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An Phríomh-Oifig Staidrimh

Population and Labour Force Projections

2011-2041

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BACKGROUND

Background

This report provides projections of the:

- population classified by age and sex at five year intervals for the period 2011 to 2041;
- labour force classified by age, sex and female marital status for 2011, 2016 and 2021.

The projections are based on assumptions relating to future trends in fertility, mortality, migration and labour force participation. Two sets of assumptions were chosen for fertility, one for mortality and three for migration¹ trends up to the year 2041. For the labour force projections a single set of assumptions relating to future labour force participation rates was chosen.

The assumptions used for the projections were agreed by an Expert Group (see membership in Appendix 1) which met during the period May to October 2007. The Central Statistics Office is grateful to the members of the group for their input and advice during the discussions leading to the adoption of these assumptions. The most up-to-date information available was used in preparing the projections. This included the results of the 2006 Census of Population, information on births up to 2006, life tables for 2004/2006 and the results for the March-May 2007 quarter from the Quarterly National Household Survey (QNHS).

Methodology

The model used in the projections is the demographic component method which projects the base 2006 population forward under the chosen assumptions governing births, deaths, migration and labour force participation. This is explained further in Appendix 2.

The methodology used in the present population projections is similar to that followed in previous projections reports. However, in line with the change introduced for the annual population estimates the projected population in the present report is on a usual residence basis rather than a de-facto basis. In practice the differences involved are quite small.

A glossary of technical terms is given in Appendix 3 to assist readers who may not be familiar with the terminology used in the report.

Layout of the report

The report contains three sections:

- The first section contains a brief description of historical population trends and the factors influencing them.
- The projection assumptions chosen and the rationale for selecting them are covered in the second section under the four population components: *fertility*, *mortality*, *migration* and *labour force*. The assumptions used in the previous set of projections are reviewed against the out-turn for recent years.
- The main results are described in the third section focusing in turn on the young population, the population of working age and the old population.

The main results presented consist of nine tables:

- Tables 1 to 6 contain the projected population at five-year intervals between 2011 and 2041 under the six scenarios obtained from the different combinations of the fertility and migration assumptions.
- Table 7 gives the average annual numbers of projected births, deaths and net migrants for the corresponding inter-censal periods.
- Tables 8, 9 and 10 contain the projected labour force for 2011, 2016 and 2021 under the M1, M2 and M0 migration assumptions.

¹ One of the three migration assumptions is a zero net migration scenario.

More detailed results are available on the CSO website http://www.cso.ie/releasespublications/pr_pop.htm (See Appendix 4).

Appendix 5 contains a number of supporting tables which either informed the deliberations of the Expert Group or were derived from the results of the projection exercise.

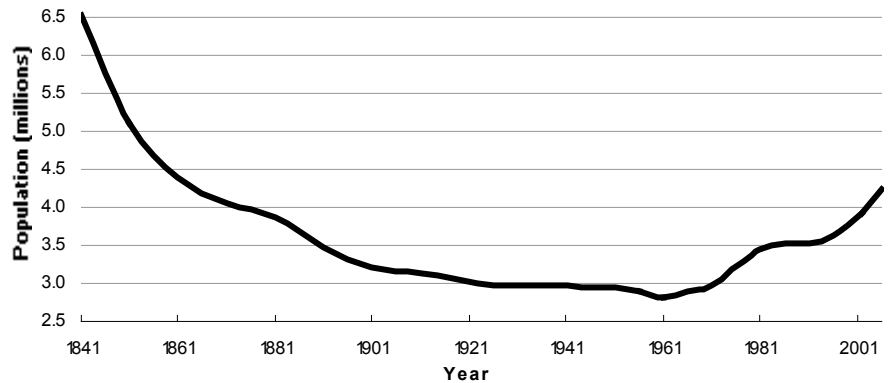
Appendix 6 provides a description of the method used to project mortality.

HISTORICAL POPULATION² TRENDS

The population 1841 to 1926

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 (see Table A1 in Appendix 5). The effects of the famine of 1846/1847 and the subsequent heavy population losses due to emigration in the latter half of the nineteenth century were the main contributing factors to this decline. A further fall of over 5 per cent occurred between 1911 and 1926 – the first year in which a census was held in the newly independent State. The continuing high level of emigration was again the main reason for this decline.

Figure 1 Population, 1841 to 2006



The situation since 1926

The overall population level, which remained quite stable at just under three million between 1926 and 1951, declined 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 a relatively 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, the upward trend in population resumed in the early 1990s. Both natural increase and significant net inward migration have contributed to record population growth with the result that the 2006 population of 4.24 million was 50 per cent higher than the low point of 1961 and was the highest recorded since the census of 1871.

Table A shows the components of population change, expressed in the form of annual averages, for each inter-censal period since 1926. The relevant components are:

- the natural increase, i.e. births less deaths; and
- net migration, i.e. inward less outward migration.

² The population figures quoted in this section relate to the de-facto concept i.e. those present in the State on Census night. The projected population is on the basis of the usual residence concept in line with changes introduced in the annual population estimates.

Table A Average annual births, deaths, natural increase and estimated net migration for each inter-censal period, 1926 to 2006

Period	Total births	Total deaths	Natural increase	Change in population	Estimated net migration
	Thousands				
1926 - 1936	58	42	16	0	-17
1936 - 1946	60	43	17	-1	-19
1946 - 1951	66	40	26	1	-24
1951 - 1956	63	36	27	-12	-39
1956 - 1961	61	34	26	-16	-42
1961 - 1966	63	33	29	13	-16
1966 - 1971	63	33	30	19	-11
1971 - 1979	69	33	35	49	14
1979 - 1981	73	33	40	38	-3
1981 - 1986	67	33	34	19	-14
1986 - 1991	56	32	24	-3	-27
1991 - 1996	50	31	18	20	2
1996 - 2002	54	31	23	49	26
2002 - 2006	61	28	33	81	48

Lowest population level in 1961

The stability of the population level in the 1926 to 1951 period resulted from gains due to the natural increase being counterbalanced by losses due to net outward migration. The high emigration during the 1950s was responsible for the historically low population level of 2.8 million recorded in 1961.

Population levels began to rise again during the 1960s mainly as a result of the decline in net outward migration. The reversal in net migration from outward to inward during the 1970s alongside an increase in births led to an overall population increase of just over 465,000 between 1971 and 1981.

Net outward migration resumed again during the early 1980s and, coupled with a decline in births, resulted in a moderation in the rate of overall population increase. The sharp increase in net outward migration in the second half of the 1980s, along with a continued fall in the number of births, contributed to a small population loss between 1986 and 1991.

In the early 1990s there was a further decline in the average annual natural increase due to the declining birth rate. However, as a consequence of increased economic activity and employment growth there was a change around once again in the pattern of migration, with a small net inflow recorded between 1991 and 1996. Thus the population increased at an average annual rate of over 20,000 in the period 1991 to 1996.

