly; however the disparities have become more pronounced as Auckland's share has increased. The maps on this slide show change in the 'Census usually resident population' at Census Area Unit (CAU) level – as indicated, blue indicates decline, red and other 'warm' colours show growth.

The overall picture is one of widening depopulation. Between 2006 and 2013, the usually resident populations of 32% of North Island CAU's declined, up from 25% between 2001 and 2006. For the South Island, 36% declined between 2006 and 2013, up from 27% 2001-2006. Clearly movements following the 2010/11 Christchurch earthquakes are implicated in these trends, with Christchurch City experiencing significant decline and surrounding areas such as the Selwyn and Waimakariri Districts making disproportionate gains—however it is important to note that both of these TAs had been making consistent and sizeable gains from Christchurch City prior to the earthquakes, especially Selwyn.

Estimated Resident Population (ERP) data (which updates the Census usually resident population data by adding births, subtracting deaths and adding/subtracting net migration) show that across the broader period 1996-2013, Auckland's share of overall growth was 52%, dropping slightly to 47% 2006-2013. Between 1996 and 2013, Auckland and the three other fastest growing cities (Tauranga, Hamilton and Wellington) accounted for two-thirds of all growth, while Auckland and just 12 of the total 67 territorial authority areas accounted for over 90 per cent. Twenty-two TAs (33%) declined, although it is important to note that most of the decline occurred during the 1996-2001 period, when 36 TAs declined; this reduced to 15 and 14 respectively across the periods 2001-2006 and 2006-2013.

Auckland's already disproportionate share of growth is projected to increase



Source: Author/Statistics New Zealand (2015), Subnational Population Projections: 2013(base)-2043

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This slide says it all – the future share of population growth is projected to remain disproportionately with Auckland. All other regions are projected to grow overall across the projection period (to 2043), but only fractionally in several cases, with the share of growth diminishing for all.

Behind these data are also changing fortunes as time goes on. Between 2028 and 2033 the West Coast and Southland Regions are projected to decline, thereby resuming decline experienced in the past few decades. The Gisborne, Hawke's Bay, Manawatu and Marlborough Regions are projected to enter absolute decline in the early 2030s, and the Tasman Region around 2038.

Total population change will be underpinned by massive age-structural transitions which will affect every aspect of service and infrastructure provision

It is critically important now to shift from past preoccupations with size and growth rates, to age, ethnic and social composition



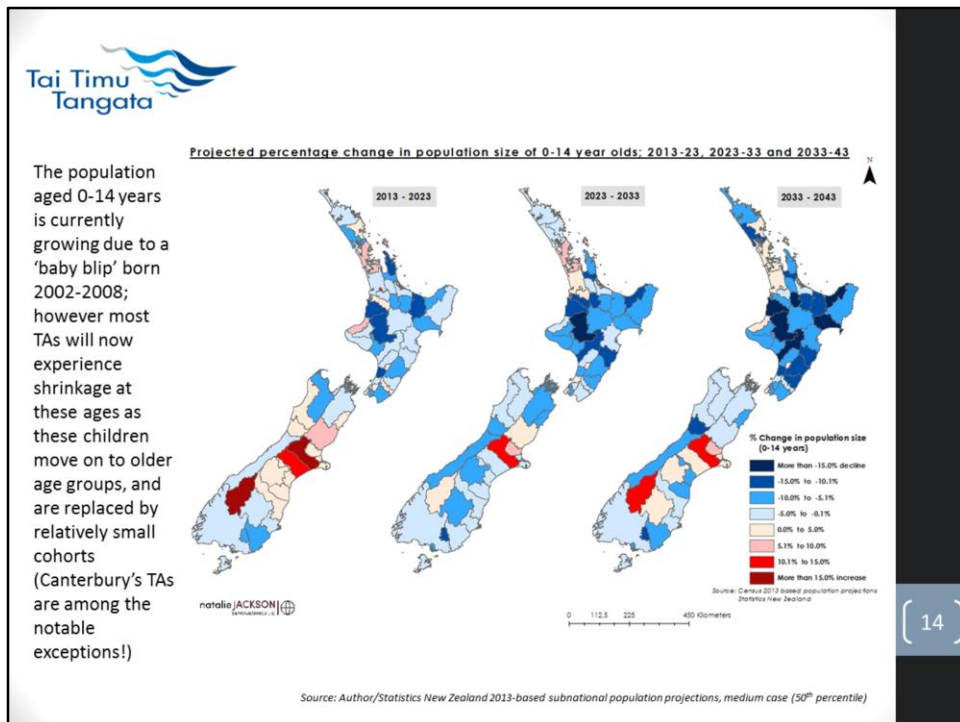
CaDDANZ
Capturing the Diversity Dividend
of Aotearoa/New Zealand

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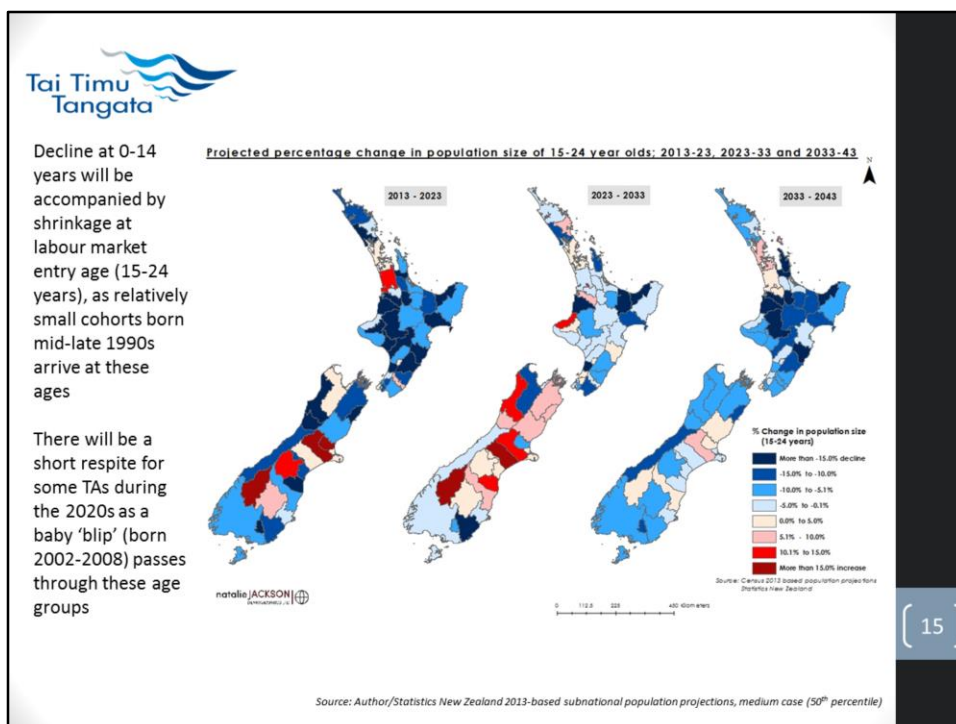
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The following set of maps will illustrate how overall population change will now be driven by ‘age structural transitions’, where cohort size – past, present and future - will wax and wane and generate a number of challenges, not least for the provision of services and infrastructure. For example, the ‘baby blip’ of 2002-2008 has already seen numbers at pre-school and primary school grow, then decline. These children are now aged 7-13 years and will successively arrive at high school, then tertiary education and labour market entry age, leaving a trough in their wake. One minute there will be a struggle to provide facilities for this cohort; the next it will have moved on. At older ages, the classic ‘65+ year’ population is projected to grow enormously – but it will also be subject to waves as larger cohorts replace smaller ones, and vice-versa. It cannot be sufficiently stressed how important it is to move from past preoccupations with the size and growth rate of populations, to their composition, both age/sex composition, and ethnic/social composition. Here I focus on change by age only. I will be looking at this issue alongside a team of researchers from Waikato and Massey Universities and Motu over the next five years – the project is called ‘Capturing the demographic diversity of Aotearoa/New Zealand’ (CaDDANZ); we will report on findings as they come to hand.



