APPENDIX 12

IMPACT OF CHANGES IN FERTILITY AND/OR MIGRATION ON POPULATION AGEING

This paper compares the plausible baseline scenario population projection outlined in Appendix 11 with various scenarios for the total fertility rate (TFR) and net overseas migration (NOM) (that is, the excess of permanent and long-term arrivals over departures) on:

- Population size and growth rate;
- Size and growth of numbers of people of workforce age; and
- Size and growth of the number of aged persons.

Under the baseline scenario:

- population growth would fall from 1.3% per annum currently to 0.3% by 2050, reaching zero by 2100. The population would reach about 26.4m around the middle of this century and continue to grow very slowly to about 27.1m by the end of this century. Deaths are likely to exceed births by around the mid to late 2030s. Beyond this point, only NOM will contribute to population growth;
- The number of persons of workforce age (ie 15-64 years of age) would slowly rise from its current level of 12.9m (67% of the population), peaking at about 16m around 2046 (60% of the population) and then decline very slowly to around 15.9m (58% of the population) at the end of the century. The ratio of people of workforce age to population size remains fairly constant after 2050; and
- Australia's population will continue to age. By 2050, about 25% of the population (6.61m) would be over 65 years of age compared to 12% (2.4m) currently, and 15% (4.2m) would be under 15 years of age compared to 21% (3.9m) currently. Over the following 50 years to 2100, the proportion of the population over 65 years of age would slowly increase to about 27% (7.6m) while the proportion under 15 years would slowly decline to about 14% (4.4m).

To illustrate the impact of different levels of fertility and of NOM on Australia's population, the remainder of this paper compares the baseline scenario with the following scenarios:

- TFR of 1.65 with 50,000 NOM and 150,000 NOM.
- TFR of 1.3 with 50,000 NOM, 100,000 NOM and 150,000 NOM. These are included as possible scenarios, given that the fertility rates of many developed countries are at or below 1.3 already (including Austria, Iceland, Italy, Spain and Sweden).
- TFR of 2.1 with 50,000 NOM, 100,000 NOM and 150,000 NOM.

The table at Appendix 1 summarises the different projection outcomes for the years 2000, 2050 and 2100.

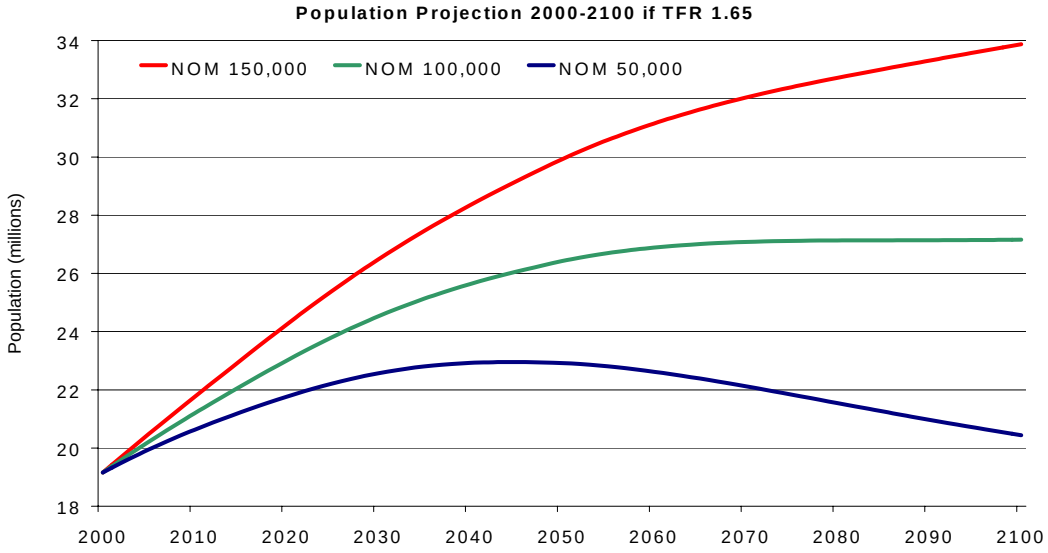
Impact on population size and growth

Different Levels of NOM with a TFR of 1.65 from 2010

With TFR constant at 1.65 from 2010 (ie the baseline assumption), Australia's population would continue to grow provided NOM is around 100,000 per annum

(around the current level) or more. NOM lower than about 100,000 per annum, however, would result in a declining population from about mid-century.