Recent high net inward migration

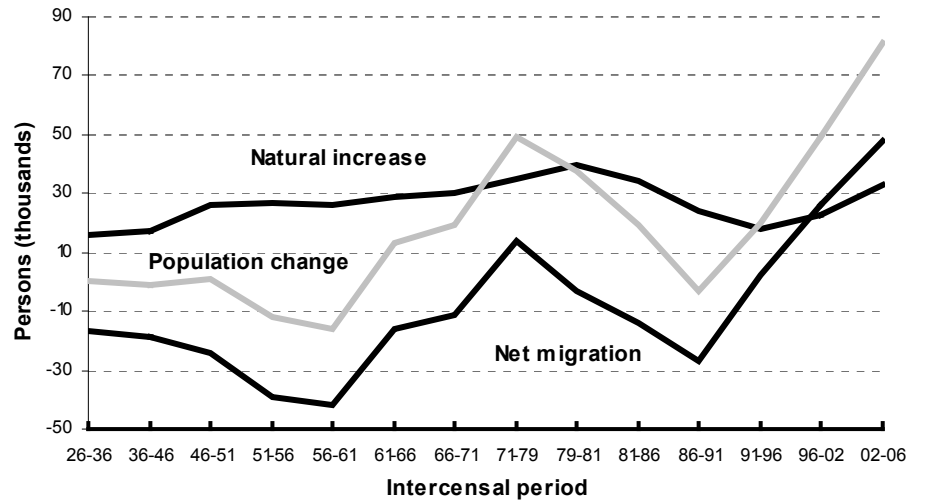
The 1996-2002 inter-censal period saw the average annual natural increase revert to the level attained during the late 1980s. When combined with high net inward migration this led to an average annual population increase on a par with that achieved during the 1970s.

The most recent inter-censal period (2002-2006) has seen the upward movement in the average annual natural increase continue. Historically high net inward migration combined with this natural increase has resulted in an unparalleled average annual population increase of over 80,000 or nearly 2 per cent per annum over this period.

Components of population change

Figure 2 shows average annual inter-censal population change, natural increase and net migration for the period 1926 to 2006. The dominant influence which migration has exerted on the pattern of population change over the eighty year period can be clearly seen from the graph.

Figure 2 Components of population changes, 1926 to 2006



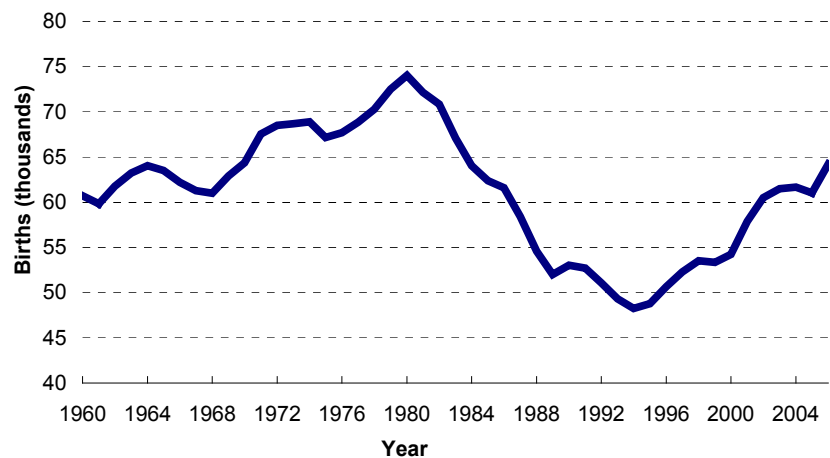
ASSUMPTIONS

Fertility

Births 1960 to date

From a fertility perspective the period from 1960 to 2006 has been a varied and interesting one. The underlying trend in the annual number of births during the 1960s and 1970s was steadily upwards, from 61,000 in 1960 to a peak of 74,000 in 1980, although there were some decreases during these years. From 1980 to 1994 the number of births fell steeply (apart from a slight pick-up in 1990) to reach a low point of 48,000 in 1994. The period since 1994 has seen the underlying trend in the annual number of births revert to its upward path and, as a result, the annual number of births has consistently exceeded 60,000 in recent years. The situation is illustrated graphically in Figure 3.

Figure 3 Births, 1960 to 2006



More women of child bearing age

The factors which impact on the number of births are the number of women of child bearing age (15-49 years) and the fertility levels of these women (see Table A2 in Appendix 5 and Table B below). In analysing the period 1960-2006 it is instructive to distinguish three distinct sub-periods: 1960-1980, 1980-1994 and 1994-2006.

In the first sub-period the number of women aged 15-49 increased by over 30 per cent. However, of more significance was the increase of nearly 50 per cent in the number of women in the prime child bearing age groups, i.e. those aged 20-39 years. The increase of over 20 per cent in the number of births during this twenty-year period thus masked a significant decline in underlying fertility rates.

The number of women aged 20-39 years continued to grow between 1980 and 1994, albeit at a slower rate (12%) than during the previous sub-period, and taken in conjunction with a decrease of 43 per cent in the total fertility rate resulted in a decline of over a third in the number of births.

In the most recent period (1994-2006) the increase of 31 per cent in the number of women aged 20-39 years was the main contributor to the rise of about a third in the number of births i.e. there was little change in fertility rates.

Table B contains age-specific and total fertility rates at five yearly intervals from 1960 to 1990 and for each year from 1990 to 2006.

Table B Age-specific fertility rate and total fertility rate, 1960 to date

Year	Live births per 1,000 females at specified ages							TFR
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
1960	8.8	103.9	209.6	213.1	156.3	56.0	4.2	3.76
1965	14.0	125.1	236.1	218.9	150.3	57.6	4.2	4.03
1970	16.3	145.5	228.7	201.9	131.9	45.3	3.7	3.87
1975	22.8	138.5	216.0	162.2	100.2	36.8	2.6	3.40
1980	23.0	125.3	202.3	165.7	97.3	29.6	2.3	3.23
1985	16.6	87.2	158.6	138.4	75.3	21.6	1.5	2.50
1990	16.7	63.3	137.6	126.2	63.1	15.4	1.1	2.12
1991	17.1	64.0	131.8	124.4	63.4	15.2	1.0	2.09
1992	16.9	58.9	123.9	122.3	61.3	14.4	0.8	1.99
1993	16.3	53.8	116.5	121.2	58.5	14.1	0.9	1.91
1994	15.0	50.7	112.5	119.8	58.6	12.8	0.7	1.85
1995	15.1	50.3	106.7	123.5	60.3	13.1	0.8	1.85
1996	16.7	52.2	105.3	127.1	63.9	11.8	0.6	1.89
1997	17.5	50.9	106.4	131.5	66.6	13.4	0.8	1.94
1998	19.2	52.5	103.1	131.5	69.3	13.4	0.6	1.95
1999	20.2	51.0	99.4	129.5	68.5	12.9	0.6	1.91
2000	19.5	51.6	95.1	129.3	71.3	13.6	0.5	1.90
2001	19.9	53.3	95.1	134.1	75.3	13.9	0.7	1.96
2002	19.4	52.8	93.7	134.5	80.0	14.5	0.6	1.98
2003	19.0	50.3	92.6	135.0	82.3	15.7	0.5	1.98
2004	17.6	49.1	87.9	133.4	84.6	15.8	0.6	1.95
2005	16.8	45.9	78.8	130.3	87.2	16.8	0.6	1.88
2006	16.6	49.2	81.1	128.1	87.6	17.7	0.7	1.90

The five-year age groups 20-24, 25-29, 30-34, 35-39 together accounted for 92 per cent of all births in 2006. The age-specific fertility rate for 20-24 year old women had declined to almost a third of its 1970 value by 1994 but has since remained close to that level. The fertility decline observed for women aged 25-29 years has been on a par with that of the 20-24 years olds but has occurred at a slower rate up to the present. Women aged 30-34 accounted for just over a third of all births in 2006. The long-term decline in the age-specific fertility rate of these women halted in 1994 and small increases were recorded over the next decade. Consistent decreases have been observed over the last three years but it is too early to conclude whether this is indicative of a new emerging downward trend of longer duration.

