The ebbing of the human tide – what will it mean for infrastructure?

Dr Natalie Jackson*

KEYNOTE ADDRESS TO LOW VOLUME ROADS WORKSHOP
Christchurch, September 17th 2015

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Professor, School of People, Environment and Planning

Population ageing – it’s not just about older drivers and pedestrians..
Although ageing workforces are involved..

**Heavy Truck and Tanker Drivers [#83231] 1996-2013 (+7%)**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1996 (N = 21,783)</th>
<th>2013 (N = 23,235)</th>
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</thead>
<tbody>
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<td></td>
<td>Male</td>
<td>Female</td>
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<td>15-19</td>
<td>28:10</td>
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<td>20-24</td>
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<td>35-39</td>
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<td>40-44</td>
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<tr>
<td>45-49</td>
<td>14:10</td>
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<td>65-69</td>
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<td>0:10</td>
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<tr>
<td>70-74</td>
<td>4:10</td>
<td>0:10</td>
</tr>
<tr>
<td>75+</td>
<td>9%</td>
<td>29.3%</td>
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</tbody>
</table>

**Passenger Coach Drivers Drivers [#83221] 1996-2013 (+33%)**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1996 (N = 4,500)</th>
<th>2013 (N = 6,015)</th>
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<tbody>
<tr>
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<td>Female</td>
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<td>70-74</td>
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<tr>
<td>75+</td>
<td>60:10</td>
<td>.96:10</td>
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Source: Statistics New Zealand Customised Industry Database
Where does demography fit in?

“Managing the funding and timing for infrastructure development in areas of growth is challenging. For most of the last hundred years, as a country, we have built for growth. Now, up to nine regions face declining forecasts. For places in these regions, managing networked infrastructure services in conditions of economic and population decline, while standard and service-level expectations increase, might be more challenging.

Although New Zealand has seen population movements before, today’s population and economic changes could present infrastructure and funding challenges with which we have little experience. The challenge for robust asset and service future planning is to find the optimal track to the future.”

— Lyn Provost, Controller and Auditor General 2014:4

1. Global population growth will end around the end of the present century
2. The cause is structural population ageing [sometimes accelerated by net migration loss of young adults]
3. Growth will not end evenly
4. As we transit the cusp from growth to decline there will be many subnational challenges [not least paying for infrastructure...]


Natalie Jackson Demographics Ltd
Population ageing in a nutshell

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

- **Structural Ageing**
  - Increase in the proportion of the population that is ‘old’/decrease in the proportion that is young – primarily caused by declining fertility rates (the increased numbers 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)

Population ageing is ushering in the end of population growth
Ageing-driven growth is not the same as youth-driven growth

New Zealand - Projected change (%) 2014-2024 by variant and age

Change (percentage)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Medium (+10.7%)</th>
<th>High (+11.6%)</th>
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<tbody>
<tr>
<td>0-4</td>
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<td>90-94</td>
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<tr>
<td>95+</td>
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Source: Statistics NZ 2015 Projected population of New Zealand by age and sex, 2014(base)-2068 (50th and 90th percentile)

Numerical ageing is clear and present

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

Structural ageing differs greatly across the country

Thames-Coromandel 2013
(1996 Unshaded)

Timaru 2013
(1996 Unshaded)


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 declined
**Auckland’s greater share projected to continue – however not just because of urbanisation/agglomeration.**

![Graph showing the percentage of projected growth in Auckland and 'The Rest'.](chart)

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

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

**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

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**TCDC 2013 (1996 Unshaded)**

<table>
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<tr>
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<td>85+</td>
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<td>15–19</td>
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<td>5–9</td>
<td>0–4</td>
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65+ years: 25.6% (19%)
Migration will not solve ‘the problem’

<table>
<thead>
<tr>
<th>Projected Pop. 2011-2031</th>
<th>Change at 65+ Years</th>
<th>Change - all other age groups combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDCs (58*) (&lt;5%)</td>
<td>49% (+98 million)</td>
<td>-4% (-41 million)</td>
</tr>
<tr>
<td>Auckland (33%)</td>
<td>112%</td>
<td>23%</td>
</tr>
<tr>
<td>The Rest (NZ) (11%)</td>
<td>88%</td>
<td>-1.5%</td>
</tr>
</tbody>
</table>

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

A ‘useful’ rise in the birth rate is unlikely – and its 20 years too late
Projected change at total population level - suggests an initial reduction in TAs experiencing decline

Total change will be underpinned by massive age-structural transitions which will affect every aspect of infrastructure provision - demand and supply
The population aged 0-14 years is currently growing due to a 'baby blip' born 2002-2008; however most TAs will now experience shrinkage at these ages as these children move on to older age groups, and are replaced by relatively small cohorts.