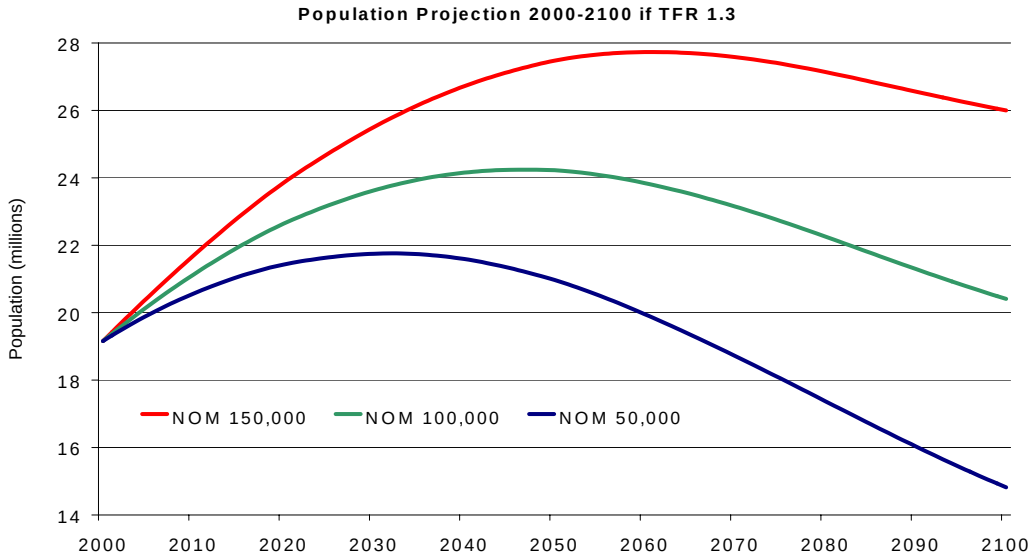
Figure 1



Different Levels of NOM with a TFR of 1.3 from 2021

The impact of the fertility rate falling to 1.3 would lead to a population with an in-built momentum for decline, a rapidly declining workforce and a sharper increase in the proportion of the population aged over 65.

