
1. Ireland's Demographic profile - how it's changing and what the future may bring, with a focus on the "Young & Old"

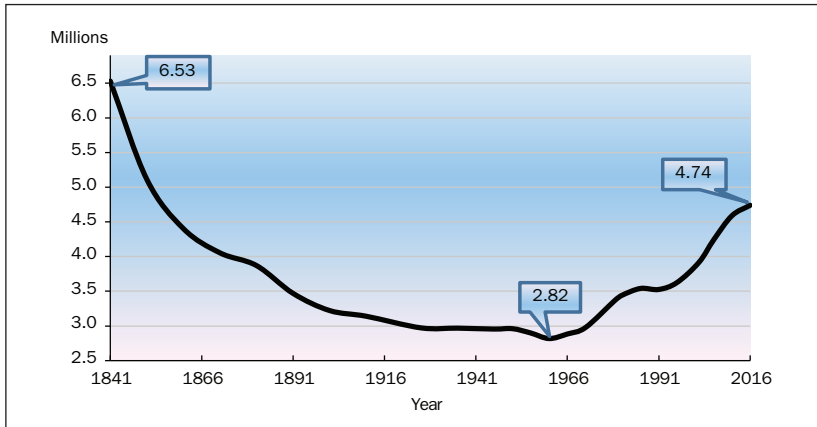
James Hegarty

1. Introduction – Ireland's population 1841-2019

The area representing the Republic of Ireland registered a decline in population from just over 6.5 million in 1841 to 3.1 million in 1911. The overall population level, which remained quite stable at just under three million between 1926 and 1951, declined further to reach a low point of 2.8 million in 1961. The 1960s, 1970s and the first half of the 1980s witnessed a decline in emigration and high level of natural increase culminating in a population total in excess of 3.5 million in 1986.

After a slight fall between 1986 and 1991, due mainly to a resumption of net outward migration at the end of the 1980s, the upward trend in population resumed in the early 1990s. Both natural increase and significant net inward migration contributed to record population growth between 2002 and 2006 with the result that the 2006 population of 4.24 million was 50 per cent higher than the low point of 1961. Despite a return to net outward migration in the years leading up to Census 2011 the population continued to grow strongly due mainly to the high number of births. Ireland's return to strong net inward migration since 2014 combined with a sustained natural increase resulted in the population climbing to an estimated 4.92 million in April 2019. This is the highest population recorded for Ireland since the 1851 Census.

Figure 1. Population at each Census 1841-2016



Source: CSO Ireland

2. Recent social and demographic changes

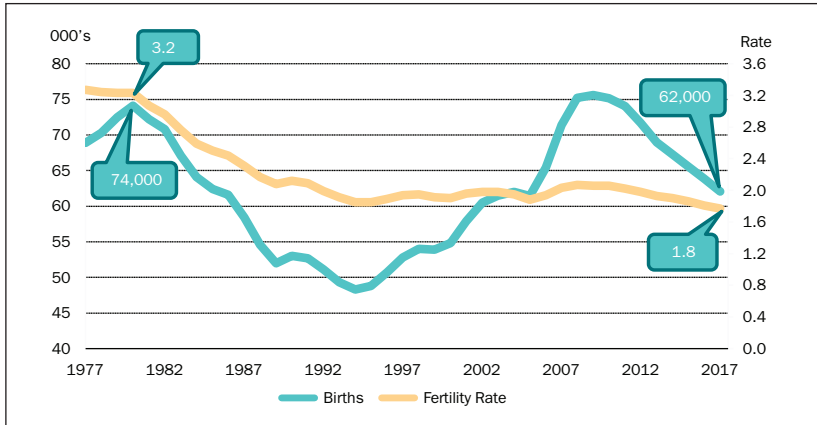
Irish society has changed significantly during the past half century. We have, for example, become a mainly urban society. Census 2016 informed us that 63% of the population lived in urban areas; the comparable figure in 1966 was 44%. Ireland has also seen significant gains in those achieving 3rd level qualifications. In 1991, 14% of males and 13.2% of females had received a third level education. By 2016, 43.2% of women were educated to third level compared with 40.7% of men. In fact, the 1991 Census was the last to indicate a higher proportion of third level qualifications among men compared with women. These gains in educational attainment have also coincided with increased labour force participation for women.

