

## 1

## HOW THE POPULATION IS CHANGING

By 2056 we expect the total population of New South Wales to be 11.2 million. This is nearly 50 per cent more than the 7.6 million today and more than double the five million of 1976. Of the 3.7 million new residents arriving over the projection period, two million will be from natural increase — which is births and the impact of gradually increasing life expectancies.<sup>1</sup> A further 1.7 million will arrive through net migration. Over the next 40 years, the average annual net migration is expected to be just over 41,000 people, made up of a net outflow of interstate migrants (19,000) offset by a net inflow of migrants from overseas (60,000).

Although 3.7 million is a large increase, the NSW population growth rate is projected to be 1.0 per cent, lower than the Australian average of 1.3 per cent. As a result, the share of the Australian population living in New South Wales is expected to continue to decline.

Our demographic destiny over the next 40 years is that our population will continue to get older on average. The extent of that ageing will depend on life expectancy, which is increasing with improvements in medical technology and birth rates. But ageing is also in part offset by migration, which can increase the number of people of traditional working age (15-64). Ageing will bring with it opportunities and challenges (set out in subsequent chapters) — opportunities that governments can embrace and challenges that governments can overcome.

NSW PROJECTED  
POPULATION IN 2056

# 11.2m

**This is nearly 50 per cent more than the 7.6 million today and more than double the five million of 1976.**



**Expected median age in 2056.**

### 1.1 The ageing population

The median age has risen from 29 in 1976 to 37 in 2015 and is expected to rise to 41 in 2056. There are three reasons for this: lower fertility rates, rising life expectancy and the post-war population surge — the ‘baby boomers’ — moving into retirement.

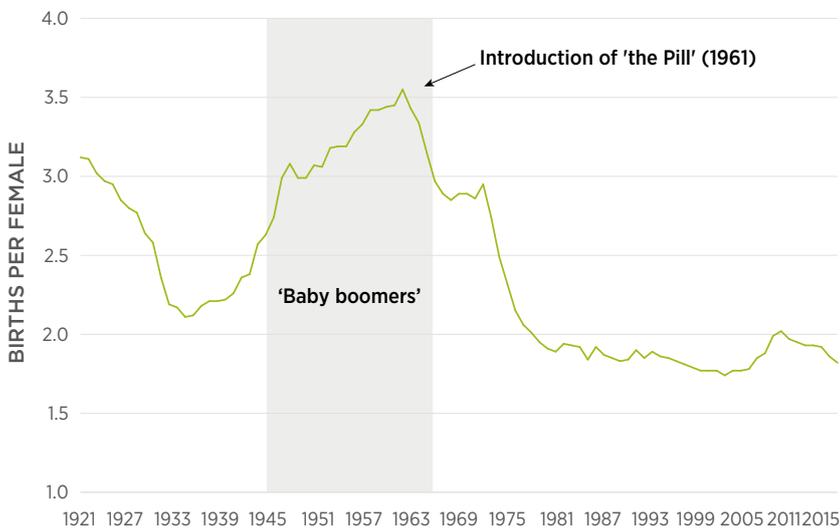
Generations immediately following the baby boomers were smaller relative to the total population. Consequently, as the baby boomers age, the overall population ages as well. Significantly, the medical successes that have increased longevity also mean that the baby boomers will have more years of healthy living than previous generations. As with the move of the baby boomers into the workforce around 55 years ago, their transition into a comparatively long retirement — which started in 2011 — will shift the population dynamics of our society.

The baby boomer generation began in 1946. The return of service personnel from the Second World War combined with strong economic growth saw the fertility rate rise sharply from the late 1940s and remained high into the 1960s. This followed a period of comparatively low fertility that stretched from the Great Depression to the Second World War (Chart 1.1).

<sup>1</sup> Numbers do not add due to rounding



Chart 1.1 Australian fertility has declined since the release of “the Pill” in the 1960s



Source: ABS cat no 3105.0.65.001 and ABS cat no 3301.0

As the baby boomers reached working age from the early 1960s, the labour force grew strongly. Over the five decades to 2011, the Australian economy benefited from a ‘demographic dividend’ as the growth in the traditional working age population (15-64) exceeded total population growth by an average of 0.2 per cent a year.

Now, however, as the baby boomers move into a comparatively long retirement we face the inevitable decline in the share of the traditional working age population. This will be a central driver of our economic and fiscal future.

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# HOW THE POPULATION IS CHANGING

## PROJECTION OF THOSE AGED 100 AND OVER IN 2056

# 18,000

compared to 100 people in 1976 and 1,500 currently.

### 1.2 The population outlook

The population of New South Wales is projected to grow by an average of 1.0 per cent a year over the next 40 years, rising from 7.6 million currently to 11.2 million by 2056.