Figure 2

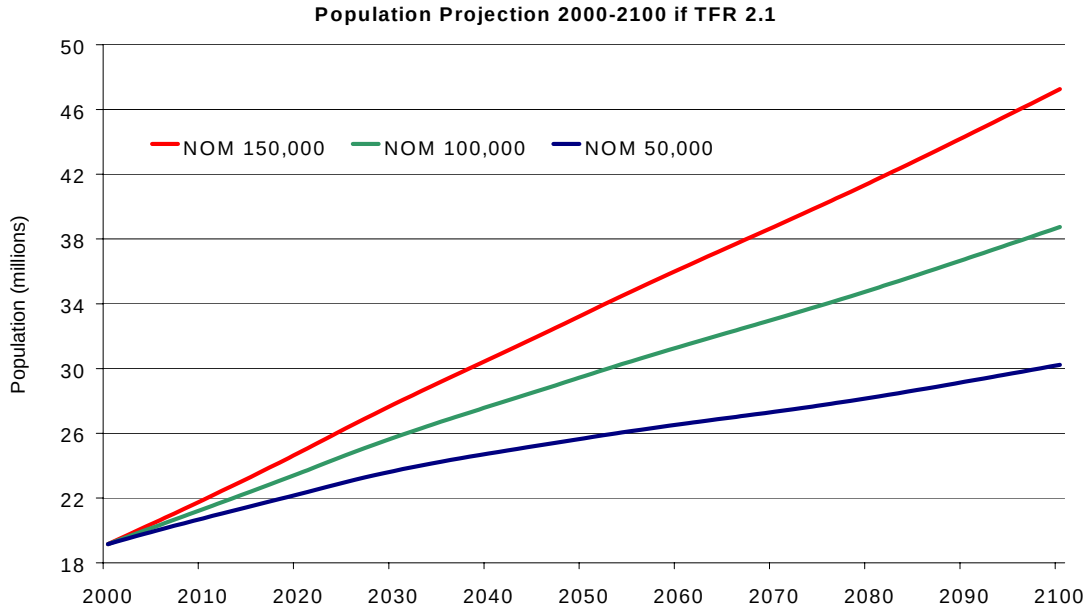


With TFR at 1.3, Australia's population would continue to grow for a few decades but would eventually go into rapid decline, at any feasible level of NOM. The higher levels of NOM do not affect the general picture. As NOM increases, the population would peak at a higher level and later and would then fall slightly more slowly than would be the case with lower levels of NOM.

Different Levels of NOM with a TFR of 2.1 from 2021

If TFR reversed its current declining trend and, instead, increased to replacement level of around 2.1 births per woman by 2021, population would grow with any positive level of NOM. However, the higher the level of NOM, the larger the population and the faster the population growth rate. TFR of 2.1 is, however, unlikely to occur. All indications are that our fertility rate will continue to fall as the currently large cohorts of women of reproductive age (the 'baby boomers') move out of child-bearing age and the numbers of women available to have children decrease. This trend is replicated in most developed countries around the world.

Figure 3



It is possible that fertility may fall faster and further than 1.65 and is unlikely to increase to 2.1. It is also possible that there could be downwards pressure for average annual NOM over the next 50 years that could see a reduction in NOM compared to what otherwise may have been achieved, as a result of:

- the contribution of long-term temporary entry to NOM has been growing (it is now around 50% of total NOM). Figure 5 shows how net long-term temporary movement has increased in importance in recent years, compared to net permanent movement. Compared to permanent movements, long-term movements are much more sensitive to relative economic conditions as well as other factors outside the direct control or influence of government. In addition, there is a tendency for long-term temporary entrants not to have children while in Australia or, if they do, to take the children with them when they leave. It is possible that the rate of growth in population from long-term temporary entry could moderate. The impact of a slowing down of long-term temporary movement in response to changed relative economic conditions could see a reduction in NOM compared to what otherwise may have been achieved;
- the impact of policy changes relating to access to social security by New Zealand arrivals combined with somewhat stronger economic growth in New Zealand; and

- the continuing attractiveness of Australian-trained people to organisations overseas, leading to higher levels of emigration.