Declining fertility

Like many countries experiencing increased levels of urbanisation and social change Ireland has seen declines in both the volume of births and fertility rates. In 2017, Ireland had just over 62,000 births, a substantial decrease from the recent high of 75,000 births recorded in 2010. The decline in fertility rates is even more dramatic, in 1980 each woman of child bearing age would have 3.2 children on average over the child bearing years, by 2017 this had declined to 1.8 (see figure 2). The age at which women are having their first child is also rising year on year. In 1980 the average age

at which women had their child was 24.9 years by 2017 this had risen to 31.0 years.

Figure 2. Births and Total Fertility Rate, 1977 - 2017

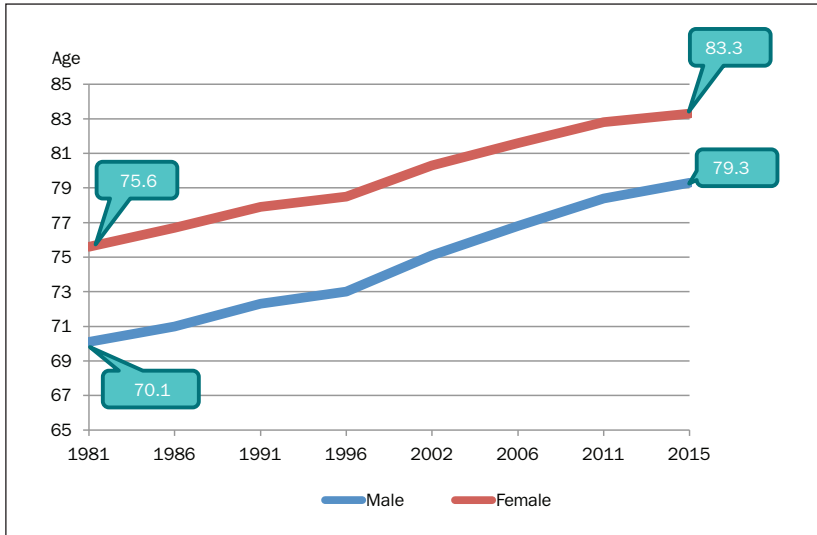


Source: CSO Ireland

Increased life expectancy

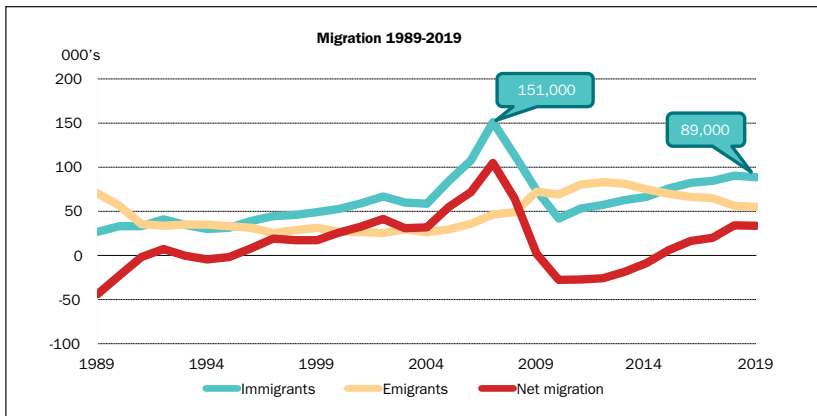
Ireland has also experienced strong gains in life expectancy with male life expectancy increasing from 57.4 years in 1926 to 79.3 years in 2015 (a gain of 21.9 years), while females have seen a gain of 25.4 years (from 57.9 to 83.3). A significant portion of this increase has occurred since 1981 with male life expectancy increasing by 7.7 years and female life expectancy increasing by 9.2 years between 1981 and 2015 (see figure 3). As a result of declining fertility rates and improvements in life expectancy Ireland’s population is getting older. In 1981, the average age of Ireland’s population was 31.3 years of age, by 2016 this had increased to 37.4 years of age.