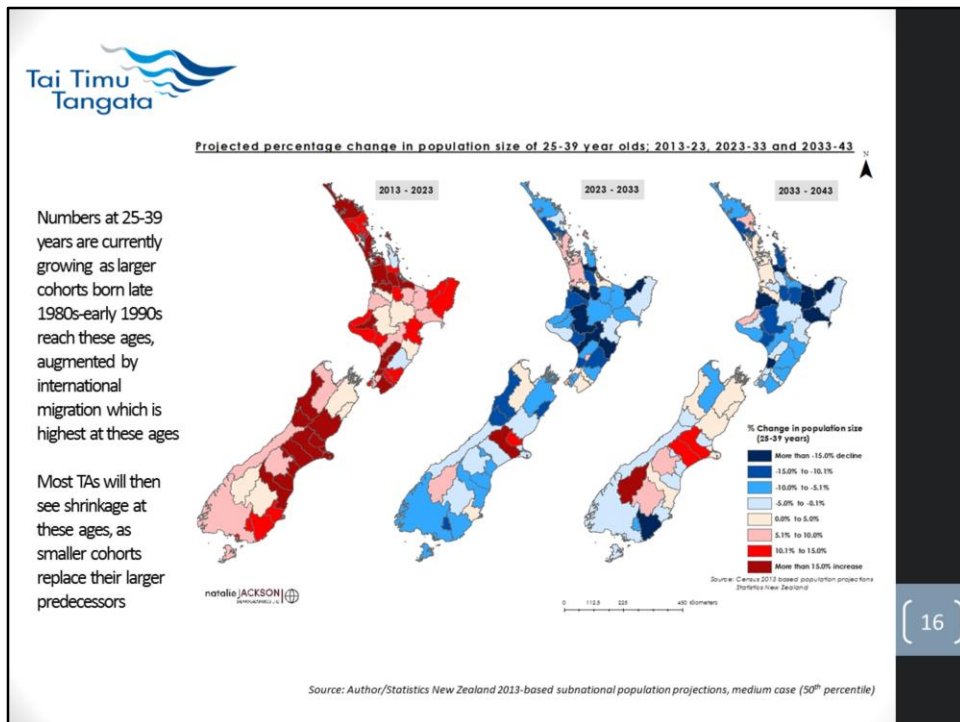
For the majority of TAs, projected change at 0-14 years is negative and this situation is expected to expand across the projection period 2013-2043, despite overall numbers being projected to increase by around 38,000. Decline at these ages is notable from the outset, because while there was a minor increase in New Zealand's birth rate between 2002 and 2008, it has since declined to its lowest ever levels (1.92 births per woman), and birth numbers are falling. (The increase coincided with – and was in fact partly driven by – the arrival of a particularly large cohort of people at the main reproductive ages (25-44 years) – these are the children of the baby boomers. In 2008 the number of births was almost the same as at the peak of the baby boom in 1961 – and can be largely understood as a second 'echo' of the baby boom; ie., the first echo was when the children of the boomers were born; the second echo is the grandchildren of the boomers).

The recent 'boomer-grandchild baby blip' is now (in 2015) aged 7-13 years. As these children pass out of this age group and into the next, the 0-14 year population will decline in a large proportion of territorial authority areas, and will do so in a wave-like manner which will also affect future age groups. In 2023, 45 TAs (67%) are projected to have fewer children aged 0-14 years than in 2013 (blue shaded areas), while in 2033, 55 (82%) are projected to have fewer than in 2023. Between 2033 and 2043, there is likely to be a slight easing of the trend, when just 51 TAs (76%) are projected to see decline at these ages. Overall, 52 TAs (78 per cent) are projected to have fewer children aged 0-14 years in 2043 than in 2013. Notably, a number of Canterbury's TAs are among the few exceptions to the rule.

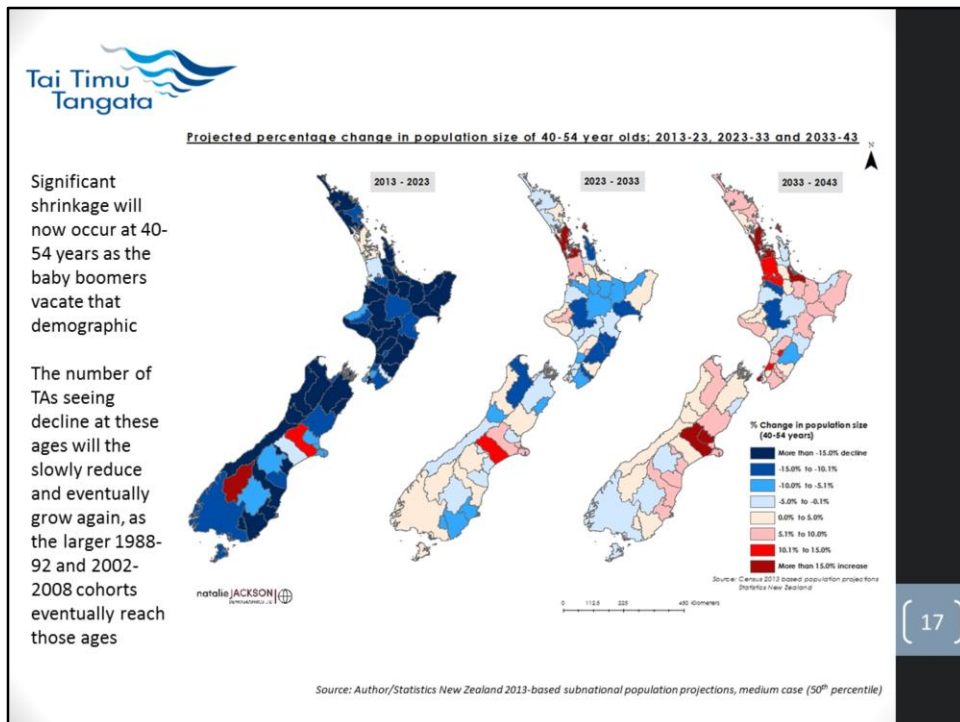


Decline at 0-14 years will be accompanied by decline at labour market entry age (15-24 years). Currently, the population aged 15-24 years is declining at national level, as smaller cohorts born during the mid- to late 1990s arrive at those ages. In 2023, 50 TAs (75%) are projected to have smaller 15-24 year old populations than in 2013. There will be a short respite to this situation between 2023 and 2033, as the recently born baby blip arrives at labour market entry age. Their arrival will see a short term and geographically patchy reduction in the number of TAs with declining 15-24 year old populations (41 TAs or 61% projected to decline). However the decline is projected to resume between 2033 and 2043 and become geographically widespread, as the trough which will follow the baby blip reaches labour market entry age itself (56 TAs, 84% projected to see decline at these ages). Overall, in 2043, 51 TAs (76%) are projected to have smaller 15-24 year old populations than in 2013.

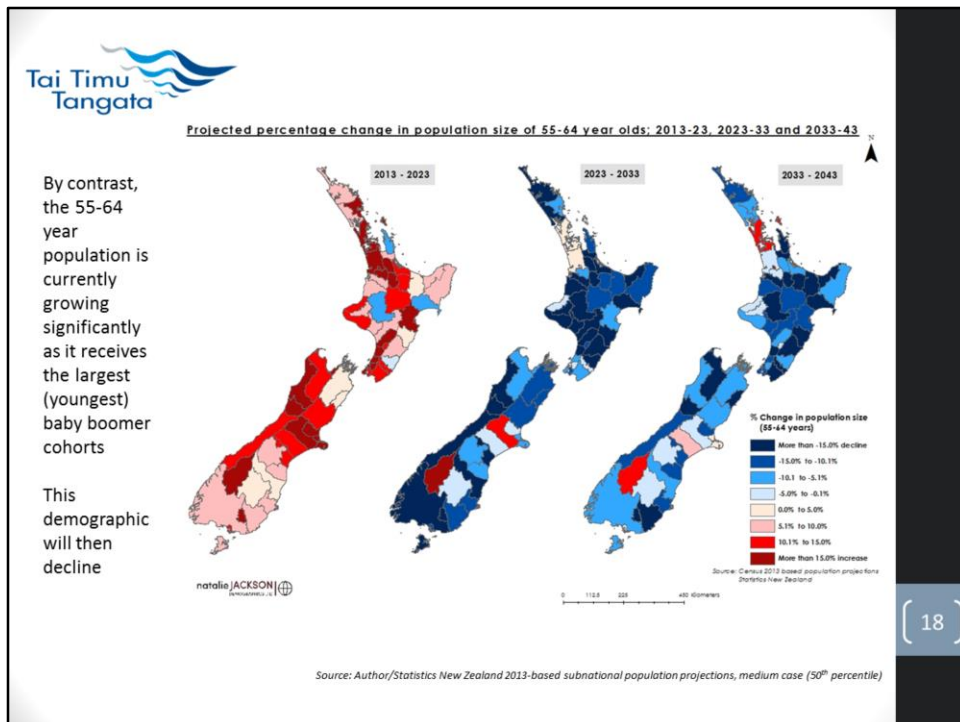
These waves or demographic oscillations (sometimes called 'age structural transitions') mean that the 15-24 year population will wax and wane at the same time as those leaving the labour market increase, due to baby boomer retirement (or reduction in hours worked). Together the trends will see a demographically-tight labour market that will remain so for several decades. Regions and TAs with growth projected at these ages should not become complacent – competition for internal labour supply will almost certainly increase (I discuss this point again later).