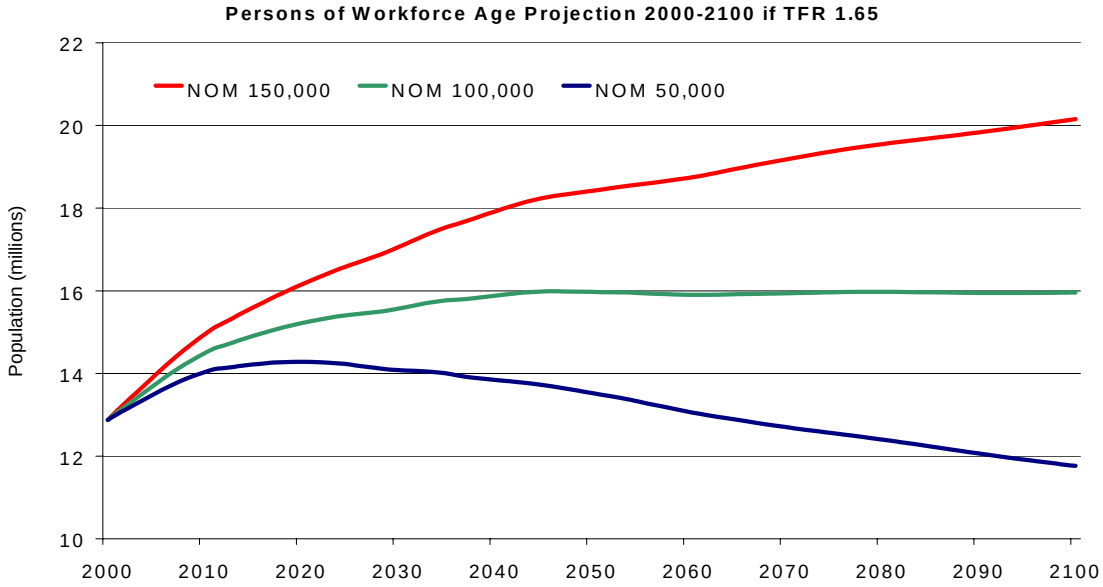
Impact on workforce size and growth

The following projections show how the size of the potential workforce (ie the number of people of working age ie 15-64 years) and the dependency ratio will change given different fertility rates and levels of NOM. Actual workforce size will depend on what happens to labour force participation rates, particularly of women and older workers.

Different Levels of NOM with a TFR of 1.65 from 2010

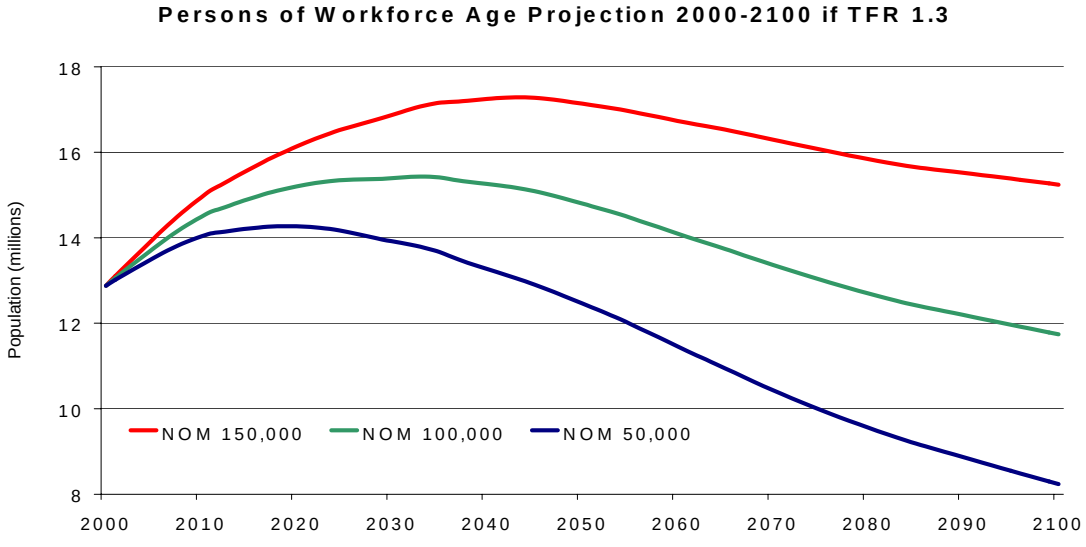
NOM around 100,000 per year results in the potential workforce stabilising around 2040 at about 15.9m. Below that number, the potential workforce grows for a while but then peaks and declines absolutely. Above that number, the potential workforce continues to grow until 2100 although the rate of growth slows.