This growth rate is higher than the 0.9 per cent projected in the 2011-12 Report, but it remains below projected Australian population growth of 1.3 per cent. As a result, the State's share of Australia's population will continue to decline, falling from 32 per cent today, to 29 per cent in 2056. This trend has been in train since the Second World War.

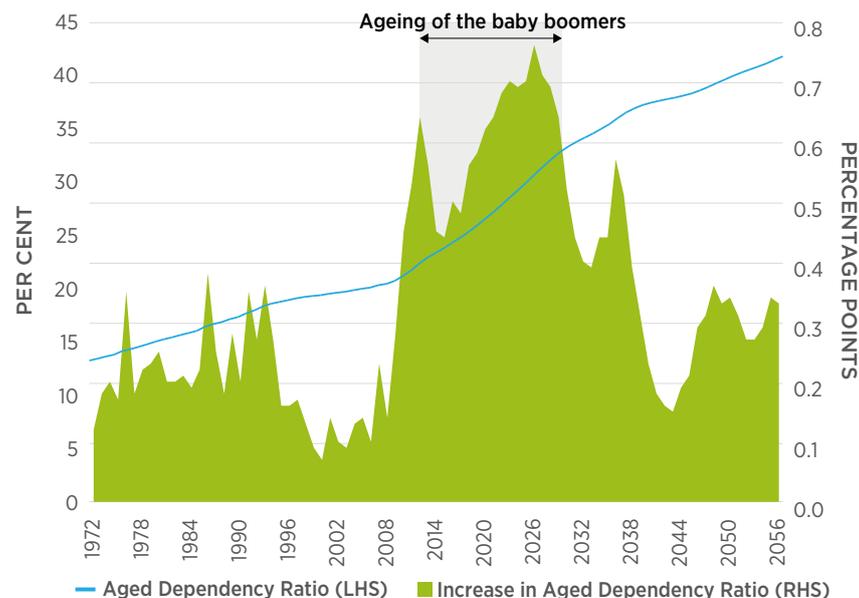
Population trends vary considerably across the state. Projections by the NSW Department of Planning and Environment indicate that between 2016 and 2031, NSW regions are expected to grow at 0.7 per cent a year, well below the rate of 1.5 per cent projected for Sydney.<sup>2</sup> Significant differences between the regions also exist, with areas like Tweed growing at 1.0 per cent and Bega Valley growing at 0.4 per cent per annum, compared with Glen Innes Severn and Lithgow, which are projected to decline by 0.5 and 0.1 per cent per annum respectively.

In 2056, a quarter of the population will be aged 65 and over, up from nine per cent in 1976, and 16 per cent currently. Of this, 10 per cent of the population will be aged 80 and over in 2056, up from four per cent currently and 1.6 per cent in 1976. We project there will be a more than 10 fold increase in those aged 100 and over, rising to over 18,000 people in 2056, from under 100 people in 1976 and 1,500 currently.

We can understand the impact of the ageing population through two key population measures of demographic pressures: first is the aged dependency ratio, which is the ratio of those aged 65 plus to those aged 15-64; and second is the youth dependency ratio, which is the ratio of those under 15 to those aged 15-64. These ratios measure the number of people of traditional working age compared to the number of people who depend on their productivity.

We expect the aged dependency ratio to increase from 24 per cent now to 42 per cent by 2056. It will rise fastest over the next 15 years as the baby boomers retire (Chart 1.2). By 2056, there will be 2.4 people of traditional working age supporting each person aged 65 and over. This is a significant decrease from the four to one ratio currently and seven to one of 40 years ago.

Chart 1.2 NSW aged dependency ratio increasing rapidly as the baby boomers age



Source: ABS cat no. 3101.0, and NSW Treasury

<sup>2</sup> NSW Department of Planning and Environment. Available at: <http://www.planning.nsw.gov.au/Research-and-Demography/Demography/Population-Projections>

As part of our modelling we have looked at what happens to our population projections when different assumptions are made around fertility and overseas migration (the life expectancy profile is the same in all three scenarios).

Table 1.1 NSW population scenarios

Year	1976	2015	2056		
			Low	Medium	High
<b>Key Assumptions</b>					
NSW Fertility Rate	2.04	1.85	1.85	1.95	2.05
Australian Net Overseas Migration ('000s)	26	168	190	215	240
<b>Population ('000s)</b>					
Total NSW Population	4,946	7,563	10,824	11,240	11,601
Under 15	1,299	1,420	1,887	1,980	2,071
65 and over	451	1,178	2,701	2,722	2,743
75 and over	161	526	1,567	1,590	1,576
<b>Proportion (%)</b>					
Under 15	26.3	18.8	17.4	17.6	17.9
65 and over	9.1	15.6	24.8	24.2	23.6
75 and over	3.3	7.0	14.3	14.0	13.6
<b>Ratios (%)</b>					
Aged Dependency Ratio <sup>(A)</sup>	14.1	23.7	42.9	41.6	40.4
Youth Dependency Ratio <sup>(B)</sup>	40.6	28.6	30.0	30.3	30.5
Total Dependency Ratio <sup>(C)</sup>	54.7	52.3	73.0	71.9	70.9

Source: NSW Treasury

A The ratio of people aged 65 and over to those between 15 and 64.