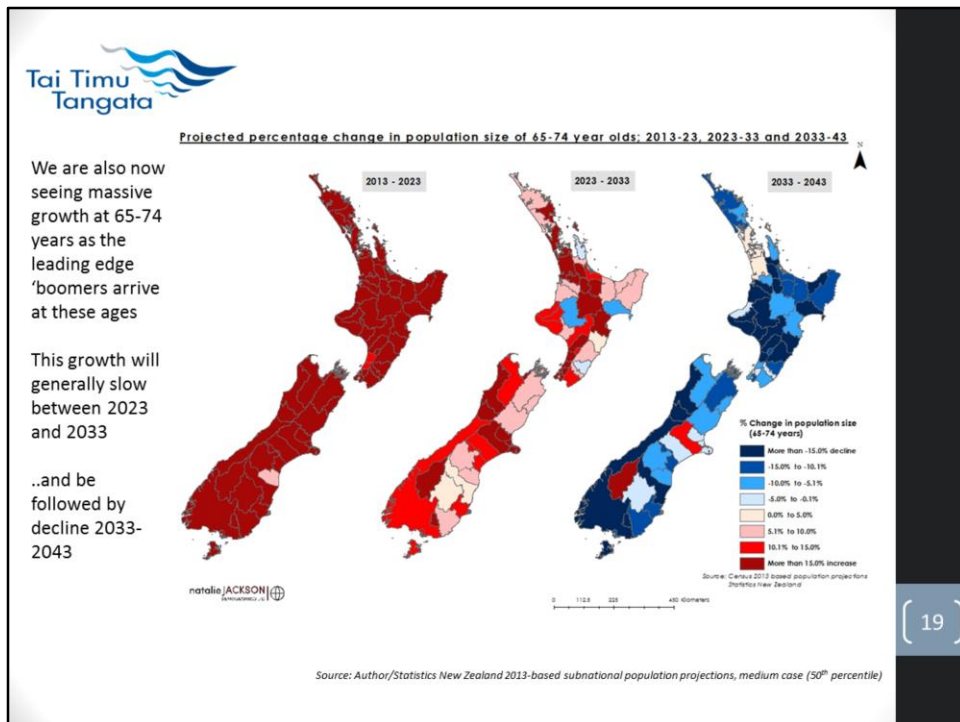
By contrast with the younger age groups, the 25-39 year population is initially projected to grow in most TAs over the next decade (depicted by red-shaded areas), primarily because a large cohort born around 1988-1992 and currently in its mid- to late twenties will be at these ages, but also in part because these age groups are those most positively affected by international migration. Between 2013 and 2023 only 3 TAs (4.5%) are projected to see decline at 25-39 years. Between 2023 and 2033 that number is projected to escalate to 50 TAs (75%), while between 2033 and 2043 the number will reduce slightly to around 46 TAs (69%). Overall, 2043 is likely to see around 30 TAs (45%) with fewer people aged 25-39 years than in 2013, while numbers at these ages are projected to grow overall by around 212,000.



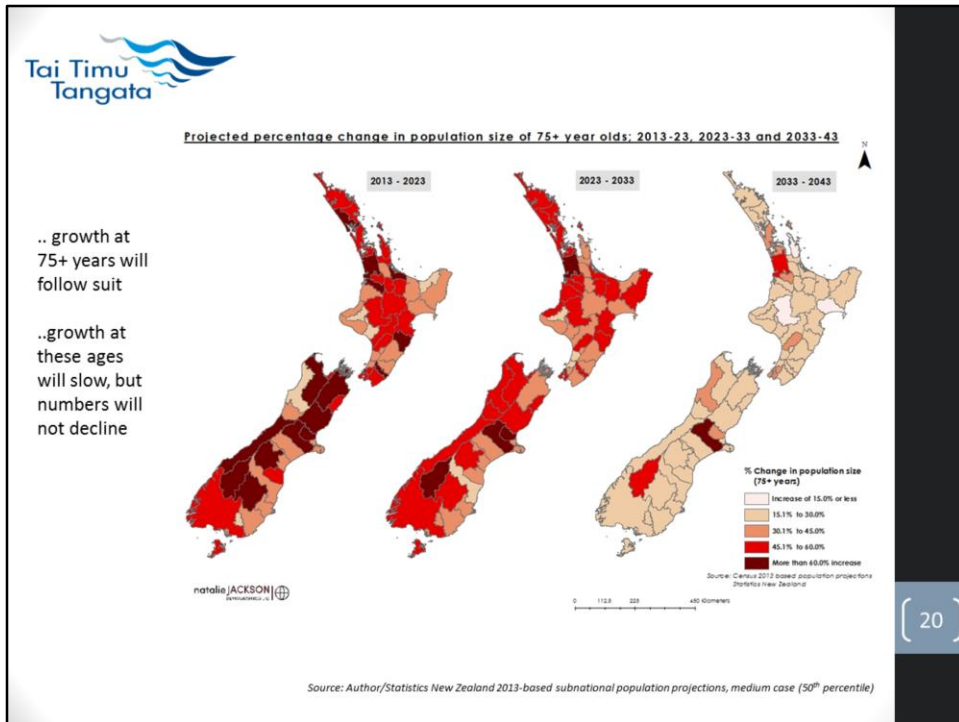
In complete contrast to the changes projected at 25-39 years of age for the next decade, very few TAs can expect to see growth at 40-54 years—while nationally numbers will decline by around 61,000. This is because the largest baby boomer cohorts, currently aged 50-54 years, are in the process of vacating this demographic and moving into the 55-59 year age group. They are also followed by somewhat smaller cohorts, so the initial decline will be pronounced. Between 2013 and 2023, 64 TAs (93%) can expect to see decline in this broad age group. Between 2023 and 2033 the decline will lessen to around 41 TAs (61%)—and be accompanied by growth of around 82,000 persons aged 40-54 years nationally, while between 2033 and 2043, decline at these ages is expected to affect just 18 TAs (27%). By then the relatively large cohorts born 1988-1992 will be at those ages, and, along with assumed international migration gains over the period, will see around 138,000 more persons at these ages than in 2013.



The pattern of growth and decline as cohorts move on to each successively older age group will now be clear. Because the baby boom (as it is officially recognized, occurring between 1946 and 1965) spanned two decades, trends at 55-64 years are almost a mirror image of those at 40-54 years. Initially there is significant growth as the largest (youngest) boomer cohort move into the 55-64 age group, but this is followed by decline as they then move on to older ages - between 2013 and 2023 all but 4 TAs see growth at 55-64 years. However between 2023 and 2033, 60 TAs (90%) experience decline, increasing slightly to 62 TAs (93%) between 2033 and 2043. Overall, in 2043, 52 TAs (78%) are projected to have fewer people aged 50-64 years than in 2013.



The impact of population ageing and its accompanying age-structural transitions become very clear from 65 years of age. The immediate period (2013-2023) will see massive growth at 65-74 years as the oldest / leading edge baby boomers move into and through this broad age group. Between 2013 and 2023, all TAs will experience growth in this demographic—in only two is that growth likely to be less than 10%. The period 2023-2033 will see further growth at these ages in all but 4 TAs, while the period 2033-2043 will see an abrupt shift to the onset of decline at these ages in 60 TAs (90%) as the boomers move on to the oldest ages. However—importantly not visible from these maps—is that by the end of the projection period all but 6 TAs will still have more people aged 65-74 years than in 2013. That is, these numbers will be diminishing, but they will still be high relative to 2013, because of sustained but slowing growth across the earlier period 2023-2033.