Figure 4



With a TFR of 1.3 by 2021

Figure 5

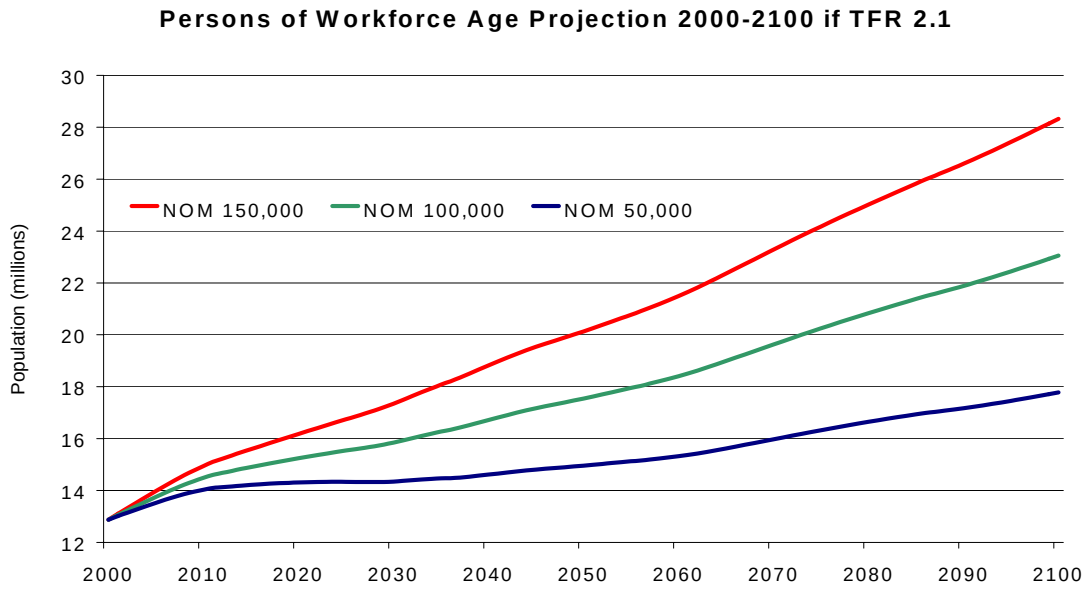


The impact of the fertility rate falling to 1.3 would lead to a rapidly declining potential workforce for all three NOM levels (starting about 2020 for 50,000 NOM and 2050 for 150,000 NOM).

Different Levels of NOM with a TFR of 2.1 from 2021

With replacement level TFR of 2.1, the size of the potential workforce would increase given any positive level of NOM. The growth rate would, however, increase with increased levels of NOM.

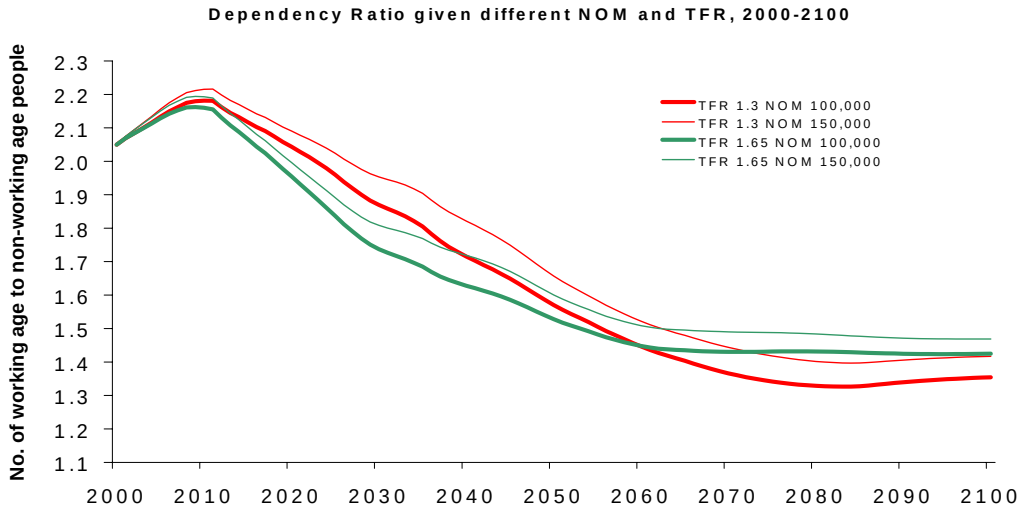
Figure 6



Dependency ratio

Figure 9 shows how changes in the fertility rate and levels of NOM can impact on the dependency ratio defined here as the proportion of the population of working age (15-64 years) relative to the proportion of the population of non-working age. For example, with a TFR of 1.65 and NOM of 100,000, there would be a peak of 2.19 working age people for every one other person in 2010, falling to 1.6 in 2050 for every one other person and to 1.47 in 2100 for every one other person.