B The ratio of those under 15 to those between 15 and 64.

C The ratio of those under 15 and over 64 to those between 15 and 64.

Table 1.1 shows us that in all three of the scenarios modelled, the **aged dependency ratio** increases to above 40 per cent. Both higher migration and fertility will lift both the proportion of the population of traditional working age (15-64) — as well as those aged under 15 — and therefore lower the aged dependency ratio. However, it is migration that is the strongest factor ameliorating ageing. For example, without migration the aged dependency ratio would increase to above 50 per cent by 2056. Chapter Four explores in further detail how raising housing supply can increase migration flows to the state and boost the share of the population that is of working age.

The projected **total dependency ratio** also increases from today in all three scenarios. In particular, for the high scenario, the decrease in the aged dependency ratio is partially offset by an increase in the youth dependency ratio. Projected increases in the youth dependency ratio are largely driven by declines in the traditional working age population share (Chart 1.3).

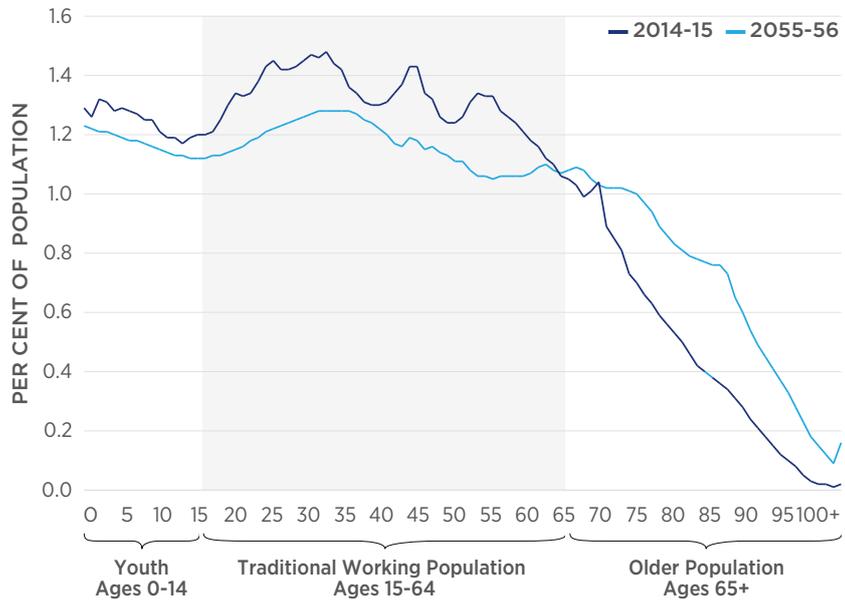


THE AGED DEPENDENCY RATIO TO INCREASE FROM 24% NOW TO

**42%**  
by 2056.

# HOW THE POPULATION IS CHANGING

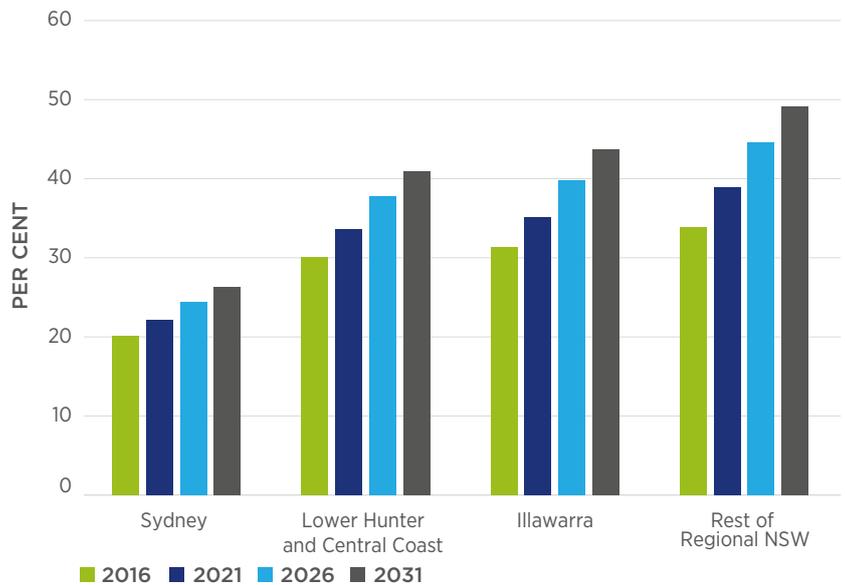
**Chart 1.3 NSW age-specific population share**



Source: NSW Treasury

The ageing of the population is especially pronounced in the regions. NSW regional population projections show the regional aged dependency ratios are high and are expected to increase over the next 15 years as the population ages (Chart 1.4). While this may be the general trend, there is significant variation between areas, with some — for example Singleton and Queanbeyan — having aged dependency ratios markedly below the state average.