The picture of sustained—albeit slowing—growth is very clear at 75+ years. No TA is projected to experience a reduction in numbers at 75+ years across any of the three periods. Between 2033 and 2043 there is somewhat reduced growth in a minority of TAs, but in 2043 there are only two TAs where numbers are not projected to have at least doubled over their 2013 base: Kawerau and Stratford. Nationally, numbers at 75+ years are projected to have trebled.

Summary - only 17 TAs will not have *all* growth to 2033 at 65+ years

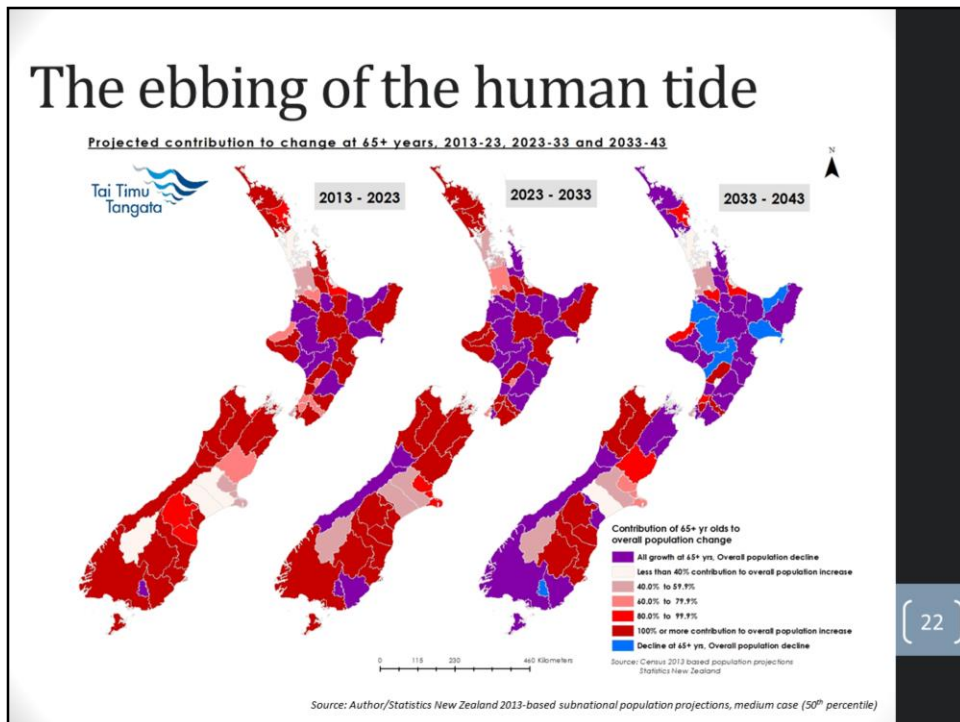
% growth 2013-2033 at 65+ years	Territorial Authority Area (SNZ 2015 Revision)
94-99 %	Kapiti Coast; Whangarei; Carterton
80-88 %	New Plymouth; Waipa; Hurunui
61-69 %	Wellington; Waimakariri ; Christchurch ; Palmerston North
55 %	Waikato
46-48%	Ashburton ; Tauranga
35-37 %	Auckland ; Selwyn ; Hamilton; Queenstown

(21)

Source: Statistics NZ 2015 Projected sub-national population of New Zealand by age and sex, 2013(base)-2043
NB. 11/16 Regions (69%) all growth at 65+ years

In sum, most TAs will see the majority of their future population growth at 65+ years. This slide shows the 17 TAs which will NOT have all their growth 2013-2033 at 65+ years. Even then, six of the 17 have over 80% of their growth at 65+ years. Notably five of the 17 TAs are located in the Canterbury Region, which says much about this Region's anomalous situation compared with much of the rest of New Zealand.

The following slide breaks the trend up into the three periods illustrated by the foregoing maps, and into the various combined causes of growth and decline.



This slide provides a synthesis of the trends - an overview of the causes of growth and decline at TA level which incorporates the impact of changes by age. The slide provides the first overview of the ebbing of the human tide, coming from our Royal Society Marsden project 'The subnational mechanisms of the ending of population growth – towards a theory of depopulation' (*Tai timu tangata. Taihoa e?* The ebbing of the human tide – what will it mean for the people?).

Start with the cream- and pink-shaded areas. These are the most strongly growing areas, where there will be growth at ages other than at 65 years of age—in other words, growth at 65+ years accounts for less than 100% of growth. Between 2013 and 2023, 2023-2033 and 2033-43 respectively this situation pertains to 23, 11, and 17 TAs.

The red shaded areas also depict continuing growth (or in a few cases, zero growth but not decline), but all growth is above 65 years of age. Between 2013 and 2023, 2023-2033 and 2033-43 respectively this situation pertains to 32, 33, and 11 TAs.

These areas increasingly give way to the purple areas which represent overall population decline. In these areas there is also significant growth at 65+ years, but it is insufficient to offset decline at all or most other ages. Between 2013 and 2023, 2023-2033 and 2033-43 respectively this situation pertains to 12, 23, and 31 TAs.

Blue areas also represent overall decline, but in those (few) cases there is also decline at 65+ years. This situation does not affect any TAs until 2033-43 when it abruptly pertains to 8 TAs.

Typology of Growth/Decline		
	2013-18	2038-43
1. Growth from both Natural Increase and Net Migration Gain	39	12
2. Growth - Natural Increase more than offsets Net Migration Loss	14	3
3. Growth - Net Migration Gain more than offsets Natural Decline	3	8
4. Decline - Net Migration Gain insufficient to offset Natural Decline	0	15
5. Decline - Natural Increase insufficient to offset Net Migration Loss	11	14
6. Decline from both Net Migration Loss and Natural Decline	0	15

Author/Statistics NZ Births, Deaths, ERP, Projected components of change

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From these data we have begun to develop a typology of growth and decline. Using projected 'components of change' (natural increase and net migration) we find three types of growing areas and three types of declining areas.

1. Between 2013 and 2018, 39 TAs are projected to experience growth from both natural increase and net migration. By 2038-43 this situation is projected to pertain to just 12 TAs.
2. Growth where natural increase is projected to more than offset underlying zero or net migration loss 2013-18 will pertain to around 14 TAs. By 2038-43 this situation is projected to be the case for just 3 TAs.
3. Growth where net migration gain is projected to more than offset zero natural increase or natural decline 2013-18 will pertain to just 3 TAs, as the latter situation is only just emerging. By 2038-43 it will pertain to around 8 TAs.
4. Declining areas, where net migration will be positive but insufficient to offset natural decline is not observed 2013-18, again because so few areas yet have natural decline. By 2038-43 it will pertain to around 15 TAs.
5. Decline where natural increase is positive but insufficient to offset net migration loss is projected to occur 2013-18 for around 11 TAs. By 2038-43 it will pertain to around 14 TAs.
6. Decline from both net migration loss and natural decline is not observed 2013-18 but will be the case for around 15 TAs 2038-43.

How are these issues being approached in structurally older countries?

A plethora of approaches and interventions to extend growth/ensure labour supply are being tried

McMillan, Rachael (2015 forthcoming). Anticipating depopulation – strategic interventions to population decline. Masters thesis, University of Waikato.

[24]

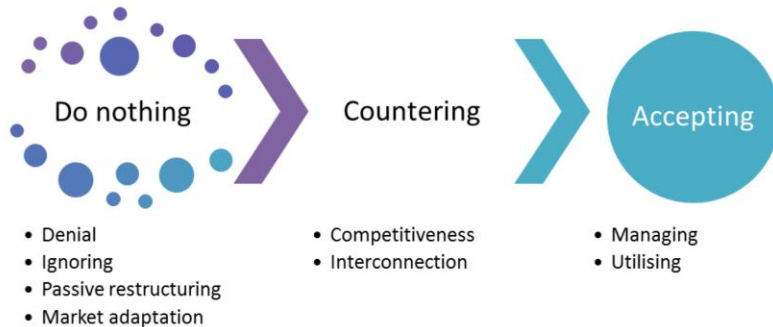
Since New Zealand has a relatively young age structure by comparison with most of its OECD counterparts, we might look to them to see how similar issues are being approached. We have a Masters student – Rachael McMillan - looking at overseas approaches and interventions to try to extend the period of population growth and to ensure labour supply. This work will be submitted in August and short articles from it will be prepared and circulated.