Figure 7



Impact on population age structure

Different Levels of NOM with TFR of 1.65 from 2010 and TFR of 1.3 from 2021

A consistent message from the outcomes of all of the scenarios (illustrated in Figures 10 and 11) is that increases in fertility are far more effective in retarding the ageing of the population than increases in NOM. For example, a 27% improvement in fertility reduces ageing by 2.3 percentage points in 2050 and 4.7 percentage points by 2100. In contrast, a 50% increase in NOM reduces ageing by 1.4 percentage points in 2050 and 0.9 percentage points by 2100 (see notes (a) and (b) in Figure 10 below). However, even returning to a TFR of 2.1, which is unlikely, will not change the fact that the proportion of Australia's population that is over 65+ years will still roughly double in size over the next 50 years.

Irrespective of any feasible level of NOM, the percentage of the population aged 65 years and over would continue to rise over the next 50 years peaking higher and later the lower the TFR and then stabilising. Figure 10 shows, however, that the size of the aged population in absolute numbers would continue to increase given any feasible level of NOM, increasing faster the higher the level of NOM. In summary, the proportion of the population aged 65+ is higher the lower the TFR, while the absolute number is higher the higher the level of NOM.

All of the scenarios assume that the age structure of migrants remains younger than the population on average – as is the case under Australia's current Migration Program. Research shows that annual NOM of up to 80,000 to 100,000 makes a worthwhile and efficient contribution to the retardation of population ageing. Levels of NOM above this become increasingly ineffective and inefficient in the retardation of ageing. It is worth noting that large increases in migration might also reduce the "younging" effect of migration if Australia was required to accept more skilled migrants who were older than the population as a whole, particularly as global competition intensifies for young skilled migrants.

To increase the impact of NOM on retardation of ageing, we would have to lower the average age of the migrant population. Issues associated with taking such action include increased expenditure on education costs and an increased dependency ratio in the short to medium term associated with an increased proportion of the population being in the younger age brackets and not in the workforce.