**Chart 1.4 Higher aged dependency ratio in regional New South Wales**



Source: NSW Department of Planning and Environment

### 1.3 Drivers of population trends

The NSW population is expected to increase to 11.2 million by 2056, from 7.6 million currently. This increase of 3.7 million people comprises a natural increase of 2.0 million and migration of 1.7 million.<sup>3</sup> The three drivers of this change are fertility, life expectancy and migration.

#### Fertility

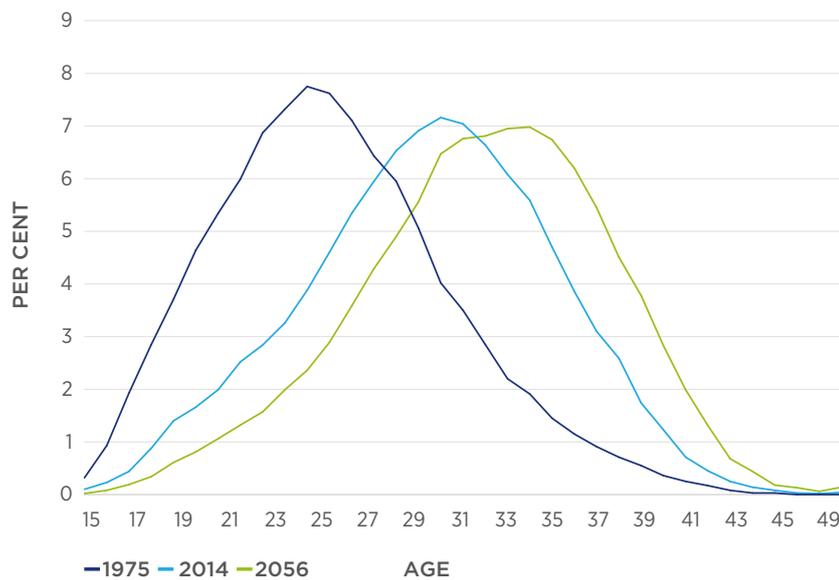
The fertility rate is the number of births the average female will have over her lifetime.<sup>4</sup> Over the next 40 years, the NSW fertility rate is expected to move to 1.95, which is the average of the last 10 years. This is slightly higher than the national 10 year average of 1.91, which is broadly consistent with Australian fertility rate of 1.9 in the Commonwealth Government's 2015 Intergenerational Report.

Regional fertility rates are high, averaging 2.1 over the last 10 years, slightly above the replacement rate. The Central West and Far West of the state have the highest 10-year average fertility rates of 2.3 and 2.5 respectively, while for regions like Newcastle and the Illawarra, rates are below the state average, at around 1.9.

After the introduction of the oral contraceptive pill in 1961, the fertility rate began a steep decline (Chart 1.1). As discussed in Chapter Two, large increases in female workforce participation, which saw women defer childbirth, added to this trend.<sup>5</sup> Importantly, the fertility rate has remained below the replacement rate of 2.1 for the last 40 years and this is expected to continue. Population growth will therefore depend on migration and increases in longevity.

Improvements in medical technology and increases in female workforce participation are likely to see the average childbearing age continue to rise, albeit at a slower rate than in the past. The average age of a woman at childbirth in 1975 was 26 years. This increased to 30.5 years in 2014 and is expected to rise to 32.9 years by 2056.

Chart 1.5 Probability distribution of birth by age of mother



Source: Based on ABS cat no. 3301.0, and NSW Treasury

NSW FERTILITY RATE IS EXPECTED TO MOVE TO



over the next 40 years.

THE AVERAGE AGE OF A WOMAN AT CHILDBIRTH

32.9 YEARS  
in 2056.

<sup>3</sup> Numbers do not add due to rounding

<sup>4</sup> The fertility rate is the number of children a representative female would bear during her lifetime if she experienced current age-specific fertility rates at each age of her reproductive life

<sup>5</sup> Bloom, D.E., Canning, D., Fink, G., Finlay, J.E., 2009. Fertility, female labor force participation, and the demographic dividend. Journal of Economic Growth Vol. 14, 79-101

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FOR THOSE BORN IN 2056  
NSW LIFE EXPECTANCY AT  
BIRTH IS PROJECTED TO BE



The long run declining trend in fertility changed around the turn of the millennium, coinciding with the introduction of government policies to support families. These policies included increases in family tax benefits, the Baby Bonus, enhanced childcare benefits and rebates. The fertility rate increased from a low of 1.78 in 2001 to a peak of 2.05 in 2008.<sup>6</sup>

Following the economic slowdown caused by the Global Financial Crisis of 2008-09, the fertility rate has since fallen.<sup>7</sup> However, it is expected to trend back towards 1.95, consistent with the average of the last 10 years.