- *“Towns are like businesses – they need to keep reinventing themselves in the global marketplace to remain competitive. However, the market has not been able to find the solution to demographic decline. There is a symbiotic relationship between the regions and the cities that is important for national competitiveness that cannot be ignored. Regional policy trends are shifting away from single sectors to cooperative, multi-actor approaches that deal with place-based issues.”*
- McMillan (2015 forthcoming)

[25]

Recurring points Rachael has found are that towns (and by implication, their TAs) are like businesses and need to reinvent themselves as their original (eg., industrial) functions change; and that the market is not able to resolve either the demographic forces associated with changing industrial demand, or the demographic forces of population ageing *per se*. Policy interventions seem to hold most promise when they move from single sector approaches (like focusing on employment issues, and/or large industries or employers) to cross-institutional, cooperative, multi-sector approaches that focus on the locality – and particularly involve making ‘place’ as attractive as possible. If people are in short supply and increasing demand, they will go (or be attracted to stay in) places that afford them the lifestyle they desire.

Summary of policy positions



McMillan, R (2015 forthcoming)

[26]

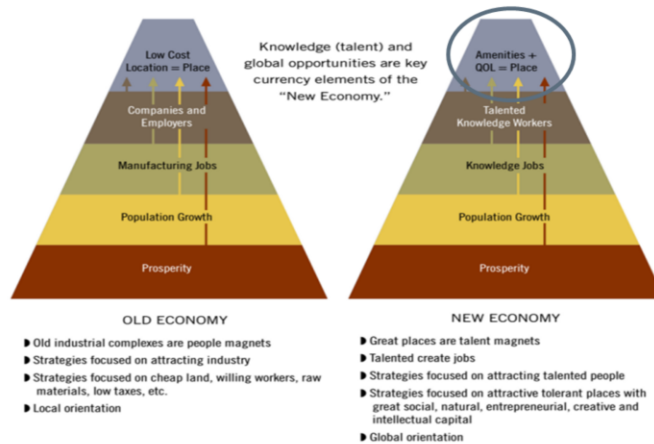
I've drawn this slide directly from Rachael's work. Essentially she finds that policy interventions can be divided into three groups: countries/regions that are doing nothing, or are developing countering strategies, or accepting strategies. By and large, regions where population decline is most pronounced are those which are based on the 'old' economy (see next slide).

The 'accepting' group involves first acknowledging the likelihood of sustained depopulation, and then managing the process, while continuing to utilise opportunities such as natural advantage – and continuing to look for emerging opportunities; but these countries/regions do not seek to keep population growth *per se* going. Japan and Germany fit into this category.

Most countries are at this stage developing 'countering' strategies, which on the one hand seek to maintain competitiveness in the market (typically based on 'old' economic principles), and on the other, seek to connect previously disconnected sectors, such as industry and community groups, and government at all levels. The latter approaches prioritise collaboration rather than competition, and are thus to some extent in contradiction with the former.

Not many countries or regions can be clearly identified as 'doing nothing', but experience tells me that this is in fact the case for many subnational regions - and perhaps more importantly, agencies and organisations - which refuse to accept that sustained population growth was never a given, and that decline will sooner or later be the case. Doing nothing essentially leaves the fate of towns and organisations to the market.

The old economy versus the new economy



McMillan, R (2015 forthcoming); Adelaja et al. 2009

[27]

This final slide from Rachael's work summarises the key elements of the 'old' and 'new' economies, and indicates the shift in ideology needed to sustain regions facing depopulation – and thus also the thinking of their major industries and employers.

Interventions attempt to influence the behaviour of people, or the flow of capital.

Many locations that are losing population were developed within an Old Economy model in peripheral areas.

Adelaja et al (2009) suggest that new drivers of growth have emerged challenging previous understanding of how growth and prosperity operate. The Old Economy placed great emphasis on drawing in big industries to create manufacturing jobs. The New Economy concentrates on knowledge based jobs and workers. Place-making, in terms of amenities and quality of life, is emerging as a key component of attraction to locations and retention for these knowledge workers (Adelaja, et al., 2009; Knight Foundation, 2010).

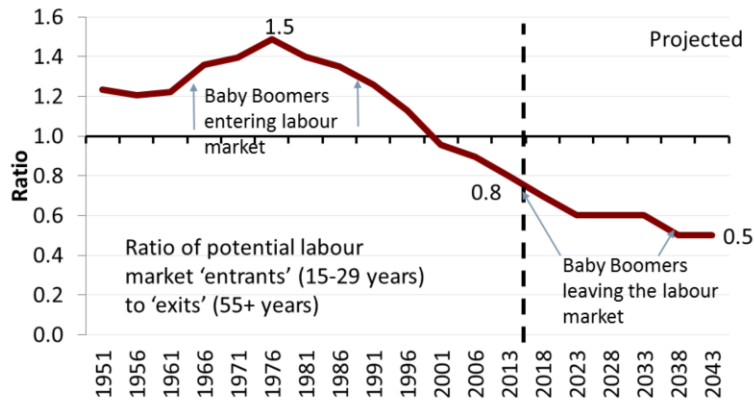
Overall the argument is that quality of life and attractiveness of place will be the key determinants of sustaining a population. This does not imply population growth, but rather, a stable population.

A few labour force implications



[28]

We have already entered a 'demographically-tight' labour market



Source: Statistics NZ various years; (2015) Projected population of New Zealand by age and sex, 2013(base)-2043

[29]

The trends mean that we have already entered a 'demographically-tight' labour market. In the late 1960s, and the '70s and '80s, when the baby boomers were entering the labour market, the ratio of potential entrants to exits (people of labour market entry age to those in the 'retirement zone') rose, peaking at 1.5 in 1976 (ie 15 entrants for every 10 at exit age). In 2014 that ratio is already well below 1 for 1, at 0.8, and it is projected to continue to decline as the baby boomers leave the labour market, falling to around 0.5 (5 entrants per 10 exits) around 2043. Note that here I am using 15-29 as the entry age, and 55+ as the 'exit' age – thus there is no avoiding the fact that most of those in the 'exit' age groups will eventually retire, irrespective of likely increases in the length of the working life.

Some useful stats

- **New Zealand's Baby Boomers are currently aged 50-69 years, number just over 1 million, and account for c.37 per cent of the employed workforce**
- **New Zealanders over 55 years account for 24 per cent of the employed workforce**
- **New Zealanders aged 50-64 years [already] have the 2nd highest employment rate of the OECD countries**
- **New Zealanders aged 65-69 years [already] have the 4th highest employment rate of the OECD countries**
- **New Zealand's employment rates post-65 years have almost doubled since 2001**
 - **65-69 years from 22 to 42%**
 - **70-74 years from 12 to 22%**
 - **75-79 years from 6 to 11%**

Source: Author/Statistics New Zealand Customised Industry and Occupation Databases

23/06/2015

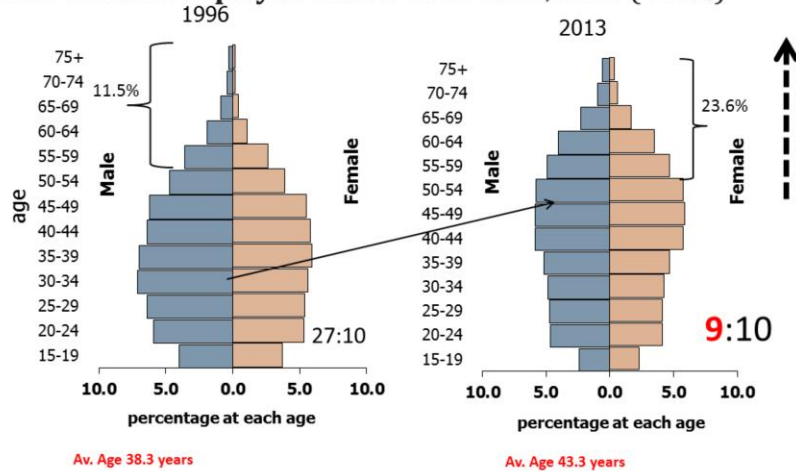
Natalie Jackson Demographics Ltd

(30)

In terms of thinking about the labour force and forthcoming baby boomer retirement/ reduction in working hours, a few stats. The main point is that the boomers currently account for over one-third of the employed labour force, and with the youngest now aged 50 years, are all in what can be considered the 'retirement zone'. Most are indeed likely to keep working for several years yet, as indicated by the increasing employment rates of their older predecessors; however once past 65 we find that other demands, such as sick or ailing spouses, or seriously ageing parents – and sometimes the need/desire to care for grandchildren – remove people from the workforce in large numbers. Although employment rates have almost doubled for all older age groups over the past decade and a half, it is unlikely that much larger proportions will work beyond age 70. With older New Zealanders already leading the charge vis-à-vis their OECD counterparts, we are likely approaching maximum participation rates.