The long-term decline in the age-specific fertility rate of women aged 35-39 years also halted in 1994 but has since increased by almost 50 per cent over the following decade or so. Women aged 40-44 accounted for only 4 per cent of all births in 2006 but it is interesting to note that the age-specific fertility rate of this age group has also been climbing in recent years, with an increase of nearly 40 per cent since 1994.

Decline in total fertility

At the overall level the total fertility rate declined from 4.03 in 1965 to 2.08 in 1989, which was the first year for fertility to fall below the replacement level of 2.1. After a slight upward movement in 1990 the TFR continued to decrease to a low point of 1.85 in 1994 and 1995. It has oscillated within the range 1.88 to 1.98 since then and stood at 1.90 in 2006.

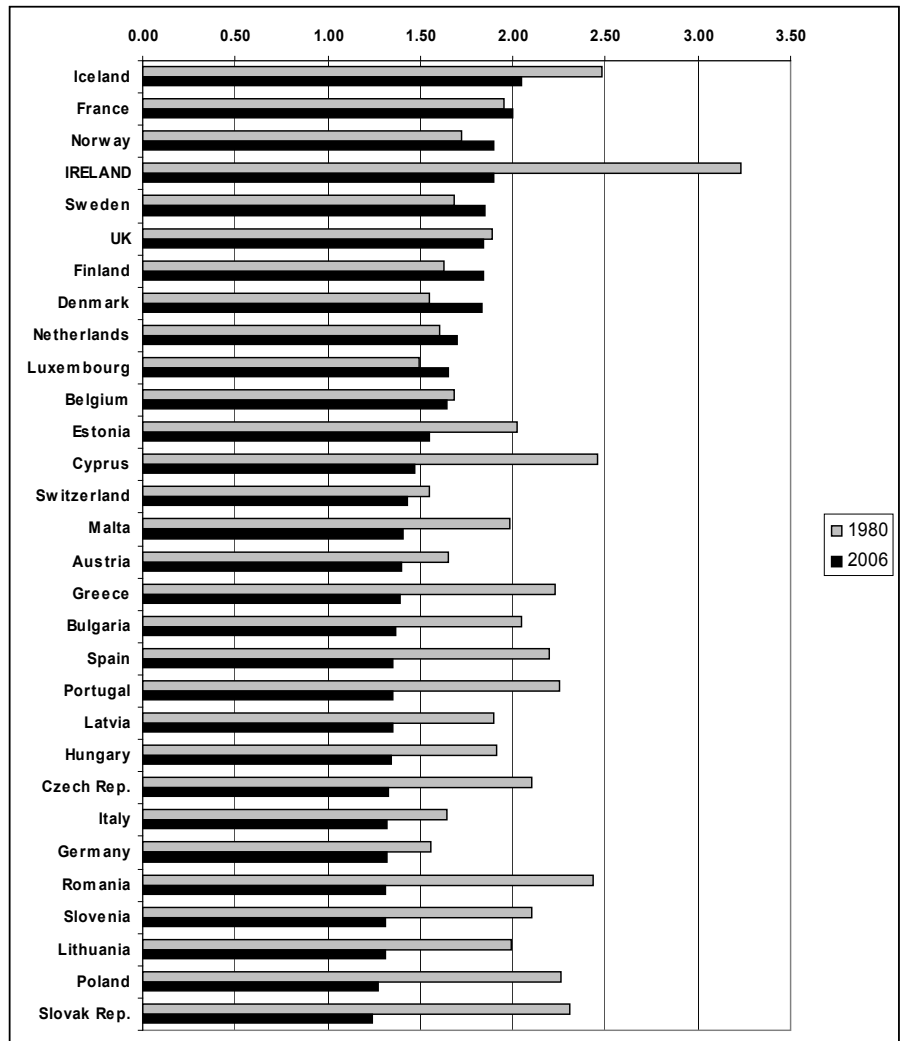
By calculating the theoretical number of births which would have occurred in 2006 if the age-specific fertility rates of 1965 still applied an indication can be obtained of the impact of the decrease in fertility rates between the mid-sixties and 2006. Using the 1965 rates, births in 2006 would have amounted to 137,200, which would have been more than double what they actually

were, (i.e. 137,200 theoretical births as against an actual 2006 figure of 64,200 births).

International trends of selected countries

Figure 4 gives the total fertility rate (TFR) for the 27 EU countries as well as for Iceland, Norway and Switzerland in 1980 and 2006. The TFR has declined in Ireland by over 40 per cent between 1980 and 2006. Notwithstanding this decline Ireland continues to have one of the highest fertility rates in Europe (exceeded only by Iceland and France and on a par with Norway).

Figure 4 Total fertility rates for selected countries, 1980 and 2006



Source: Eurostat Statistics in Focus

In short, Ireland is now no longer an outlier in terms of having a markedly higher fertility than in other European states. In general terms the highest fertility rates occur in the Northern European states while the lowest occur in the East and South.

Fertility assumptions

When deciding on the assumptions for future fertility the Expert Group took account of the recent trends in Ireland and developments in Europe. It concluded that the very recent slight upward trend in fertility in Ireland is unlikely to be maintained beyond the next few years and that the long-term decline can be expected to resume, albeit at a more moderate rate. In reaching this conclusion the Group considered the following factors:

- The recovery in recent years was to a significant extent due to an increase in the fertility rates of women in their thirties. This undoubtedly reflects a postponement effect whereby women are now giving birth at older ages. However, the data for the most recent years indicate that the upward movement in the fertility rates, especially of females aged 30-34, has tended to level off. The Group considered that further significant increases were unlikely.
- The increased educational attainment and labour force participation of women are expected to exert downward pressure on fertility.
- Average family size is projected to continue to decrease while childlessness among women will continue to rise.
- Irish fertility rates are still high when compared with those of other European countries, and the trends in Europe continue to be largely downward.

The Group considered that the most likely out-turn for overall average fertility over the projection period, as measured by the TFR, would be in the range 1.65 to 1.9. Two variants were chosen: a high variant (F1) and a low variant (F2):

- | |
|---|
| <ul style="list-style-type: none"> • F1: TFR to remain at its 2006 level of 1.9 for the lifetime of the projections • F2: TFR to decrease to 1.65 by 2016 and to remain constant thereafter |
|---|

High fertility assumption

The high fertility assumption F1 assumes the total fertility rate will remain at the level observed in 2006 of 1.9 for the lifetime of the projections (i.e. until 2041). This assumption allows the impact on the projections of fertility remaining at just under the theoretical replacement level to be monitored.