### Life expectancy

The projections show that for those born in 2056, life expectancy at birth is projected to be 88.6 years for men and 91.4 years for women. Compare that to the life expectancy of a child born in 2014, which was 80.8 years for men and 85.0 years for women.<sup>8</sup> This is a dramatic improvement in life expectancy from someone born in the early twentieth century. At that time, life expectancy at birth was 55.9 years for men and 59.0 years for women.

This improvement has been driven by lower infant and child mortality rates, medical improvements such as antibiotics, improved safety in vehicles and workplaces and increases in the quality of medical care. These have increased life expectancies for both the young and the elderly.<sup>9</sup> Our longer lives will raise the NSW population by over half a million by 2056, which equals 0.1 of a percentage point a year over the next 40 years. It will also increase the aged dependency ratio from 34.5 per cent to 41.6 per cent, compared to current life expectancies.<sup>10</sup>

While life expectancy is an important concept, healthy-life expectancy is perhaps even more so. This is the number of years people live without a severe or profound core disability. As we live longer, the proportion of healthy life years has important implications as people are likely to become more dependent on the health care system after the age of 75 years.<sup>11</sup> The Australian Institute of Health and Welfare estimated that of those born in 2012, males could expect 74.2 years of life without a severe or profound core limitation, while females could expect 76.5 years.<sup>12</sup> Healthy-life expectancy has increased by around 3.5 years for males and 2.6 years for females since 1998. Further, there has been a decline in the proportion of Australians self-reporting as being in poor health. The proportion of Australians rating their health status as fair or poor has dropped from 18.2 per cent in 2001, to 14.4 per cent in 2012.<sup>13</sup>

Nevertheless, while healthy-life expectancy has increased, there has also been a proportionate increase in the number of years spent with a core disability, with males spending around seven per cent of their life with a core disability and females around nine per cent. This suggests that as the population ages, the number of people with a severe or profound core disability, and the average time for which they will have that disability, will increase – adding to expense pressures in the areas of health, disabilities and aged care.

<sup>6</sup> Australian Bureau of Statistics, Historical Population Statistics, Australia, 2014, (cat no. 3105.0.65.001), ABS, Canberra

<sup>7</sup> Sobotka, T., Skirbekk, V., and Philipov, D., 2010. Economic Recession and Fertility in the Developed World: A Literature Review, Vienna Institute of Demography, February 2010.

<sup>8</sup> These figures are calculated based on the period life expectancy method, which use the age-specific mortality rates prevailing in the single stated year. They are not comparable with life expectancies calculated on the cohort method, which are larger, and use the mortality rates for the years specific to that person through their life. The 2015 Commonwealth Intergenerational Report uses the cohort method, although earlier reports use the period method

<sup>9</sup> Francis, D.R., 2016. Why do Death Rates Decline? National Bureau of Economic Research

<sup>10</sup> The life expectancy projections come from trends in historical mortality rates using the Lee-Carter method. This method projects death rates for each five-year age cohort over the next 40 years. The death rates are then converted to age-specific probabilities of dying, from which we calculated the life expectancy at birth in each year of the projection

<sup>11</sup> OECD, 2013 Public spending on health and long-term care: a new set of projections

<sup>12</sup> Australian Institute of Health and Welfare, 2014. Healthy life expectancy in Australia: patterns and trends 1998 to 2012 (Bulletin no. 126). Australian Government

<sup>13</sup> Australian Bureau of Statistics, 2013. Australian Health Survey: Updated Results (cat. no. 4364.0). ABS, Canberra

**Box 1.1****Why are we living longer and what is driving longevity?**

The World Health Organisation notes that Australia has one of the highest life expectancies in the world.<sup>14</sup> As at 2013, the life expectancy for a female at birth was 85 years (up from 80 in 1990), while for a male it was 80 years (up from 74 years in 1990). At the simplest level, the main reason we are living longer is because the probability of dying prematurely has fallen dramatically.

Since the start of the 20th century, for instance, longevity has been driven by improvements in sanitation, immunisation, pharmaceuticals, medical technology, diagnostics, lower rates of infectious disease and significant progress in pre and post-natal care. More recent advances include a drop-off in sudden infant death syndrome (SIDS), a decline in the incidence of death from transport accidents (due to increased seat belt use, random breath testing and speed cameras) and a sizeable reduction in deaths from drowning and poisoning.<sup>15</sup>

While mortality rates have improved across all age cohorts, the most notable improvements have been at the early stages of life. Infant death rates for instance, have declined from about 71 deaths per 1,000 births early in the 20th century (and 8.2 deaths in 1990) to around 3.6 now.<sup>16</sup> While children aged from 0-4 accounted for over 25 per cent of all deaths in 1900,<sup>17</sup> they now account for less than one per cent.