Source: Author/Statistics New Zealand 2013-based subnational population projections, medium case

By 2043 there will be 38,000 more 0-14 year olds nationally, but 52 TA's (78%) will have fewer.

Decline at 0-14 years will be accompanied by shrinkage at labour market entry age (15-24 years), as relatively small cohorts born mid-late 1990s arrive at these ages.

There will be a short respite for some TAs during the 2020s as a baby 'blip' (born 2002-2008) passes through these age groups.

Source: Author/Statistics New Zealand 2013-based subnational population projections, medium case

By 2043 there will be 24,000 more 15-24 year olds nationally, but 51 TA's (75%) will have fewer.
Numbers at 25-39 years are currently growing as larger cohorts born late 1980s-early 1990s reach these ages, augmented by international migration which is highest at these ages. Most TAs will then see shrinkage at these ages, as smaller cohorts replace their larger predecessors.

By 2043 there will be 213,000 more 25-39 year olds nationally, but 30 TA’s (45%) will have fewer.

Significant shrinkage will now occur at 40-54 years as the baby boomers vacate that demographic. The number of TAs seeing decline at these ages will the slowly reduce and eventually grow again, as the larger 1988-92 and 2002-2008 cohorts eventually reach those ages.

By 2043 there will be 138,000 more 40-54 year olds nationally, but 55 TA’s (82%) will have fewer.
By contrast, the 55-64 year population is currently growing significantly as it receives the largest (youngest) baby boomer cohorts.

This demographic will then decline.

By 2043 there will be 69,000 more 55-64 year olds nationally, but 52 TA’s (78%) will have fewer.

By 2043 there will be 202,000 more 65-74 year olds nationally, although 6 TA’s (9%) will have fewer – however 90% will see decline across the period 2033-2043.

We are also now seeing massive growth at 65-74 years as the leading edge ‘boomers arrive at these ages.

This growth will generally slow between 2023 and 2033...

...and be followed by decline 2033-2043.
By 2043 there will be 512,000 more 75+ year olds nationally, and NO TA's will have fewer...

...growth at 75+ years will follow suit
...growth at these ages will slow, but numbers will not decline

Source: Author/Statistics New Zealand 2013-based subnational population projections, medium case

By 2043 there will be 512,000 more 75+ year olds nationally, and NO TA's will have fewer...

Only 16 TAs will not have all growth to 2043 at 65+ years

<table>
<thead>
<tr>
<th>% growth 2013-2043 at 65+ years</th>
<th>Territorial Authority Area (SNZ 2015 Revision)</th>
</tr>
</thead>
<tbody>
<tr>
<td>94-95 %</td>
<td>Kapiti Coast; Whangarei</td>
</tr>
<tr>
<td>80-88 %</td>
<td>New Plymouth; Waipa; Hurunui</td>
</tr>
<tr>
<td>61-66 %</td>
<td>Palmerston North; Christchurch; Waimakariri</td>
</tr>
<tr>
<td>56-59 %</td>
<td>Waikato; Wellington</td>
</tr>
<tr>
<td>42-46%</td>
<td>Queenstown; Ashburton; Tauranga</td>
</tr>
<tr>
<td>35-38 %</td>
<td>Auckland; Hamilton; Selwyn</td>
</tr>
</tbody>
</table>

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

Projected contribution to change at 65+ years, 2013-23, 2023-33 and 2033-43

Summary

The period 1996-2013 saw 23 TA’s decline but these accounted for only 10.0% of the NZ population.

By 2038-2043, 44 TA’s are projected to be declining and these will then account for 24% of New Zealand’s population of c.5.6 million.

By then, over half of the population is projected to be concentrated in just 3 TA’s (down from 4 today*). 75% will live in just 16 TA’s (down from 19 TA’s today).

*Auckland, Christchurch, Wellington, Hamilton

“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)
Summary of policy positions

- Do nothing
  - Denial
  - Ignoring
  - Passive restructuring
  - Market adaptation

- Countering
  - Competitiveness
  - Interconnection

- Accepting
  - Managing
  - Utilising


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

- **Accept**
  - Major demographic shifts are coming to a low volume road near you
  - In many cases they mean the end of growth, challenges for funding
  - Awareness >> Alarm >> Acceptance

- **Buffer**
  - *Short, medium and long-term countering:* 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 carefully**
  - Communicate, collaborate, conserve..
Thank you

Enquiries welcome

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