Figure 10

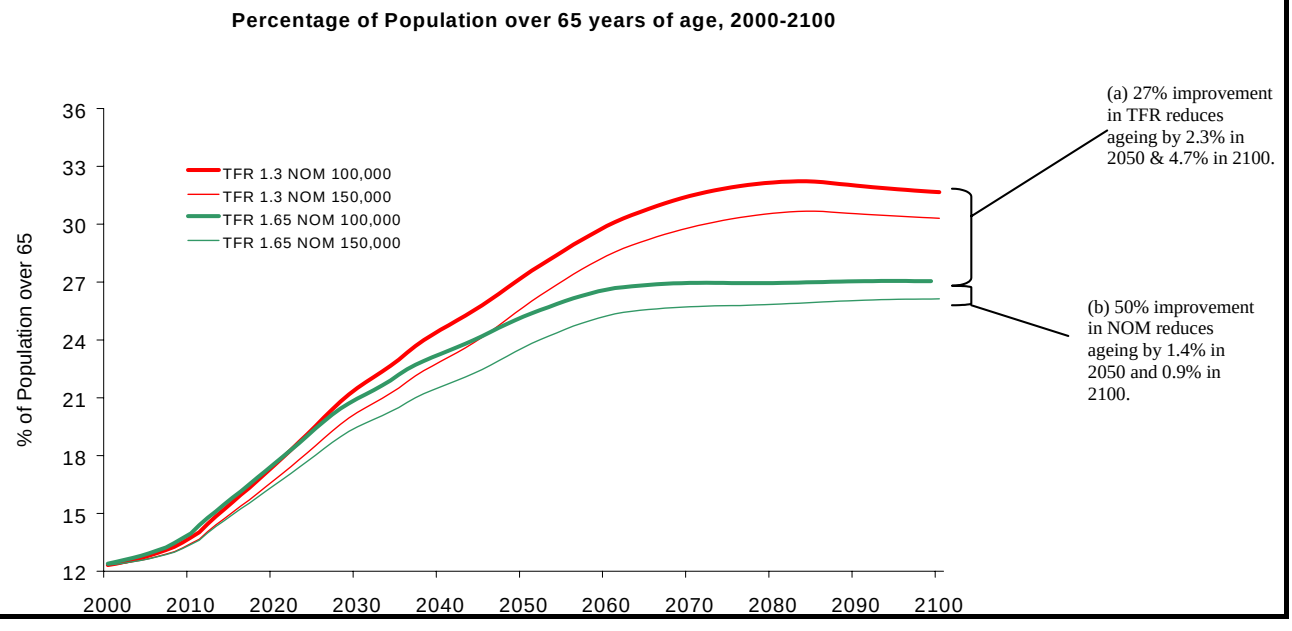
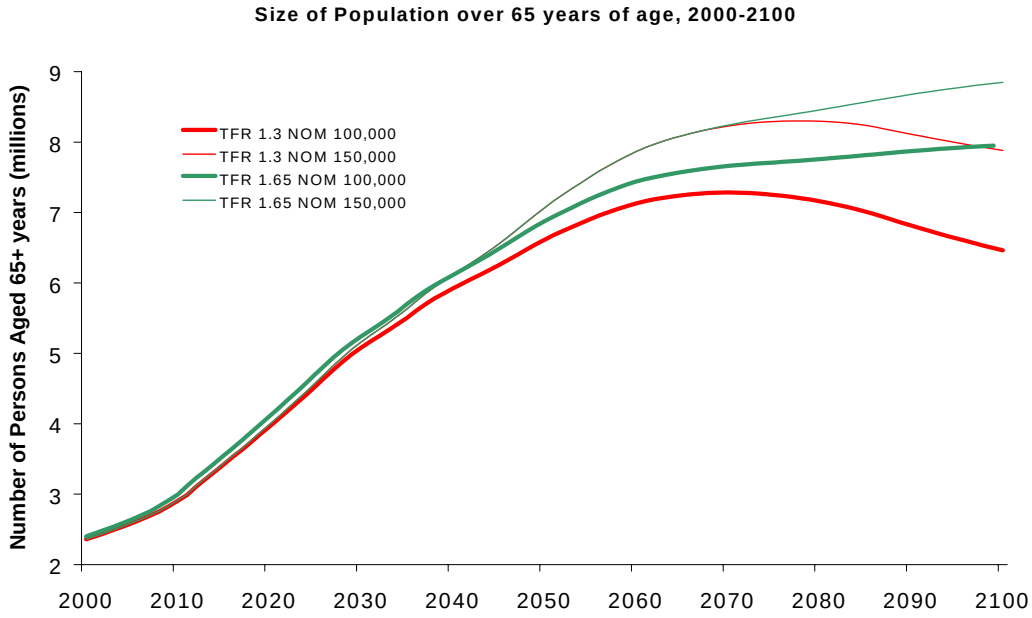


Figure 11



Different Levels of NOM with a TFR of 2.1 from 2021

It is unlikely that Australia would ever return to replacement levels of fertility. However, with TFR of 2.1, the absolute number of people aged 65 years and over would increase with any feasible level of NOM. The proportion of the population in this age bracket would peak around 2050, gradually begin to fall from then and remain relatively stable from about 2070 to the end of the century.