Figure 3. Life expectancy for males and females, 1981 - 2015



Source: CSO Ireland

Figure 4. Immigration, emigration and net migration



Source: CSO Ireland

Net inward migration

Ireland has evolved from a country of net migration outflows to one that primarily experiences net migration inflows, with net inward migration recorded for 15 of the last 20 years (see figure 4). Ireland has also become a much more multicultural society. In 1996 just over 53,000 (1.5%) Census respondents were born outside of Ireland, by 2016 this had increased to just under 540,000 (11.3%). In the 20 years 1997 to 2016, 20,000 more persons on average arrived to live in Ireland per annum than left Ireland to live abroad. Since 2016 immigration has exceeded emigration by around 30,000 per annum.

3. Designing the population projections, 2017-2051

As in previous iterations of the projections, the CSO convened an Expert Group on Population Projections. Having considered the recent social and demographic trends the group agreed on the following projection assumptions. Two sets of assumptions were chosen for fertility, one for mortality and three for migration up to the year 2051, giving six sets of results altogether.

Fertility Assumptions Agreed

- F1:** Total fertility rate to remain at the 2016 level of 1.8 for the lifetime of the projections
- F2:** Total fertility rate to decrease from 1.8 to 1.6 by 2031 and to remain constant thereafter to 2051

Mortality Assumptions Agreed

Mortality rates for males and females are assumed to improve at 2.5% and 2.0% per annum respectively in the short-term to 2040. The long-term rate of improvement is assumed to be 1.5% per annum. These assumptions will result in gains in life expectancy from:

- 79.3 years in 2015 to 85.6 years in 2051 for males
- 83.3 years in 2015 to 88.3 years in 2051 for females

Migration Assumptions Agreed

- M1:** Net migration +30,000 per annum to 2051
- M2:** Net migration +20,000 per annum to 2051
- M3:** Net migration +10,000 per annum to 2051

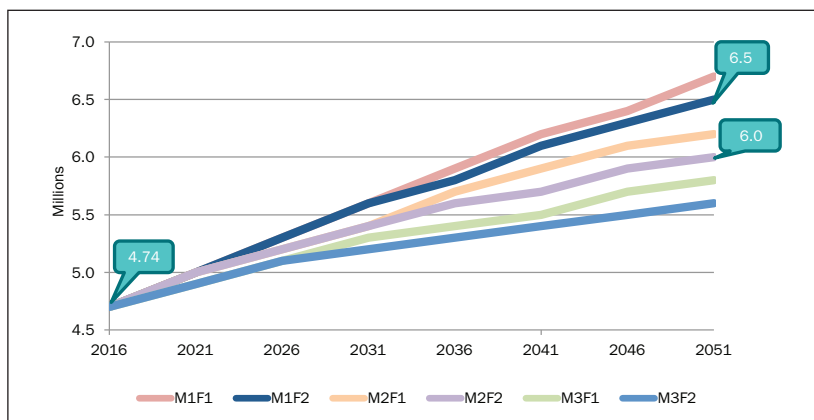
4. Population Projection results 2017-2051¹

The usually resident population according to Census 2016 was 4.74 million and this is projected to grow significantly under the six projection scenarios to 2051. Figure 5 and table 1 illustrate the projected population at 5 year intervals for the six scenarios from 2016 - 2051.

Recent trends indicate that sustained net inward migration inflows and declines in fertility are likely to continue. Therefore this report will focus on the two scenarios that best reflect these trends.