For other age groups, the declining incidence of death from transport accidents in more recent times has been especially beneficial in lifting life expectancy in children aged 1-14 and adults aged 15-44. Otherwise, more recent medical advances and lower rates of smoking have been particularly successful in reducing death rates from coronary heart and lung disease<sup>18</sup> — the two leading causes of death overall and in adults aged 45-74.

**Migration**

The third driver of population change in New South Wales is migration. Net migration to and from the state comprises net overseas migration (NOM) and net interstate migration (NIM). As migrants on average are in their 20s and 30s, higher migration leads to a lower average age of the population, lower average mortality and a greater number of births. Migration therefore helps moderate the ageing of the population.

We expect average net migration into New South Wales of around 41,000 a year, reflecting an average NIM outflow of 19,000 and an average NOM inflow of 60,000. In practice, the profiles for NOM and NIM will vary over time in response to economic conditions. For the regions more than half the population growth will be through migration, mostly from the metropolitan areas, but also from interstate and overseas.

Migration can add to underlying demand for housing and therefore increase house-price pressures. Conversely, higher relative house prices or a less attractive job market in New South Wales can deter overseas migration and increase the interstate outflow of residents.

HEALTHY-LIFE  
EXPECTANCY HAS  
INCREASED BY AROUND



3.5  
YEARS

2.6  
YEARS

since 1998.



We expect average net  
migration into New South  
Wales of around 41,000  
a year.

<sup>14</sup> World Health Organization, 2015. World Health Statistics

<sup>15</sup> Australian Bureau of Statistics, 1998. Causes of Infant and Child Deaths, Australia, 1982 to 1996 (cat. no. 4398.0). ABS, Canberra, and Data and analysis from the Australian Institute of Health and Welfare (AIHW)

<sup>16</sup> Australian Bureau of Statistics, 2014. Deaths, Australia (cat no. 3302.0). ABS, Canberra

<sup>17</sup> Australian Institute of Health and Welfare, 2006. Mortality over the twentieth century in Australia: Trends and patterns in major causes of death (cat. no. PHE 73)

<sup>18</sup> This includes cancer and chronic obstructive pulmonary disease

# HOW THE POPULATION IS CHANGING

## NEW HOUSING SUPPLY



43,500  
PER YEAR

over the projection period.

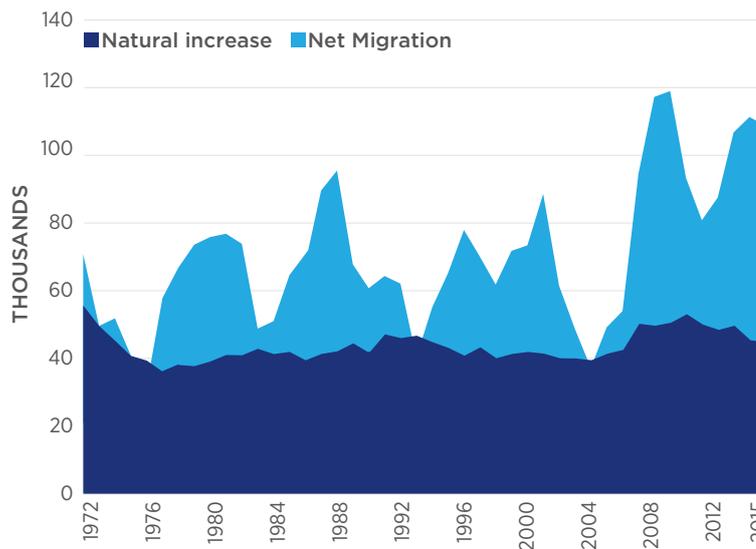
In the modelling in this Report, migration responds to housing prices, housing supply and labour market conditions.

As discussed in detail in Chapter Four, the projection for New South Wales has new housing supply averaging 45,000 dwellings per year through to 2031, consistent with *A Plan for Growing Sydney*, and around 43,500 dwellings per year over the whole 40 year projection period. This housing supply scenario drives house price growth and, combined with the labour market projections, yields the projection profiles for both NIM and NOM (Chart 4.7).

Unlike fertility and life expectancy, migration is volatile from year to year, influenced by changes in economic conditions, world events and government policy. For instance, annual net migration has ranged from a loss of around 5,000 people in 1993 to a gain of nearly 70,000 people in 2009 (Chart 1.6). The average increase has been around 31,000 people a year.

NIM and NOM therefore vary over the projection period, consistent with the dynamics around housing supply and labour market strength. Given that migration is around half of total population growth, this volatility is the primary source of uncertainty in the population projections.