The employed labour force already has fewer people at entry than 'exit' age

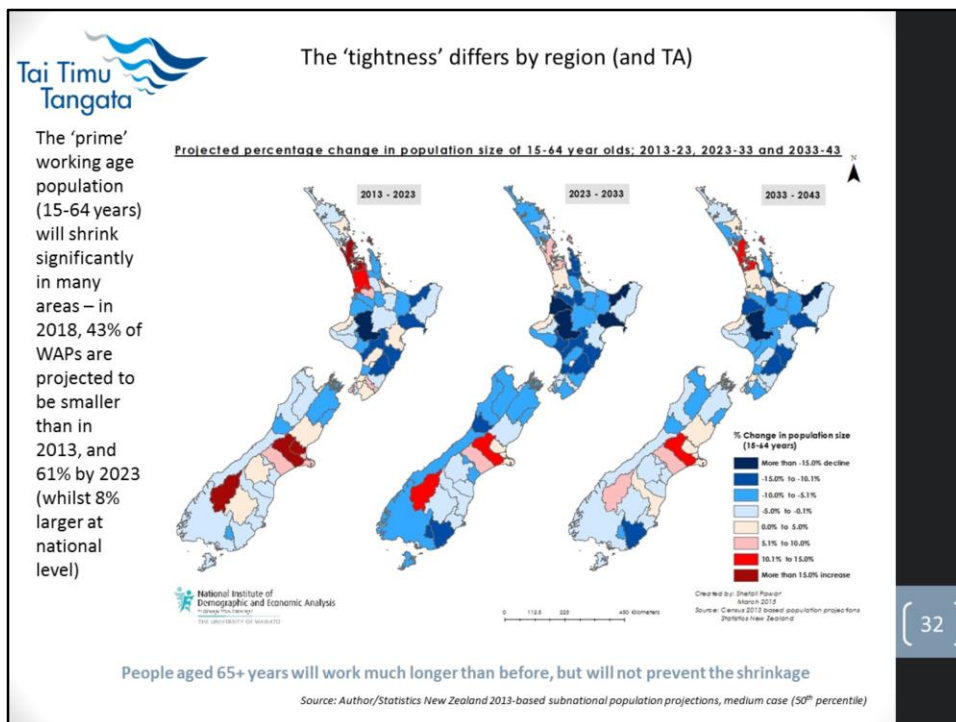
New Zealand **Employed** Labour Force 1996, 2013 (+23%)



Source: Author/Statistics New Zealand Customised Occupation Database

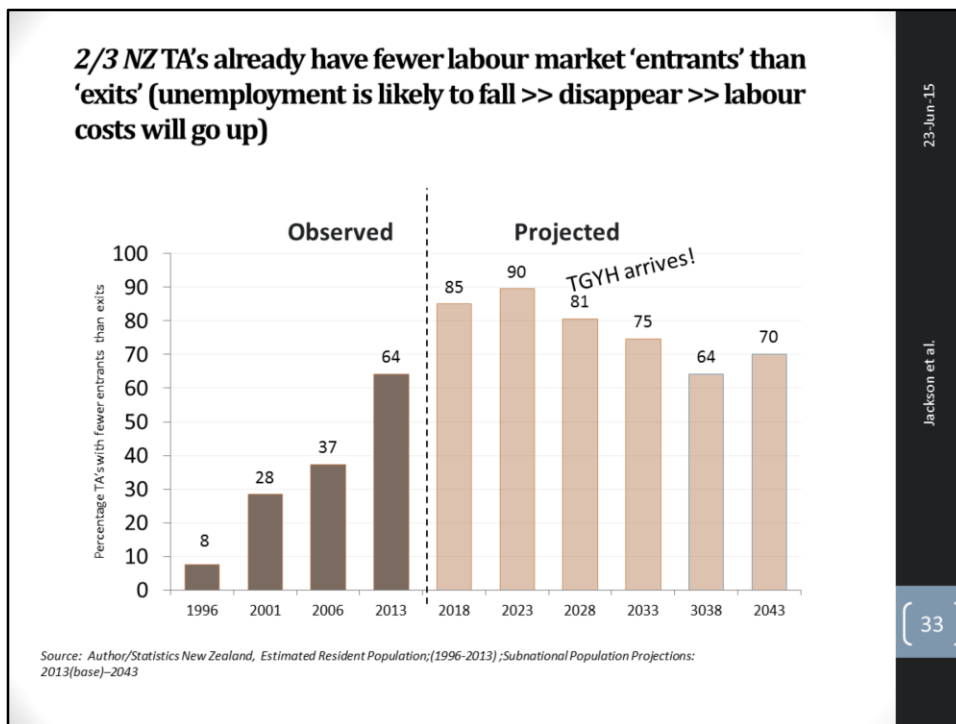
If we turn our attention to the employed labour force (as opposed to the potential labour 'market') we also find a sobering statistic – in 2013 there were just 9 people aged 15-29 years employed for every 10 at 55+ years of age. The slide shows the profound ageing of the employed workforce since 1996, when just 11.5% were aged 55+ years, and there were 27 people at labour market entry age (15-29 years) for every 10 in the retirement zone (55+ years). In 2013, 23.6% was aged 55+ years.

The line between the two graphs shows the movement of the youngest baby boomer cohorts – for example in 1996 the youngest boomers were aged 35 years; in 2013, 52 years. As these cohorts leave both the labour force and the labour market there are relatively few replacements coming behind.



Bringing these trends together for the 'prime' working age group (15-64 years), we can anticipate widespread shrinkage at TA level, while overall numbers are projected to grow (nationally). Between 2013 and 2023, the working age populations of around 41 TAs (61%) will decline in size, while overall numbers grow nationally by 8%. Between 2023 and 2033, decline encompasses 55 TAs (82%) and between 2033 and 2043, 59 TAs (88%), while overall growth in numbers continues at national level. By 2043, the working age populations of 51 TAs (76%) are projected to be smaller than in 2013, while overall numbers at these ages are projected to be 15.3 per cent greater. Growth at these ages is shared by just 16 TAs, the vast majority of it (94%) in Auckland, followed by Hamilton City, Christchurch City, Tauranga City, and Selwyn District.

Importantly, increasing the prime working age population by extending it to age 69 (and more appropriately also the main entry age to 20 years) does little to alter these trends. Between 2013 and 2023, the 20-69 year working age populations of 28 TAs (42%) would decline, increasing to 52 TAs (78%) between 2023 and 2033, and 55 TAs (82%) 2033-2043. In 2043, the working age populations of 50 TAs (75%) would be smaller than in 2013, compared with 51 TAs (76%) under the 15-64 year working age parameters.



We can see that the declining 'entry:exit' ratio is already clearly visible at TA level. Here I use the ratio of people aged 15-24 to those aged 55-64, noting that ratios are even lower (and thus proportions of TAs with fewer entrants than exits are higher) if an older age grouping is used (eg 20-29: 60-69 years).

In 1996, just 5 (8% of TAs) had fewer people at labour market entry than exit age, among them Hurunui District. In 2001 that had increased to 28%, by which time it included the Timaru, Waimate, Mackenzie and Kaikoura Districts (also Waitaki – noted in relation to this presentation). In 2006 it pertained to 37% of TAs, including Waimakariri, and in 2013 to 64%, including Ashburton.

By 2018, 85% of TAs are projected to have fewer people at labour market entry than exit age, and by 2023, 90%. Selwyn and Christchurch are projected to join these TAs between 2018 and 2023. The proportion of TAs in this situation will then reduce slightly, as generation TGYH (the baby blip born 2002-2008) arrives at labour market entry age.