The high migration declining fertility scenario M1F2 (which assumes annual net inward migration of 30,000 and a declining fertility rate) sees the population increase to 6.5 million by 2051. The more moderate M2F2 (which assumes annual net inward migration of 20,000 and a declining fertility rate) shows a population increase of 1,290,900 (+27.2%) over the same period to 6.03 million persons. The accompanying presentation will concentrate on the high migration declining fertility scenario (M1F2) only.

Figure 5. Actual and projected population, 2016 - 2051



Source: CSO Ireland

¹ <https://www.cso.ie/en/releasesandpublications/ep/p-plfp/populationandlabourforceprojections2017-2051/populationprojectionsresults/>

Table 1 Projected population, 2016 - 2051

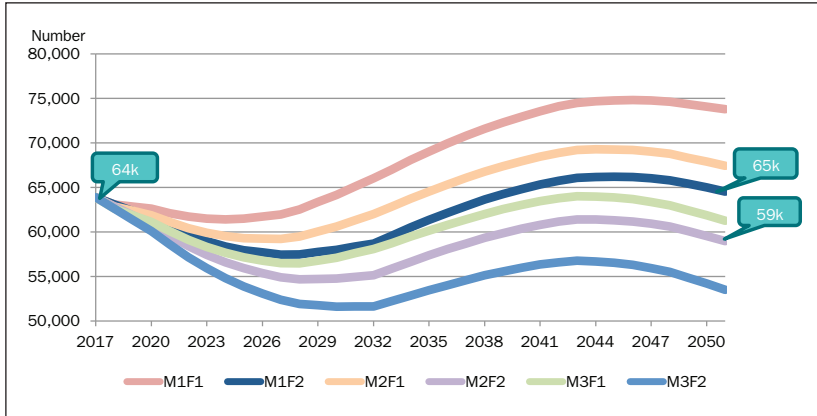
| Year | High Fertility (F1) | | | Low Fertility (F2) | | |
|------|---------------------|---------|---------|--------------------|---------|---------|
| | M1 | M2 | M3 | M1 | M2 | M3 |
| | '000 | | | | | |
| 2016 | 4,739.6 | 4,739.6 | 4,739.6 | 4,739.6 | 4,739.6 | 4,739.6 |
| 2021 | 5,047.5 | 4,995.2 | 4,943.0 | 5,044.4 | 4,992.2 | 4,940.0 |
| 2026 | 5,334.9 | 5,224.2 | 5,113.4 | 5,316.7 | 5,206.5 | 5,096.2 |
| 2031 | 5,614.5 | 5,438.8 | 5,263.0 | 5,568.3 | 5,394.6 | 5,220.7 |
| 2036 | 5,896.3 | 5,651.2 | 5,405.9 | 5,812.5 | 5,571.8 | 5,330.8 |
| 2041 | 6,176.7 | 5,860.0 | 5,542.9 | 6,052.7 | 5,743.0 | 5,432.9 |
| 2046 | 6,445.9 | 6,056.0 | 5,665.6 | 6,279.5 | 5,899.8 | 5,519.3 |
| 2051 | 6,692.9 | 6,227.9 | 5,762.3 | 6,481.9 | 6,030.5 | 5,578.3 |