Table 1. Projection outcomes for the years 2000, 2050 and 2100, Australia

	INPUTS			OUTCOMES IN 2000							OUTCOMES IN 2050							OUTCOMES IN 2100						
	TFR (a)	Life Exp. (b)	NOM ('000) (c)	Popn (mill)	Popn Growth Rate % (d)	65+ % (e)	No. of 65+ (mill)	W-f age % (f)	No.of W-f age (mill)	Dep. Ratio (g)	Popn (mill)	Popn Growth Rate % (d)	65+ % (e)	No.of 65+ (mill)	W-f age % (f)	No.of W-f age (mill)	Dep. Ratio (g)	Popn (mill)	Popn Growth Rate % (d)	65+ % (e)	No.of 65+ (mill)	W-f age % (f)	No.of W-f age (mill)	Dep. Ratio (g)
Current	1.74	ABS	100	19.2	1.1	12.3	2.4	67.2	12.9	2.1	27.2	0.3	24.3	6.6	60.3	16.4	1.51	29.4	0.1	26.0	7.6	59.0	17.3	1.44
Baseline	1.65	ABS	100	19.2	1.1	12.3	2.4	67.2	12.9	2.1	26.4	0.3	25.0	6.6	60.5	16.0	1.53	27.1	0	27.0	7.6	58.8	15.9	1.42
High NOM	1.65	ABS	150	19.2	1.1	12.3	2.4	67.2	12.9	2.1	29.9	0.5	23.6	7.1	61.6	18.4	1.6	33.8	0.2	26.1	8.9	59.5	20.2	1.47
Low NOM	1.65	ABS	50	19.2	1.1	12.3	2.4	67.2	12.9	2.1	22.9	0	26.9	6.2	59.0	13.5	1.43	20.4	-0.2	28.6	5.8	57.5	11.8	1.35
Low TFR	1.3	ABS	100	19.2	1.1	12.3	2.4	67.2	12.9	2.1	24.2	0	27.3	6.6	61.1	14.8	1.57	20.4	-0.4	31.7	6.5	57.5	11.7	1.35
High NOM	1.3	ABS	150	19.2	1.1	12.3	2.4	67.2	12.9	2.1	27.4	0.2	25.7	7.1	62.3	17.1	1.65	25.9	-0.2	30.3	7.9	58.6	15.2	1.42
Low NOM	1.3	ABS	50	19.2	1.1	12.3	2.4	67.2	12.9	2.1	20.9	-0.4	29.4	6.2	59.4	12.5	1.46	14.8	-0.8	34.0	5.0	55.6	8.2	1.25
High TFR	2.1	ABS	100	19.2	1.1	12.3	2.4	67.2	12.9	2.1	29.5	0.7	22.4	6.6	59.4	17.5	1.46	38.7	0.5	22.0	8.5	59.5	23.1	1.47
High NOM	2.1	ABS	150	19.2	1.1	12.3	2.4	67.2	12.9	2.1	33.3	0.9	21.2	7.1	60.4	20.1	1.52	47.3	0.6	21.4	10.1	59.9	28.3	1.49
Low NOM	2.1	ABS	50	19.2	1.1	12.3	2.4	67.2	12.9	2.1	25.6	0.4	24.0	6.2	58.2	15.0	1.39	30.2	0.4	22.8	6.9	58.8	17.8	1.43

a. Total Fertility Rate (TFR). 1.65: TFR falls from 1.75 in 2000 to 1.65 in 2010 and then remains constant. 1.30: TFR falls from 1.75 in 2000 to 1.30 in 2021 and then remains constant. 2.1: TFR increases from 1.75 in 2000 to 2.1 in 2021 and then remains constant.

b. Life expectancy at birth: rises from 76.5 years for males and 82.5 years for females in 2000–05 to 81.5 years for males and 87.5 years for females in 2045–50, and remains constant to 2100 thereafter.

c. Net overseas migration (NOM). 100,000: NOM is constant at 100,000 per annum. High NOM: NOM is constant at 150,000 per annum. Low NOM: NOM is constant at 50,000 per annum.

d. Annual growth rate.

e. Percentage of the population aged 65 and over.

f. Percentage of the population aged 15-64 years ie workforce age.

g. Dependency ratio ie ratio of the number of people of workforce age compared to those not of workforce age.