- ***Many Industrial and Occupational 'entry: exit' ratios are getting seriously low***
- ***Skills shortages are increasing; labour shortages will follow***
- ***Structurally older regions have relatively low unemployment***

[34]

There is not time in this presentation to go into the seriously low entry:exit ratios already observed in a large proportion of New Zealand's industries and occupations, but the four single largest industries at 3 digit level (at which 158 industries are enumerated) in 2013 give an indication (here we are again using ratios based on 15-29: 55+ years). It should be noted that older regions in general tend to have slightly lower labour market entry: exit ratios across most industries, and younger regions, slightly higher:

#1: School Education 4:10

#2: Government Administration 6:10

#3 Hospitals and Nursing Homes 5:10

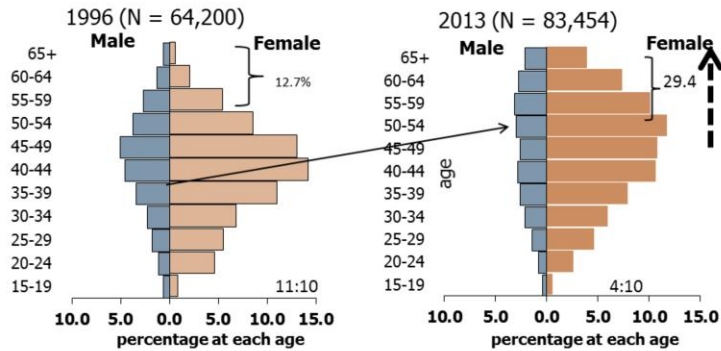
\$4: Marketing & Business management Services 9:10.

As a general guide, all industries concerned with health, community care, teaching, grain/sheep/beef farming, horticulture and transport have entry: exit ratios around 3-5 per 10. By contrast, several industries like retail, hospitality and computer services have relatively young age structures, but it goes without saying that people are not perfect substitutes for each other and most lateral movements (eg., between occupations, between industries) involve related training. As structural ageing progresses we can anticipate growing skill shortages and competition for labour, as well as decreased unemployment (already showing in the older regions) and this situation can further be expected to increase labour costs.

There will be increasing competition for professionals and skills..

NZ's single largest industry

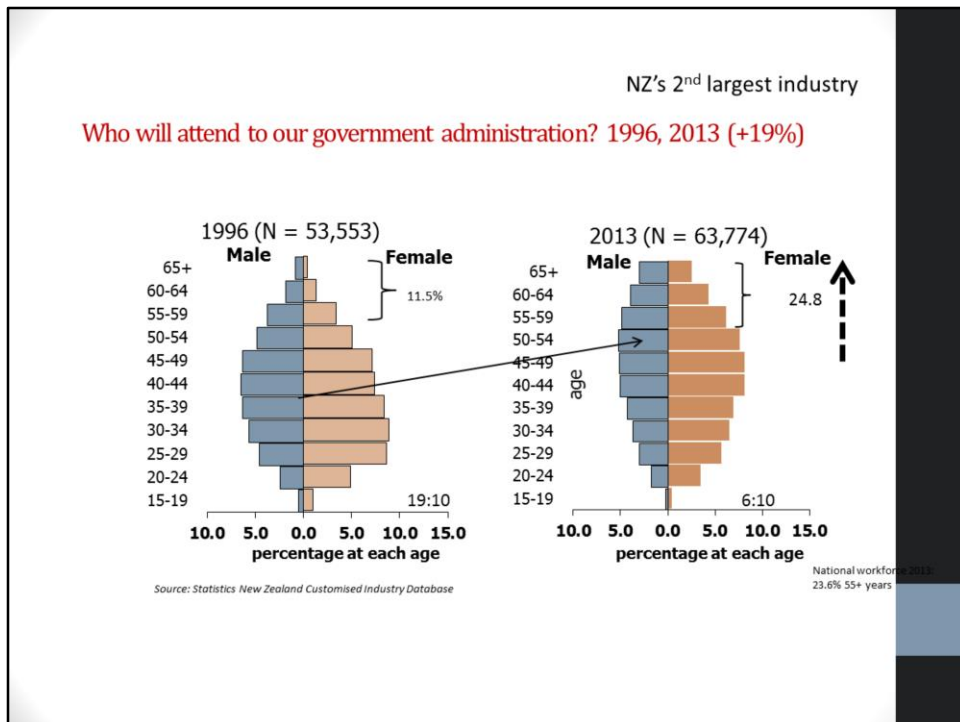
Who will teach the kids? School Teachers 1996, 2013 (+30%)



Source: Statistics New Zealand Customised Industry Database

National workforce 2013:
23.6% 55+ years

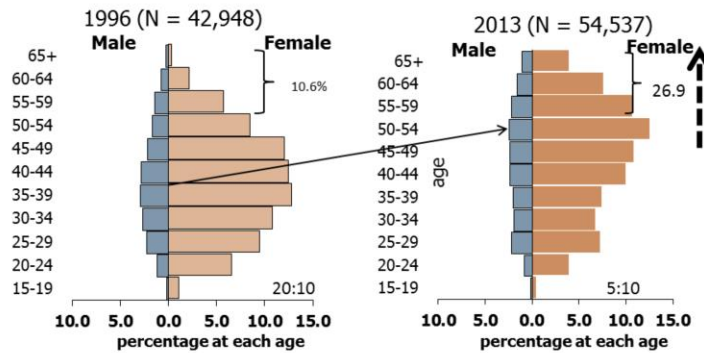
Here we see the significant ageing of New Zealand's single largest industry at 3-digit level: School Teachers. Numbers employed in this industry have grown by 30% across the period 1996-2013, while the workforce has aged significantly, the ratio of people at entry age (15-29 years) to those in the retirement zone (55+ years) falling from 11 per 10 in 1996 to just four per 10 in 2013. With 29.4% aged 55+ years in 2013, the workforce is somewhat older than the national average (23.4%).



And in New Zealand's second largest industry – Government Administration – which I believe accounts for most of IPANZ's workforce – numbers employed have grown by 19%, while the 'entry:exit' ratio has fallen from 19:10 to just 6:10. The industry is, however, only slightly older than the national average when considered in terms of % aged 55+ years, which is why viewing the age structure itself is so important. The low ratio at entry: exit age will need to be addressed, as competition for younger recruits will now increase.

NZ's 3rd largest industry

Who will mend us when we're sick? Hospitals and Nursing Homes
1996, 2013 (+27%)



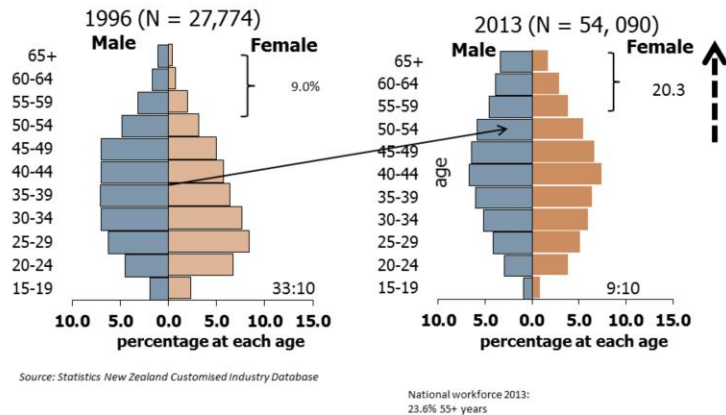
Source: Statistics New Zealand Customised Industry Database

National workforce 2013:
23.6% 55+ years

And New Zealand's third largest industry.. Again older than the national average, and with only three people in the entry ages for every ten in the retirement zone, down from 20:10 in 1996.

NZ's 4th largest industry

Who will attend to our marketing and business management interests?
1996, 2013 (+94.8%)



Just to labour the point, here's New Zealand's fourth largest industry.. In this case the % aged 55+ years is somewhat lower then the national average (20.3% compared with 24.3%), but again there are fewer people at entry than exit age.