Source: CSO Ireland

Births

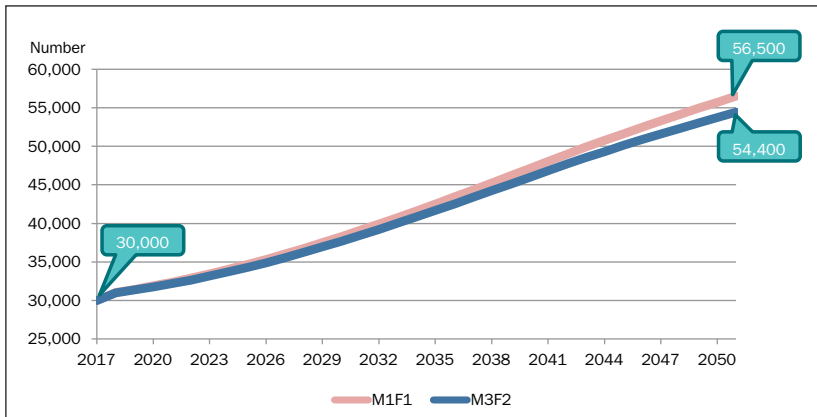
Annual average births are projected to experience a period of decline towards 2030 under all scenarios, at varying rates depending on the assumption used. This is a consequence of the projected lower number of women of child bearing years at this time, resulting from a fall in the number of births between the period 1986 and 2006. For the declining fertility scenarios such as M1F2 and M2F2 annual average births are projected to reach around 65,000 and 59,000 respectively by 2051. The F2 (declining fertility) scenarios currently offer the more likely outcomes given the steady decline in fertility rates and the consistent increases in the age of first-time mothers. Figure 6 graphs the projected annual births for each year from 2017 - 2051 for each assumption.

Figure 6. Projected annual births, 2017 - 2051



Source: CSO Ireland

Figure 7. Projected deaths, 2017 - 2051



Source: CSO Ireland

Deaths

The average annual numbers of deaths are projected to increase steadily under all scenarios from 29,500 in 2016 to between 54,400 and 56,500 by 2051 depending on the scenario chosen. Figure 7 graphs the projected deaths for the most optimistic and most pessimistic scenarios, with the other scenarios falling between these.

Net migration

Net migration is projected to be +30,000 on average for scenario M1, an annual average of +20,000 persons under M2 and +10,000 (the most pessimistic scenario) for M3 for the period 2017 - 2051.

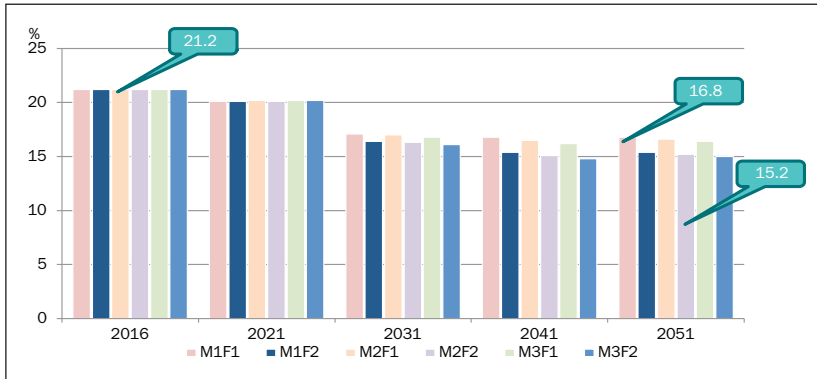
5. Projected population for selected age groups – ‘young’ population

The young population – Ages 0 - 14

Census 2016 showed that there were 1,005,500 persons aged 0-14 years. Under the high migration declining fertility scenario M1F2 the population aged 0 - 14 is projected to decline from 2016 levels to 905,800 persons by 2036. Post 2031 the average annual numbers of births are projected to rise gradually under this scenario, leading to just over 1 million persons aged 0 - 14 by 2051.