Low fertility assumption

The low fertility assumption F2 assumes the total fertility rate will decrease from its 2006 level of 1.9 to 1.65 by 2016 and then stabilise at this level until the end of the projection period (2041). The Group considered that this assumption would allow Ireland to remain close to the top of the EU fertility table while still allowing a decrease to take place from the current level.

It is also assumed that the decline in fertility under F2 will be uniform across all age groups. As indicated previously, there has been wide variation in the rates at which the fertility of women in different age groups has evolved in recent years. While this variation is likely to persist into the future, it is not possible to predict it with any degree of confidence because of the impact of factors such as birth postponement and spacing of children.

In any event given that the principal purpose of the fertility assumptions is to generate the projected annual number of births to feed into the projection model, the distribution of these births according to the age of the mothers is considered to be a secondary factor. The assumed age-specific and derived total fertility rates under assumption F2 are given in Table C.

Table C Actual 2006 and assumed age-specific fertility rate and total fertility rate, 2011 to 2041 under fertility assumption F2

Year	Live births per 1,000 females at specified ages						TFR	
	15-19	20-24	25-29	30-34	35-39	40-44		45-49
2006	16.6	49.2	81.1	128.1	87.6	17.7	0.7	1.90
2011	15.5	45.8	75.6	119.4	81.6	16.5	0.7	1.78
2016-2041	14.4	42.7	70.4	111.2	76.1	15.4	0.6	1.65

Previous projections

Three fertility assumptions were used in the last set of projections (published in 2004) covering the period 2006 to 2036. The high variant assumed the TFR would increase from its 2003 level of 1.98 to 2.0 by 2011 and then remain constant. The medium variant assumed the TFR would decrease to 1.85 by 2011 and remain constant thereafter, while the low variant assumed the TFR would decrease to 1.7 by 2011 and then remain constant.

The medium scenario F2 was the closest fit of the three scenarios to the actual outturn for 2004 to 2006 – with a projected annual average number of births of 62,900 compared with 62,300 actual births over this period.

Mortality

National trends

Life expectancy at birth for males increased from 57.4 years in 1926 to 76.7 years in 2005, representing a gain of 19.3 years over the seventy-nine year period. The corresponding female rates were 57.9 and 81.5 years, respectively, which represents a gain of 23.6 years. The differential between male and female life expectancy at birth has increased from 0.5 years in 1926 to 4.8 years in 2005. Table D shows that the gains achieved were not uniformly distributed by age.

Table D Gains in life expectancy at various ages 1926 to 2005

Period	Males			Females		
	Birth	5 years	70 years	Birth	5 years	70 years
1926-1946	3.1	2.0	-0.8	4.5	3.3	-0.5
1946-1961	7.6	4.2	0.5	9.5	6.5	0.8
1961-1971	0.7	-0.2	0.0	1.6	1.0	0.5
1971-1981	1.3	0.6	0.0	2.1	1.5	0.7
1981-1986	0.9	0.7	0.1	1.1	0.9	0.4
1986-1991	1.3	1.2	0.7	1.2	1.1	0.9
1991-1996	0.7	0.6	0.2	0.8	0.6	0.3
1996-2002	2.1	2.1	1.3	1.7	1.7	1.1
2002-2005 ³	1.6	1.4	0.9	1.2	1.1	0.9
1926-2005	19.3	12.6	2.9	23.7	17.7	6.1

Note: See Table A3 in Appendix 5 for the more detailed underlying figures.

The major gains in both male and female life expectancy were recorded in the immediate post-war period, i.e. 1946-1961. These resulted from improvements in living conditions as well as from advances in maternity services and medical treatment, including immunisation, which significantly improved survival rates. The reduction in mortality was most marked in the case of infant deaths.

The 1960s, on the other hand, marked a fall off in the rate of improvements and, in the case of older males, a marginal deterioration occurred in life expectancy over the decade. Two reasons are generally advanced for this. First, the rate of improvement in infant mortality began to taper off and, consequently, its influence on life expectancy at birth diminished. Secondly, an increase was experienced in the mortality of people of working age due to a rise in the incidence of deaths due to ischaemic heart disease and most forms of cancer.

The situation has improved again in recent years. Life expectancy at birth increased by 5.7 years for males between 1986 and 2005 while the increase for females over the same period was 4.9 years. The improvements have been most notable in the older age groups and have also been very marked in the period 1996 to 2005, with a gain of 3.7 years in life expectancy at birth for males and a corresponding gain for females of 2.9 years. Improved living conditions coupled with further developments in medical care are considered to be the main contributing factors.

³ The 2005 Life Tables referenced here were produced by the CSO as a special exercise for this projections publication. A set of Life Tables for 2005-2007 using Census 2006 data will be published during 2008.

International comparisons

Male life expectancy in Ireland ranks 13th highest of the 30 countries listed in Table E, while female life expectancy ranks 17th. The table also shows that the life expectancy of females is now 82 years or over in eleven of the countries shown, while the life expectancy of males is 77 years or over in five of the countries.

Table E Life expectancy at various ages for selected European countries for years around 2004

Country	Year	Males				Females			
		0	1	15	65	0	1	15	65
Austria	2004	76.5	75.8	62.0	16.9	82.1	81.4	67.5	20.2
Belgium	2003	75.9	81.7
Bulgaria	2004	69.1	69.0	55.4	13.2	76.2	76.0	62.3	16.2
Cyprus	2004	76.9	76.2	62.5	16.5	81.6	80.8	67.0	19.0
Czech Rep.	2004	72.6	71.9	58.1	14.3	79.2	78.5	64.6	17.7
Denmark	2004	75.4	74.8	60.9	15.9	80.3	79.6	65.7	19.0
Estonia	2003	66.2	65.8	52.1	12.8	77.2	76.6	62.9	17.4
Finland	2004	75.4	74.7	60.8	16.5	82.2	81.4	67.6	20.4
France	2003	75.9	75.3	61.4	17.1	83.0	82.2	68.4	21.3
Germany	2004	76.5	75.8	62.0	16.5	82.1	81.4	67.5	20.1
Greece	2003	76.6	75.9	62.1	16.8	81.3	80.6	66.7	18.8
Hungary	2004	68.7	68.2	54.4	13.3	77.1	76.6	62.8	17.2
Iceland	2004	79.3	78.5	64.6	18.0	83.6	82.8	69.0	21.3
Ireland	2004	76.3	75.7	61.9	16.0	81.1	80.5	66.6	19.3
Italy	2003	76.8	-	-	16.8	82.5	-	-	20.5
Latvia	2004	66.1	65.7	52.0	12.7	76.2	76.0	62.2	17.1
Lithuania	2004	66.4	66.0	52.3	13.5	77.7	77.2	63.5	17.8
Luxembourg	2004	76.3	75.6	61.7	16.6	82.5	81.8	68.0	20.7
Malta	2003	76.7	76.1	62.3	15.8	80.4	79.6	65.8	18.2
Netherlands	2004	76.8	76.2	62.4	16.2	81.4	80.7	66.8	19.8
Norway	2004	77.5	76.8	62.9	17.0	82.4	81.6	67.8	20.5
Poland	2004	70.6	70.2	56.4	14.2	79.1	78.6	64.8	18.3
Portugal	2004	74.9	74.2	60.4	16.2	81.4	80.7	66.9	19.6
Romania	2003	67.8	68.1	54.6	13.3	75.3	75.4	61.8	16.1
Slovak Rep.	2004	70.4	69.9	56.2	13.4	78.0	77.5	63.8	17.1
Slovenia	2004	73.6	72.9	59.1	15.1	80.8	80.1	66.2	19.3
Spain	2004	77.2	-	-	-	83.8	-	-	-
Sweden	2004	78.4	77.6	63.7	17.4	82.7	82.0	68.1	20.6
Switzerland	2004	78.5	77.9	64.1	18.0	83.6	82.9	69.1	21.4
United Kingdom	2003	76.1	75.6	61.7	16.2	80.5	79.9	66.1	19.1

Source: Recent demographic developments in Europe 2005 (Council of Europe).