**Chart 1.6 Stable natural increase in population, with significant variance in migration (NSW)**



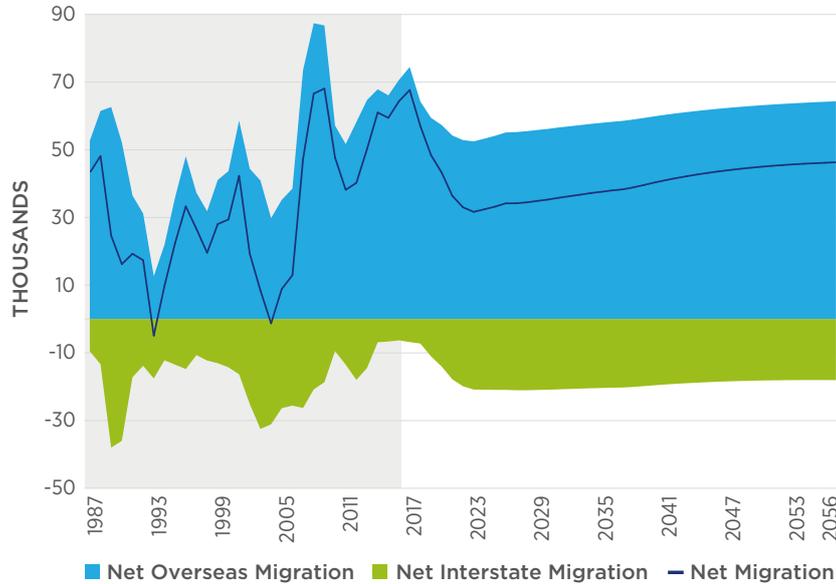
Source: ABS cat no. 3105.0 and 3101.0

### Net overseas migration (NOM)

Overseas migration is a key driver of population growth, with more than a quarter of people in New South Wales born overseas. The level of permanent migration into Australia is determined by Commonwealth Government policy. This Report adopts 215,000 people a year as the long-term NOM estimate, as set out in the 2015 Commonwealth Intergenerational Report. The level of overseas migration into New South Wales depends on the State's NOM share.

New South Wales' NOM share is expected to average around 28 per cent of the national total. That equals on average about 60,000 people per year over the projection period. This is above both the average of 53,000 over the last 20 years, and the average of 35,000 for the 20 years before that.

Chart 1.7 New South Wales migration components



Source: ABS 3101.0 and NSW Treasury

Chart 1.7 shows a lift in NOM to New South Wales over the past five years as the mining investment boom petered out and the NSW labour market outperformed other states.<sup>19</sup> This lift in the NOM level is likely to be temporary, given the recent surge in NSW dwelling prices compared with the rest of Australia, as well as the eventual levelling of national labour market conditions. This is consistent with previous declines in the NSW NOM share following the high relative NSW housing prices in the late 1980s and in the early 2000s.

The recent lift in relative NSW housing prices is likely to deter potential overseas migrants and encourage migration to other states. In the longer term, however, the lift in relative housing prices is expected to gradually abate, as the strong housing construction outlook translates into increased housing supply, and reduces the current imbalance between supply and underlying demand (Chapter Four for details). As housing becomes relatively more affordable, prices will be less of a deterrent, diminishing net out-migration to other states and slowly lifting the NSW NOM share to just over 30 per cent — about 64,000 people a year — by the end of the projection period.

This latter share is a little above New South Wales' projected share of the national population by the mid-2050s, but it is below the pre-mining boom average. That pre-boom average was, however, boosted by the higher share of permanent migrants who arrived in Australia under the family stream, of which New South Wales received a high share.

**There has been a lift in NOM to New South Wales over the past five years as the mining investment boom petered out and the NSW labour market outperformed other states.**

<sup>19</sup> The tapering off of the mining boom resulted in an outflow of migrants returning overseas from the mining states, pushing down the NOM, and therefore pushing up the NSW share of migrants

## HOW THE POPULATION IS CHANGING

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From 1997-98, the skilled migration stream — of which New South Wales received a lower share — overtook the family stream as the largest group of permanent entrants, and its importance has continued to increase over time. The skilled migration stream currently represents just under 70 per cent of the permanent migration program.

In addition to the structural change in the permanent migration program, the early 2000s' decline in the NSW NOM share was driven by a peak in relative housing prices and the state opting out of regional migration programs. The mining boom commenced in 2004 and the national migration intake increased dramatically with migrants flocking to the mineral-rich states of Western Australia and Queensland. As a result, the share of total migrants coming to New South Wales softened, averaging below 30 per cent from 2004 to 2013. New South Wales' NOM share was, however, falling before the mining boom, although it accelerated this trend.