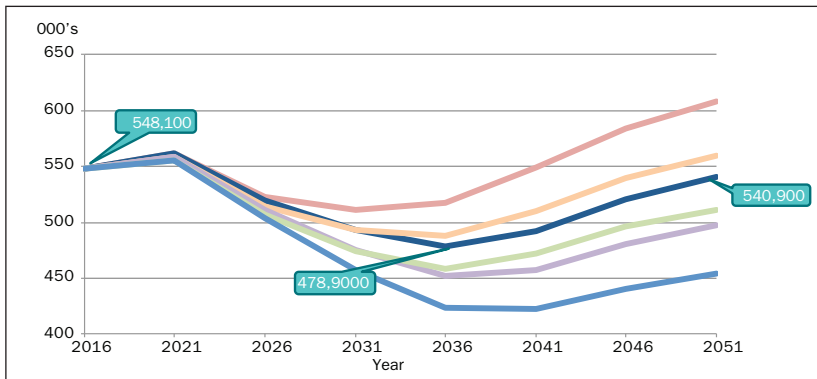
Using the medium migration and declining fertility assumption M2F2 the number of persons aged 0-14 is projected to decline to 853,100 in 2036, before rising steadily to 918,200 persons by 2051. This represents a decrease of 8.7% on 2016 levels. Under all scenarios those age 0-14 will account for a lower percentage of the population in 2051 than in 2016 (see figure 8).

Figure 8. Actual and projected percentage of the population aged 0-14, 2016 - 2051



Source: CSO Ireland

Figure 9. Actual and projected primary school pupils, 2016 – 2051



Source: CSO Ireland

Primary school children – Ages 5 – 12

For the purpose of this projections exercise the “primary” school population is broadly represented by those aged 5-12 years of age. In 2016 there were 548,100 children in this age group and this number is projected to increase by between 13,900 and 7,400 to 2021, depending on the scenario chosen. Post 2021 the fall in births since 2010 is expected to impact negatively on the number of primary school children under all combinations of

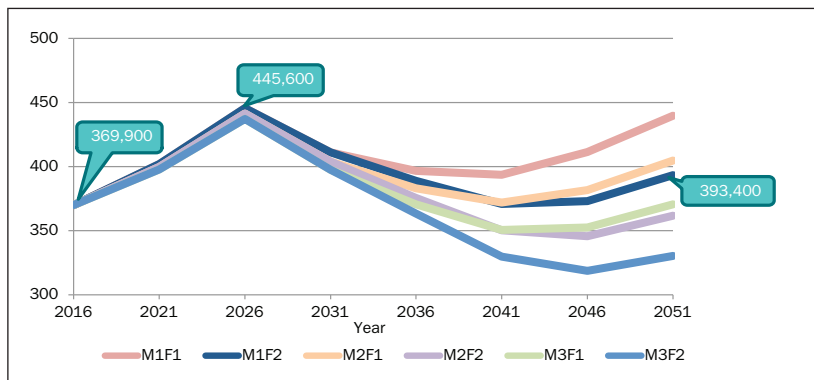
assumptions, before increasing steadily thereafter. The period and rate of decline is dependent on the assumption chosen.

Under the high migration and declining fertility assumption M1F2 primary school children will decrease from 548,100 in 2016 to 478,900 by 2036 (-14.8%), before climbing to reach 540,900 by 2051 (see figure 9).

Secondary school pupils – Ages 13 – 18

The number of children of “secondary” school age (i.e. persons aged 13 -18 years) is projected to increase by between 75,700 and 67,200 over the next decade to 2026, depending on the assumptions used. This represents increases in the range of 20.5% to 18.2% over the period. The largest increases will be seen between 2021 and 2026 as the projected cohort of primary school children graduate to secondary level. The number of secondary school children is projected to decline under all declining fertility scenarios post 2026 to 2046. Figure 10 shows the projected number of secondary school pupils for selected years from 2016 - 2051.