Mortality assumptions

There is a general consensus internationally among demographers that the improvements in life expectancy will continue for the foreseeable future. However, the major question to be addressed is how past experience is likely to inform future developments.

A further question which the Expert Group had to consider was the choice of methodology to be used in projecting mortality rates. Previous projection exercises used the logarithmic method whereby the log-linear trend in age specific mortality rates observed in the past was extrapolated into the future. The method had a number of drawbacks. First, the choice of the past period to be used was not entirely clear. Secondly, the method gave rise to a discontinuity in the first year of the projection period.

The Expert Group decided to adopt an alternative methodology for the current set of projections – a so-called targeting approach. This requires an estimate of short term mortality trends, an assessment of the likely long-term improvement in mortality rates from some point in the future and a method of interpolating between the current short-term trends and the long-term trends. The precise methodology used is described in Appendix 6.

The assumptions adopted result in a projected male life expectancy at birth of 86.5 years in 2041 and a projected female life expectancy at birth of 88.2 years – representing improvements in life expectancy of 9.8 and 6.7 years for males and females respectively over the full projection period. The projected life expectancy at birth for males is about 7 years higher than the current highest rates observed for the countries listed in Table E, while that for females is about 4.5 years higher. However, given that life expectancy in all EU countries is expected to continue to improve, and that the catching up process by Ireland should also continue, the projected rates for Ireland are considered to be reasonable. The projections also assume that the recent narrowing of the gap in life expectancy between males and females will continue over the projection period.

Table A4 in Appendix 5 shows the evolution of life expectancies at various ages over the projection period under the assumptions used.

Mortality rates are assumed to decrease which will result in gains in life expectancy at birth from:

- 76.7 years in 2005 to 86.5 years in 2041 for males
- 81.5 years in 2005 to 88.2 years in 2041 for females

Previous projections

In the last set of projections life expectancy at birth was assumed to improve to 82.5 years for males and 86.9 years for females by 2036. The actual improvement between 2002 and 2005 significantly exceeded the projected level – by nearly one year in the case of males. The new assumptions, therefore, take account of this faster rate of improvement.

Migration

Historical trends

The dominant influence which migration has had on the profile of population change in the past can be seen clearly in Figure 2. Migration is also the most uncertain factor affecting the population. This is illustrated in Table A, which shows that net migration varied considerably from an average annual outflow of over 40,000 in the 1950s to an average annual inflow of around 48,000 in the most recent inter-censal period 2002-2006.

Table F shows the annual migration flows for recent years. The annual number of immigrants increased steadily between 1997 and 2002 and following a slight fall off in the years to April 2003 and 2004 experienced a major upsurge since then. This sharp increase in the period 2005 to 2007 was mainly as a result of labour migration following the accession of the ten new EU member states in May 2004. With the exception of 1999, outward migration has been in the range 20,000 to 30,000 annually between 1997 and 2005. The upward movement since then reflects a return to their home countries on the part of some recent immigrants. Immigration has been the main driver of net migration in the period since 1997 with a temporary peak of over 40,000 being experienced in the year to April 2002. Following a slight decline, the number increased significantly and reached a maximum of close to 72,000 in 2006 following which it fell back somewhat to 67,000 in the year to April 2007.

Table F Estimated migration, 1997 to 2007

Year ending April	Emigrants	Immigrants	Net Migration
	Thousands		
1997	25.3	44.5	19.2
1998	28.6	46.0	17.4
1999	31.5	48.9	17.3
2000	26.6	52.6	26.0
2001	26.2	59.0	32.8
2002	25.6	66.9	41.3
2003	29.3	60.0	30.7
2004	26.5	58.5	32.0
2005	29.4	84.6	55.1
2006	36.0	107.8	71.8
2007	42.2	109.5	67.3

Migration assumptions

Projecting migration involves assumptions about the magnitude and direction of future migration flows. The volatility in the historical flows described above clearly points to the uncertainty that must surround any such projections. In this context, the Group decided to focus on providing from a current perspective (i.e. Q4 2007) two contrasting scenarios to reflect the likely range of possible outcomes. While labour market trends and economic growth will have a significant bearing on future migration flows, no attempt was made to explicitly factor these into the definition of the scenarios in any detailed way. Instead the focus was kept on projecting forward recent migration trends having regard to broad expectations in relation to relevant national and international developments (see below). The sensitivity of the derived labour force projections to the choice of migration assumptions is, however, explored later on in the report.

In its consideration of likely future migration patterns, the Group recognised that the high economic and labour force growth experienced by Ireland in the past decade has radically changed the outlook in regard to migration. In short the country has moved from a long-standing pattern of emigration to a new pattern of relatively strong immigration and it is unlikely that this will be reversed to any sustained degree over the projection period. Accordingly,

the Group decided that its two scenarios should seek to contrast immigration continuing at close to the current high rate and at more moderate levels.

The following issues were taken into consideration in framing the two scenarios:

- future expectations of growth in the economy and labour force;
- the availability of a large pool of labour particularly from the Eastern European countries which acceded to membership of the EU since 2004;
- the capacity of our infrastructure to cope with continuing high population growth;
- reduced labour supply due to the decline in births in the 1980s and 1990s;
- demographic “pull” factors arising from a more rapidly ageing population structure in other European countries;
- sharply decreased pool of Irish migrants living abroad.

Under migration scenario M1, the Group assumed annual net migration of 60,000 in the period 2006 to 2011 followed by 50,000 in the period 2011 to 2016. Net migration is assumed to fall further to 40,000 in the period 2016 to 2021, before settling at an average 30,000 per annum for the period 2021 to 2041. This would result in an average annual net inflow of nearly 39,000 over the projection period compared with the 35,000 per annum recorded for the 1996-2007 period.

Under migration scenario M2, average annual net migration is assumed to be 50,000 for the period 2006 to 2011, falling back to 35,000 in the period 2011 to 2016 and then to 25,000 during 2016 to 2021. It is then assumed to settle at 10,000 per annum for the period 2021 to 2041. This would result in an average annual net inflow of 21,400 over the entire projection period. This scenario would be consistent with a more modest performance for the Irish economy and labour market over the projection period.