***Technological and industrial change
will see reduced labour demand in
some industries***

- ***against increased demand in others***
- *Community Care has doubled and risen from #17 to #6 (1996-2013)*
- *Other Health Services has risen from 27th to 9th*
- *Computer Services from #53 to #15*
- *Technical Services from #29 to #20*
- *Medical and Dental from #37 to #27*
- *Over the past 17 years growth in 'sunrise' industries has more than offset decline in sunset industries, with a net increase of 370,000 jobs.*

(39)

It is important to acknowledge that there is likely to be declining demand in some industries, such as manufacturing and other industries where technology may replace workers – and or demand for the product or service reduces, however there will be greatly increased demand in others, as indicated on this slide. What we have to do is try to anticipate where the demand will increase, and more closely align that demand with supply.

New Zealand has a 'collateral demographic dividend' on offer



23-Jun-15

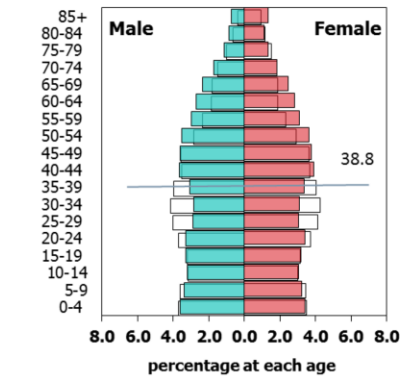
Jackson et al.

[40]

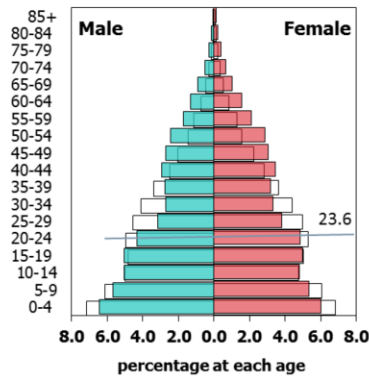
Auckland

European origin 2013 (53.4%)
(1996 Unshaded 66.2%)

Māori 2013 (10.2%)
(1996 Unshaded 11.4%)



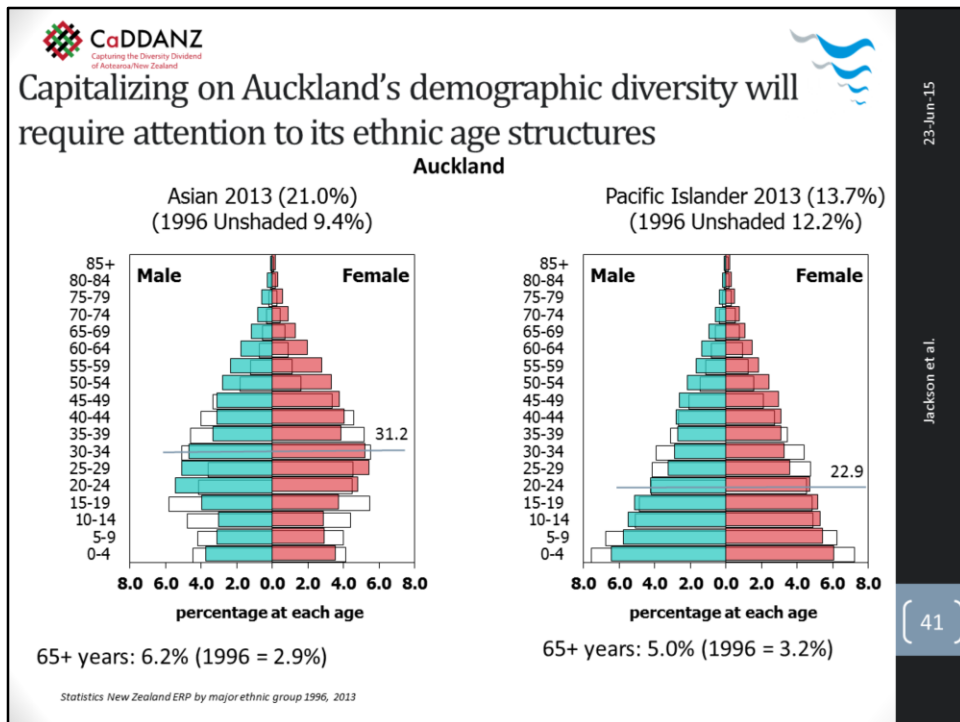
65+ years: 14.9% (1996 = 12.6%)



65+ years: 4.3% (1996 = 2.2%)

Statistics New Zealand ERP by major ethnic group 1996, 2013

A final point to be made when considering population change is to remember that underlying all the former data are significant differences by ethnicity. Here the age structures for Auckland are shown for those of European- and Māori –origin (which together account for 63.0% of Auckland's responses to the Census ethnic origin question which counts people into each ethnic group they nominate). Shaded bars pertain to 2013, and unshaded, to 1996. In both cases the age structures have 'aged', as indicated by the difference between the shaded and unshaded bars: proportions have declined at the younger ages and increased at older ages. The median age (above and below which half the population falls) in 2013 was 38.8 years for European, and 23.6 years for Māori. In other words, half of the region's Māori population in 2013 was aged less than 23.6 years, substantially below the proportion of European, while only 4.3% was aged 65+ years compared with 14.9% of European. These differences imply the need for significant attention to the resource and service needs of each population; they also indicate many opportunities for the Māori population as the older and numerically dominant European population reaches the age at which most people retire. In 2013, Maori accounted for 10.2 per cent of Auckland's population, substantially lower than the national share (14.1 per cent); however of importance for future workforce planning and related education and training, the region's Maori and Pacific Island youth together (see next slide) account for 29 per cent of those currently at labour market entry age (15-24 years). This is fractionally higher than the national proportion (27%) and represents a potential demographic dividend in terms of the region's future workforce.



When considered alongside the data in the previous slide, the Pacific Island population is the region's youngest, followed by Maori. The European-origin population is the oldest, with the Asian population in the middle.

Aside from being extremely youthful, the Pacific Island population has increased its share of the region's population, 13.7 per cent in 2013 up from 12.2 per cent in 1996.

Auckland's Asian population has also grown significantly since 1996 when it accounted for just 9.4 per cent of all responses; in 2013 that had more than doubled, to 21.0 per cent.

In both cases the age structures have aged (as can be seen from the shaded bars which represent 2013), the median age in 2013 being 31.2 years for the Asian population and 22.9 years for the Pacific Islander population.

Not shown on these slides is Auckland's Middle Eastern/Latin American/African (MELAA) population, which in 2013 numbered 28,200 and accounted for 1.7 per cent of the region's population, up from 0.7 per cent in 1996. The MELAA population age structure is remarkably like that for Asian, and in 2013 had a median age of 28.9 years.

These data indicate that around 53.3 per cent of Auckland's labour market entrants are currently Maori (12.5%), Pacific Island (16.8%) and Asian (24%), while those of European-origin account for around 45.0 per cent and MELAA 1.9%.

The A-B-C of population ageing and the ending of growth

Accept

- Major demographic shifts *are* coming to a region near you
- In many cases they mean the end of growth
- Awareness >> Alarm >> Acceptance

Buffer

- Revisit/revise business plans, policies, principles on which they are based
- It's the '*can't do it because*' that has to change

Choose your strategy

- Communicate, collaborate, conserve..
- Watch out for McMillan 2015



Local government and business leaders will need to lead..

The overall message is that major demographic shifts are coming to your Region and its Territorial Local Authority Areas. There is little that can be done to alter the demographic future, but much that can be done to ensure policies are fit for purpose. It is essential that regions and organisations in them revisit their policies and plans and the principles on which they are based, to ensure they are appropriate for an ageing population – but importantly, one within which there are younger and older populations, each with different needs and opportunities. Choice of strategy in how to engage with these trends will very much determine whether regions and organisations – and subnational populations - will be successful going forward. The research being undertaken by the Tai Timu Tangata project is designed to assist with this engagement; the associated work currently being undertaken by Masters student Rachael McMillan on the plethora of interventions being utilised overseas where population ageing is more advanced will especially provide a sound foundation for deliberation. My own view is to approach the situation like a jigsaw – we all hold a piece of it but at this stage are still in the process of putting it together, and we don't yet know if we have all the pieces.



Tai Timu Tangata; Taihoa e?

*The sub-national mechanisms of the
ending of growth – towards a theory
of depopulation*

– Marsden 13-UOW-058

*Investigators: (PI) Natalie Jackson,
Dave Mare, Mike Cameron,
Bill Cochrane, Lars Brabyn, Ian Pool*

CONTACT:

N.O.Jackson@massey.ac.nz