Figure 10. Actual and projected secondary school pupils, 2016 - 2051



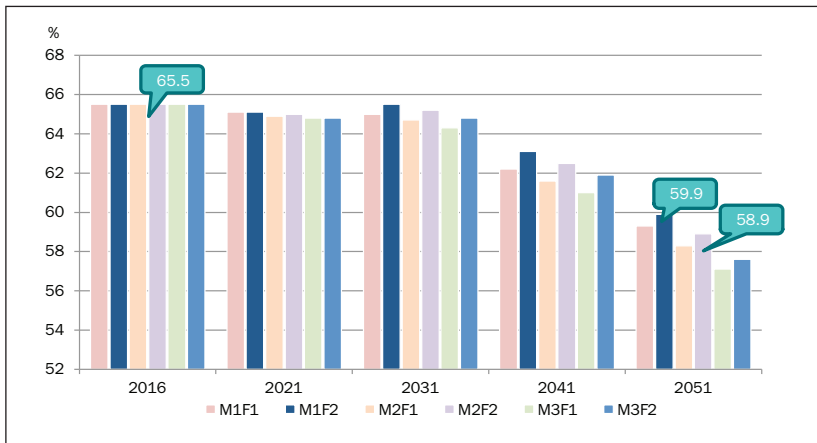
Source: CSO Ireland

Working age population – Ages 15 - 64

The working age population is primarily comprised of those aged 15 - 64. In 2016 there were 3,104,300 persons in this age category, equating to 65.5% of the total population of 4,739,600. While the size of this population group will rise under all scenarios by 2051, its relative share of the total population is set to decrease.

The M1F2 scenario projects that while the working age population will increase by 780,100 (25.1%) to 3,884,400 by 2051, its overall share of the population of 6,481,900 will have declined by over 5.5 percentage points to 59.9%. The M2F2 scenario shows that the working age population will increase by 445,500 to 3,549,700 by 2051 (14.3%) but its overall share of the population will have declined from 65.5% in 2016 to just under 59% by 2051. Figure 11 shows the percentage of the population aged 15 - 64 for selected years from 2016 - 2051.

Figure 11. Actual and projected percentage of the population aged 15 - 64, 2016 – 2051



Source: CSO Ireland

6. Projected population for selected age groups – The ‘older’ population

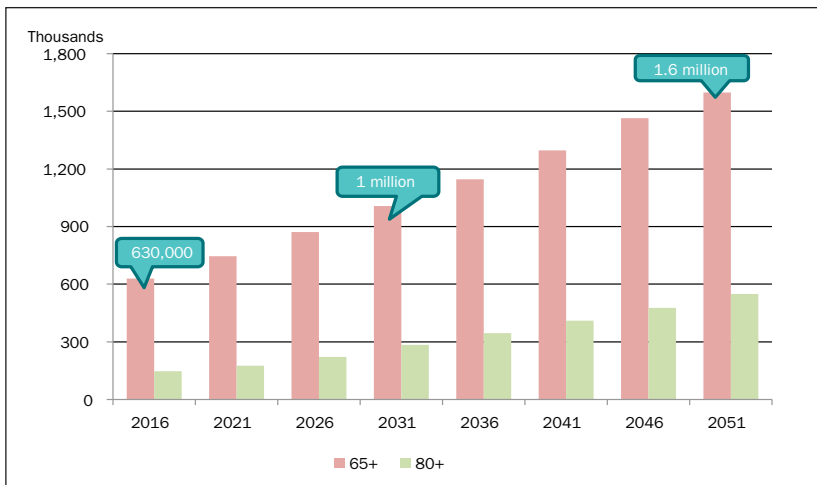
The older population (i.e. those aged 65 years and over) is projected to increase very significantly from its 2016 level of 629,800 persons to nearly 1.6 million by 2051 under the more positive M1 and M2 migration assumptions. Figure 12 highlights the increases in the older population to 2051

The very old population (i.e. those aged 80 years of age and over) is set to rise even more dramatically, increasing from 147,800 in 2016 to 549,000

under M1F2 and 541,700 under M2F2 by 2051. This reflects increases of between 263% and 271% in this age group.

In 2016, the number of persons aged 0-14 (1,005,500) was considerably higher than the number of persons aged 65+ (629,800), but this will reverse by 2031 under all scenarios. The excess will increase steadily towards 2051 at which stage it is projected that there will be between 496,600 and 691,800 more older people than younger people depending on the scenario used.