M1: Immigration continuing at a high level and then moderating

- +60,000 per annum in 2006/2011
- +50,000 per annum in 2011/2016
- +40,000 per annum in 2016/2021
- +30,000 per annum in 2021/2026
- +30,000 per annum in 2026/2031
- +30,000 per annum in 2031/2036
- +30,000 per annum in 2036/2041

M2: Immigration continuing at more moderate levels

- +50,000 per annum in 2006/2011
- +35,000 per annum in 2011/2016
- +25,000 per annum in 2016/2021
- +10,000 per annum in 2021/2026
- +10,000 per annum in 2026/2031
- +10,000 per annum in 2031/2036
- +10,000 per annum in 2036/2041

The gross flow components of these net migration assumptions are given in Table G incorporating a long run outward migration assumption of 20,000 per annum.

Table G Assumed average annual migration flows, 2006 to 2041

Scenario	2006- 2011	2011- 2016	2016- 2021	2021- 2026	2026- 2031	2031- 2036	2036- 2041
Thousands							
M1							
Immigration	80	70	60	50	50	50	50
Emigration	20	20	20	20	20	20	20
Net migration	60	50	40	30	30	30	30
M2							
Immigration	70	55	45	30	30	30	30
Emigration	20	20	20	20	20	20	20
Net migration	50	35	25	10	10	10	10

In addition to migration assumptions M1 and M2 a zero net migration scenario has been introduced to allow a full assessment of the impact of migration to be made. The zero net migration scenario consists of assumed annual inflows of 20,000 being offset by corresponding annual outflows for the entire projection period.

Previous projections

The previous projections assumed that net migration would be 120,000 for the period 2002 to 2006 under both the high (M1) scenario and the low (M2) scenario. Based on the results of the 2002 Census, the derived inter-censal net migration figure was significantly higher at 191,000.

Thus the new migration assumptions represent a substantial upward revision in the projected impact of migration on future population growth i.e. projected average annual net inward migration of 39,000 compared with 23,000 under M1 and 21,400 compared with 11,400 under M2 over the relevant 35 year projection periods.

Labour Force

Methodology

The population projections provide estimates of the population classified by single year of age and sex under different assumptions for the period 2007 to 2041.

Applying labour force participation rates to the resulting data gives the relevant labour force projections. However, because of the uncertainty involved in projecting labour force participation rates in the longer term, the labour force projections are restricted to the period up to and including 2021.

The labour force comprises persons who are either employed or unemployed. The classification used in the present set of projections is that of the International Labour Organisation (ILO) as used in the Quarterly National Household Survey (QNHS).

The starting point is the projected population aged 15 years and over. As fertility does not impact in any way on the size of this population sub-group in the period to 2021, the only variants which are relevant are those under the different migration assumptions. The target variable for projection is the participation rate, i.e. the proportion of the relevant sub-population in the labour force. This is analysed at the level of five-year age groups for men and women. The age groups 15-19 and 20-24 have been split between those in the education system and those outside it. Separate labour force participation rates are applied to the assumed future populations of these two sub-categories for males and females. Similarly, women aged 25 years and over are classified by marital status (i.e. married and single) and separate participation rates are projected to reflect the different labour force participation and development profiles of the two groups.

It would have been preferable to distinguish separately women with and without dependent children (especially young dependent children) from the point of view of their labour force participation rates⁴. However, this would have entailed the added complication of making assumptions concerning future trends in the number of childless women and the timing and spacing of births to women with children. It was, therefore, decided to continue to use a breakdown of women according to whether they were married or not as an alternative while recognising that the single category contains a growing number of lone parents and partners in cohabiting couples.

Marriage rate assumptions

The projected female population aged 25 years and over is first divided into two categories – married and single. Table H shows the percentage of females who were married in each age group as measured by the 1996, 2002 and 2006 Censuses of Population along with the rates assumed for 2011, 2016 and 2021.

Table H Females married classified by age group (%), 1996 to 2021

Age group	Actual			Assumed		
	1996	2002	2006	2011	2016	2021
25-29 years	41.5	26.8	23.7	22.0	21.0	20.0
30-34 "	73.1	60.6	55.0	53.0	51.0	49.0
35-39 "	84.3	78.4	73.4	72.0	71.0	70.0
40-44 "	88.1	85.4	82.2	80.0	78.0	76.0
45-49 "	89.9	88.2	86.3	84.0	83.0	82.0
50-54 "	90.2	90.0	88.6	88.0	88.0	88.0
55-59 "	89.0	90.6	89.9	90.0	90.0	89.0
60-64 "	87.0	89.9	90.2	90.0	90.0	89.0
65 years and over	81.9	84.6	85.4	86.0	87.0	87.0

⁴ Table A7 of Appendix 5 provides such an analysis for 2000, 2002, 2004 and 2006.

The table shows a sharp decline between 1996 and 2006 in the percentage of married females, particularly those aged 25-34 years. It is assumed that the observed downward trend will continue, albeit at a much more moderate pace. For females aged 35 to 54 the proportions married are assumed to drop by up to a further 6 percentage points up to 2021. The proportions are assumed to remain about the same for females aged 55 years and over.

Participation in education

In the 15-19 year age group 77 per cent of males were in education in 2006 compared with 87 per cent for females. The relevant proportions are assumed to increase to 84 per cent and 91 per cent, respectively, by 2021. Participation in education is less pronounced for 20-24 year olds. In 2006 the proportions were 22 per cent and 29 per cent for males and females, respectively. These are assumed to increase to 31 per cent and 36 per cent, respectively, by 2021, in line with a greater emphasis on participation in third level education and the knock-on effect of higher participation by 15-19 year olds. The historical education participation rates for 1996, 2002 and 2006 along with the projected rates for 2011, 2016 and 2021 are given in Table I.

Table I Education participation rates, 1996 to 2021 (%)

	Actual			Assumed		
	1996	2002	2006	2011	2016	2021
Males						
15-19 years	77	77	77	80	82	84
20-24 "	23	26	22	25	27	29
Females						
15-19 years	84	86	87	89	90	91
20-24 "	26	31	31	32	34	36

Labour force participation rate assumptions

The labour force participation of students is largely a reflection of the extent to which they are involved in part-time work while continuing in full-time education. The rates for 15-19 year olds were about 11-12 per cent for males and about 13-14 per cent for females in 2002 and 2006. These rates are projected to increase up to 2021. The rates for 20-24 year olds were about 22-28 per cent for males and in the range 20-30 per cent for females in 2002 and 2006. These rates are also projected to increase for both males and females up to 2021.

For non-students aged 15-24 participation rates are assumed to remain close to 2006 levels in the period to 2021. The recent historical and projected participation rates for students and non-students aged 15-24 are given in Table J.

The actual labour force participation rates for 1996, 2001 and 2006 as well as the assumed participation rates for 2011, 2016 and 2021 are given in Table A5 of Appendix 5 for males, married females and single females, respectively.