Although the effects of the mining boom are dissipating, if housing constraints deter migration, the NSW share of NOM is expected to return to the pre-mining boom levels of below 30 per cent. Alternatively, greater housing supply, driving a more affordable market would enable New South Wales to take a higher NOM share and consequently lift its working age population.

### **Net interstate migration (NIM)**

NIM is expected to average a loss to other states of 19,000 residents a year over the next 40 years. The profile for NIM is driven by developments in relative house prices and in the performance of the NSW labour market, compared with other states.

Average outflow of nearly 19,000 per year is broadly consistent with the long-term average, which has seen a net 18,000 people move out of the state each year. This outflow was more pronounced in the 2000s, when a combination of high house prices relative to the other states and then the mining boom saw average outflows rise to 25,000 a year from 2002 to 2009.

In the aftermath of the mining boom, and as the State's labour market strengthened relative to the rest of Australia, this net outflow declined to an average of 8,000 per year. This is the likely low point of the NIM cycle as the stabilisation of the mining sector is expected to see prior trends resurface.

### 1.4 Generational structure

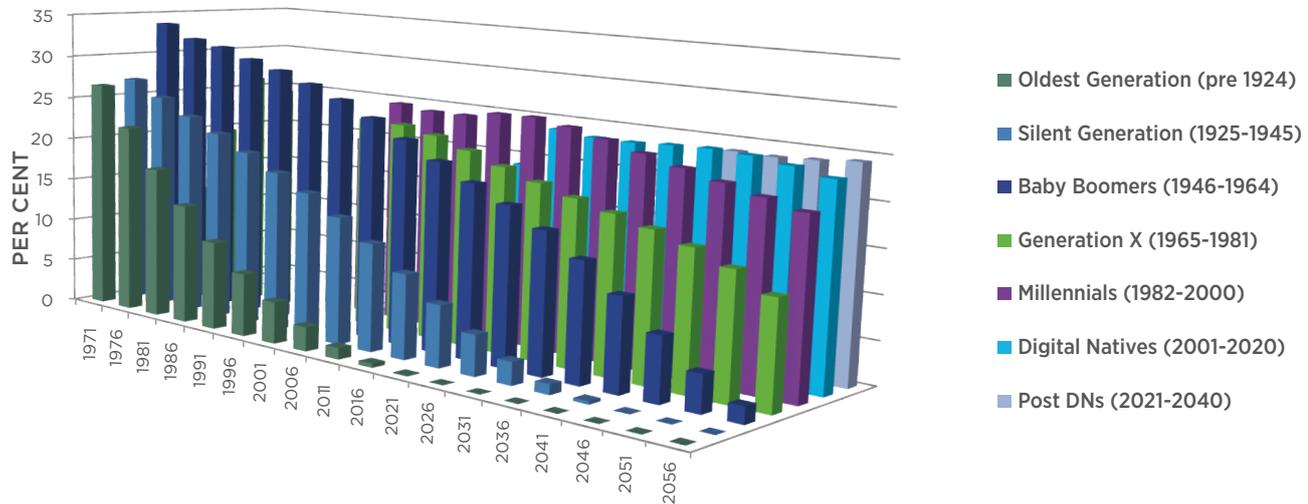
Segmenting the population by generation is part of popular culture. The generation that came of age in the 1970s is very different to that of the 1980s or 2000s, having grown up with different technology, political and social events.

Historical events affect not just the nature, but also the size of each generation. Baby boomers are a product of rebound from a difficult period marked by the Great Depression and the Second World War. From 1946 onwards the population surged until after the introduction of the contraceptive pill in the 1960s.

Chart 1.8 shows that in New South Wales the millennials (born between 1982 and 2000) are now the largest generational group, having overtaken the baby boomers in 2006. Millennials will remain a major force throughout the next 40 years, making up the largest proportion of the population into the 2030s. This is partly an 'echo' effect — they are the children of the baby boomers — but also reflects migration.



Chart 1.8 Millennials have overtaken baby boomers as the largest generation



Source: ABS cat no 3105.0.65.001, ABS cat no. 3101, and NSW Treasury

Generation X sits between the baby boomers and the millennials. As the children of the smaller population of Depression and war babies, Generation X will potentially be the only generation that will never take up the largest share of the population. The effect of this will flow through to the size of their children’s generation, the digital natives (2001-2020) although the size of this last group will be significantly bolstered by migration.

The ageing of the population will be dramatic as the baby boomers retire. Over the next 15 years, as the boomers all reach traditional retirement age, the proportion of the population aged over 65 to those of the working age is expected to increase by around 0.5 percentage points a year from 24 per cent currently to 33 per cent in 2030. From that point on, the growth in over 65’s slows as Generation X retires. It is a further 17 years, that is, around the late 2040s before we see an acceleration in ageing as the millennials retire.

**Millennials will remain a major force throughout the next 40 years, making up the largest proportion of the population into the 2030s.**