Figure 12. Actual and projected population aged 65+ and 80+, 2016 – 2051 (M1F2)



Source: CSO Ireland

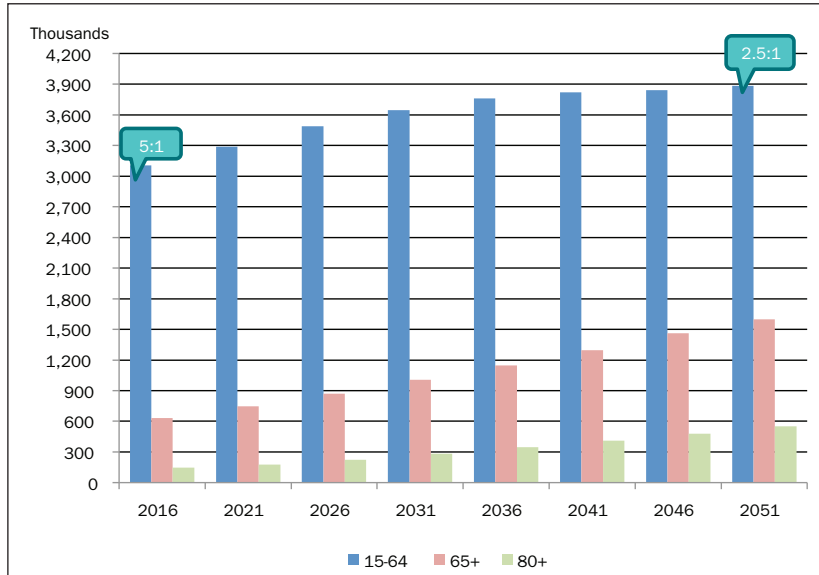
Dependency ratios

The young dependency ratio (the population aged 0 - 14 years expressed as a percentage of the population aged 15 - 64 years) is projected to fall under all assumptions by 2051. This ratio was 32.4% in 2016 and falls to 25.8% under M1F2. The young dependency ratio is expected to be at its lowest level in the five year period to 2036.

The older dependency ratio (the population aged 65 years and over expressed as a percentage of the population aged 15 - 64 years) was 20.3% (5:1) in 2016. This is projected to increase steadily from 2016 onwards,

rising by 3 - 4 percentage points every five years. By 2051 this ratio will have doubled since 2016 and is projected to be 41.1% for the M1F2 Scenario (2.5:1).

Figure 13. Ratio of the working age population to those aged 65+ (M1F2)



Source: CSO Ireland

The two ratios combined give the total dependency ratio. In 2016 the total dependency ratio of 52.7% meant that there were roughly 2 people of working age for everyone aged 0-14 and 65+. This ratio is projected to rise under all scenarios to reach values of between 66.9% (M1F2) and 75.2% (M3F1) by 2051. Therefore in 2051 there will be less than 1.5 persons of working age compared to the total of those aged 0 - 14 and 65+.

Changing population structure

Ireland's changing population structure is illustrated in figure 14 and shows a fall in those aged 0-10 years of age by 2051 with increases projected for all other age groups. In 2016, 13.3% of the population were aged 65 and over, by 2051 those aged 65 and over are projected to account for just less than 25% of the total population.

Figure 14. Population pyramid for 2016 and projected for 2051 (M1F2)



Source: CSO Ireland

7. Conclusion

Ireland's population is projected to grow substantially over the next 35 years. While Ireland's demographic structure is relatively favourable at present, shifting demographics over the coming decades will see large increases in the older age groups. The number of persons aged 65 and over is projected to increase from 630,000 in 2016 to just less than 1.6 million by 2051. The increase in the older population will be accompanied by a reduction in the percentage share of the working age population and increased dependency ratios (at present there are around 5 persons of working age for each person aged 65 and over; by 2050, the equivalent figure is projected to be around 2.5).

The CSO demographic projections help to inform policymakers of the likely demographic trends to 2051. This knowledge will assist policymakers to address the needs of a changing society and to manage resources for demographically-sensitive components of public expenditure, such as pensions and healthcare.