Table J Labour Force participation rates, 1991 to 2016 (%)

Category and sex	Age group	Actual			Assumed		
		1996	2002	2006	2011	2016	2021
Students							
Males	15-19 years	4.3	11.1	12.2	12.0	13.0	14.0
	20-24 "	6.8	21.7	28.0	31.0	32.0	33.0
Females	15-19 "	4.8	13.1	14.0	18.0	19.0	20.0
	20-24 "	6.2	20.3	30.4	34.0	35.0	36.0
Non-students							
Males	15-19 years	90.2	90.7	90.5	91.0	91.0	91.0
	20-24 "	95.1	94.7	94.9	95.0	95.0	96.0
Females	15-19 "	84.4	80.1	81.0	81.0	82.0	83.0
	20-24 "	87.7	85.9	86.2	86.0	87.0	88.0

It is assumed on the basis of recent trends that participation rates of males in the 25-44 age group will remain largely unchanged over the projection period at the actual rates recorded in 2006 while in the case of males aged 45 years and over it is assumed that there will be some slight upward movement reflecting a greater propensity to remain in the labour force.

There have been major gains in the labour force participation rates of married females in the recent past, with the increases averaging over two percentage points annually during 1996 to 2006 in the case of females aged 45-49, 50-54 and 55-59.

The Expert Group considered that the scope for additional gains in the labour force participation rates of married females, especially older married females, is somewhat limited. It assumed that further gains will be achieved in the case of younger married females. The Group also considered that there was scope for a moderate increase in the labour force participation rate of other females in the period to 2021.

Males:

- LFPR of 25-44 year old males largely unchanged
- Minor increases in LFPR of males aged 45 and over reflecting a greater propensity to remain in the labour force

Married females:

- Further LFPR gains for married females aged 25-49 years
- Moderate gains in LRPR of married females aged 50 years and over

Other females:

- Moderate increases in LFPR of other females

Summary of Assumptions

Fertility

- **F1:** TFR to remain at its 2006 level of 1.9 for the lifetime of the projections
- **F2:** TFR to decrease to 1.65 by 2016 and to remain constant thereafter

Mortality

Mortality rates are assumed to decrease which will result in gains in life expectancy at birth from:

- 76.7 years in 2005 to 86.5 years in 2041 for males
- 81.5 years in 2005 to 88.2 years in 2041 for females

Migration

M1: Immigration continuing at a high level and then moderating

- +60,000 per annum in 2006/2011
- +50,000 per annum in 2011/2016
- +40,000 per annum in 2016/2021
- +30,000 per annum in 2021/2026
- +30,000 per annum in 2026/2031
- +30,000 per annum in 2031/2036
- +30,000 per annum in 2036/2041

M2: Immigration continuing at more moderate levels

- +50,000 per annum in 2006/2011
- +35,000 per annum in 2011/2016
- +25,000 per annum in 2016/2021
- +10,000 per annum in 2021/2026
- +10,000 per annum in 2026/2031
- +10,000 per annum in 2031/2036
- +10,000 per annum in 2036/2041

Labour force

Males:

- LFPR of 25-44 year old males largely unchanged
- Minor increases in LFPR of males aged 45 and over reflecting a greater propensity to remain in the labour force

Married females:

- Further LFPR gains for married females aged 25-49 years
- Moderate gains in LFPR of married females aged 50 years and over

Other females:

- Moderate increases in LFPR of other females

RESULTS

Introduction

Different sub-periods

Two distinct time periods are distinguished in the presentation of the results, namely: the periods 2011-2021 and 2021-2041, respectively. Six population variants are given for both periods. These are M1F1, M1F2, M2F1, M2F2, M0F1 and M0F2. The one mortality assumption underlies all these projections. Three projections for the labour force are presented for the period 2011-2021 as fertility rates do not have any direct impact on the level of the workforce over such a relatively short period of time.

The results are set out in Tables 1 to 10 following this commentary.

Tables 1 to 6 give the projected population classified by five-year age group and sex at five-year intervals from 2006 to 2041.

The projected numbers of births, deaths and net migration under the six combinations of assumptions are set out for five-year periods from 2006 to 2041 in Table 7. This table also contains comparable historical inter-censal data from 1926 onwards in order to facilitate comparisons with past trends.

In Tables 8, 9 and 10 the projected labour force is classified by five-year age group, sex and female marital status for the years 2011, 2016 and 2021.

The period 2011 to 2021

Total projected population

The usually resident population according to Census 2006 was 4.23 million. Table K summarises the total projected population arising under the six combinations of fertility and migration.

Table K Projected population, 2011 to 2021

Year	High Fertility (F1)			Low Fertility (F2)		
	M1	M2	M0	M1	M2	M0
Thousands						
2011	4,738	4,686	4,422	4,729	4,676	4,413
2016	5,233	5,094	4,607	5,188	5,050	4,568
2021	5,688	5,449	4,764	5,590	5,356	4,686

Under the highest variant (M1F1) the population is projected to grow by nearly one and half million between 2006 and 2021 - an average annual rate of population increase of almost 2 per cent, equivalent to that observed during the most recent inter-censal period 2002-2006. Under the lowest variant of zero net migration and low fertility (M0F2) overall population growth is projected to be 453,000 over the fifteen year period to 2021. The difference between the populations projected under the highest and lowest variants is therefore 1 million with migration being the predominant differentiating factor.

.. migration the key factor..

The difference in the impact of the high and medium migration assumptions on the level of the projected population in 2021 is between 234,000 and 238,000 depending on which fertility assumption is used. The difference between zero net migration and the high migration assumption on the other hand is over 900,000 clearly illustrating the impact which migration has on projected population growth. The fertility effect is between 77,000 or 97,000 depending on the migration assumption used. Migration, therefore, accounts for over 90 per cent of the total difference between the highest and lowest population levels projected for 2021.

Table L shows the population by broad age group under the various combinations of assumptions for five-year intervals from 2011 to 2021. It also distinguishes the derived young and old dependency ratios as well as the population of school-going age.

The young population

The number of persons aged 0-14 years reached a peak of 1,044,000 in 1981. The main reasons were the steady build up of births in the 1970s coupled with inward migration during the same period when complete families returned to Ireland. The number of children in this age group has, however, declined in every census between 1981 and 2002 mainly reflecting the sharp fall in births from the 1980 peak, which left the numbers in this age group at 827,000 in 2002, (a decrease of about 217,000 since 1981). The most recent inter-censal period has seen the population of this age group increase by 4.5 per cent to 865,000 mainly as a result of the resurgence in the number of births since 2002.

Those aged 0-14 years in 2006 will have aged fifteen years by 2021 and will, therefore, have been completely replaced by those born in the intervening period, with due allowance being made for migration and mortality. Comparisons between the number of persons aged 0-14 in 2006 and 2021 will vary, therefore, largely in accordance with the fertility assumption chosen.

Maintaining a total fertility rate of 1.9 (fertility assumption F1) would result in the projected number of 0-14 year olds exceeding the 1981 peak of 1,044,000 by 2016 under migration scenarios M1 and M2. Under the highest scenario M1F1 the young population is projected to increase to 1,167,000 in 2021 – up 35 per cent compared with 2006. In the absence of migration, the young population would experience no change under F2 and

Table L Population projections, 2011 - 2021

Scenario	Population of school going age		Population				Annual Average % change in total population in 5-year period	Dependency ratios		
	"Primary" 5-12	"Secondary" 13-18	0-14	15-64	65+	Total		Young	Old	Total
	Thousands							Percentage		
Actual										
2006	450.5	342.3	865.1	2,905.5	462.4	4,232.9	0.00	29.8	15.9	45.7
M1F1										
2011	500.4	339.4	964.5	3,237.0	536.6	4,738.2	2.28	29.8	16.6	46.4
2016	558.8	374.5	1,074.4	3,510.3	648.6	5,233.3	2.01	30.6	18.5	49.1
2021	623.1	409.7	1,166.9	3,745.9	774.7	5,687.5	1.68	31.2	20.7	51.8
M1F2										
2011	500.4	339.4	954.9	3,237.0	536.6	4,728.5	2.24	29.5	16.6	46.1
2016	549.2	374.5	1,029.0	3,510.3	648.6	5,187.9	1.87	29.3	18.5	47.8
2021	578.7	408.8	1,069.5	3,745.9	774.7	5,590.1	1.50	28.6	20.7	49.2
M2F1										
2011	497.2	337.9	956.9	3,192.9	535.7	4,685.5	2.05	30.0	16.8	46.7
2016	548.7	370.1	1,048.8	3,399.1	645.9	5,093.8	1.69	30.9	19.0	49.9
2021	599.5	401.5	1,114.0	3,565.8	769.5	5,449.2	1.36	31.2	21.6	52.8
M2F2										
2011	497.2	337.9	947.4	3,192.9	535.7	4,676.0	2.01	29.7	16.8	46.4
2016	539.2	370.1	1,004.7	3,399.1	645.9	5,049.7	1.55	29.6	19.0	48.6
2021	556.3	400.6	1,021.2	3,565.8	769.5	5,356.4	1.19	28.6	21.6	50.2
M0F1										
2011	481.1	330.4	918.6	2,972.2	531.1	4,421.9	0.88	30.9	17.9	48.8
2016	511.2	354.2	951.3	3,019.6	636.0	4,606.9	0.82	31.5	21.1	52.6
2021	518.2	376.4	944.2	3,066.2	753.3	4,763.7	0.67	30.8	24.6	55.4
M0F2										
2011	481.1	330.4	909.7	2,972.2	531.1	4,413.0	0.84	30.6	17.9	48.5
2016	502.3	354.2	912.7	3,019.6	636.0	4,568.3	0.69	30.2	21.1	51.3
2021	480.5	375.5	866.9	3,066.2	753.3	4,686.4	0.51	28.3	24.6	52.8

an increase of about 9 per cent under F1, illustrating again how sensitive the projections are to the choice of migration assumption used.

**..rise in numbers of
“primary” school-going
age..**

The projected changes will directly impact on the population of school-going age. Taking the “primary” school population as being broadly represented by those aged 5-12 years, the numbers in this category are projected to increase progressively under all combinations of assumptions in the period 2006-2021. The projected increases vary from 106,000 under M2F2 to 173,000 under M1F1. Even in the absence of migration (M0) the “primary” school going population is projected to increase by between 30,000 and 68,000 over the period 2006-2021, depending on the fertility assumption chosen.

The numbers of children of “secondary” school age (i.e. persons aged 13-18 years⁵) under all combinations of assumptions are projected to continue to decline until 2011 and to then experience a recovery by 2016 due to the higher number of births from 2003 onwards. This increase is projected to continue on up to 2021 and range from 33,000 under M0F2 to 67,000 under M1F1.

It is instructive to put the likely changes in the young population in the context of projected changes in the rest of the population. The “young” dependency ratio is a measure which expresses the population aged 0-14 years as a percentage of the population aged 15-64 years. This ratio peaked at over 50 per cent during the 1960s and 1970s but has been in continuous decline since then to stand at around 30 per cent in 2006. Table L shows that this ratio is projected to remain largely unchanged in the range 28 to 32 per cent under all assumptions in the period to 2021.

..births on the increase..

The number of births averaged 70,000 in the ten-year period 1971-1981 with the peak number of births (74,000) occurring in 1980. Declines were observed in each inter-censal period up to and including 1991-1996 when the average fell to just 50,000 births per annum over the period. Since the mid-1990s the annual number of births recorded has increased progressively from a low of 48,000 in 1994 to 64,200 in 2006. As a result, in the most recent inter-censal period 2002-2006 the average annual number of births rose to 61,000.

Under assumptions F1 and F2 the number of births is projected to continue its upward path with an average of 79,000 births projected for 2016-2021 under M1F1 and 69,000 under M1F2. For the lower migration scenario (M2) the number would be approximately 4,000-5,000 lower on each fertility assumption. Under the zero net migration assumption (M0) the number of births would be considerably lower in the range 51,000 to 59,000 depending on which fertility assumption is chosen.

**The population of working
age**

In examining the population aged 15-64 in the period to 2021 reference only needs to be made to the migration effect as the different fertility assumptions have no impact on this age group. Three scenarios are considered, namely high (M1), medium (M2), and zero (M0). With nearly all of net migration estimated to affect the 15-64 age group the difference between the three migration assumptions impacts almost entirely on the this age group up to 2021.

The population aged 15-64 has increased at every census since 1961 from its then low point of 1,626,000 to 2,906,000 in 2006. Under M1 – the continuing high net migration assumption – the population aged 15-64 is projected to increase by 840,000 between 2006 and 2021 representing an average annual increase of about 1.7 per cent. Under M2 the increase

⁵ Users should note these figures reflect the actual number of persons in this age group and not the numbers enrolled in secondary level schools as participation rates for those aged 16, 17 and 18 can vary over time, and are not taken into account.

during the period 2006-2021 would be 660,000 persons or 1.4 per cent per annum.

Both these projected population growth rates are lower than the 2.1 per cent rate recorded between 1996 and 2006. This high growth rate was due to two factors. On the one hand, the number of entrants to the age group was bolstered by the high births recorded in the early 1980s. On the other hand, the number of 65-year-olds leaving the age group was depleted due to emigration from this cohort during the 1950s.

In the absence of migration the population aged 15-64 is projected to increase by slightly over 160,000 between 2006 and 2021, representing an annual average increase of just 0.4 per cent. Under this scenario the average annual increase of around 10,000 represents the projected excess of entrants over exits impacting on the working age population over the period.

The Expert Group's assumptions concerning labour force participation rates translate these populations into their relevant labour force and non-labour force components. The results are given in Tables 8, 9 and 10.

Increasing labour force

Under migration assumption M1, which assumes net inward migration continuing at an average annual rate of 50,000 up to 2021, the labour force is projected to increase by three-quarters of a million, from 2.12 to 2.87 million between 2006 and 2021. This represents an average annual increase of 50,000 compared with 72,000 in the most recent inter-censal period (2002-2006). The male and female components of the labour force are each projected to increase by 2 per cent per annum between 2006 and 2021 under M1 implying that the female share of the labour force will remain unchanged at just over 42 per cent during this period.

Under the M2 scenario the labour force is projected to increase at a slower average annual rate of 40,000 over the period to reach 2.72 million in 2021. The projected growth rates for males and females will be equivalent at 1.7 per cent per annum over the projection period. In the absence of migration the labour force is projected to grow at a modest annual average rate of 0.6 per cent for both males and females between 2006 and 2021. This would result in an average annual increase of under 13,000 in the labour force over the period.

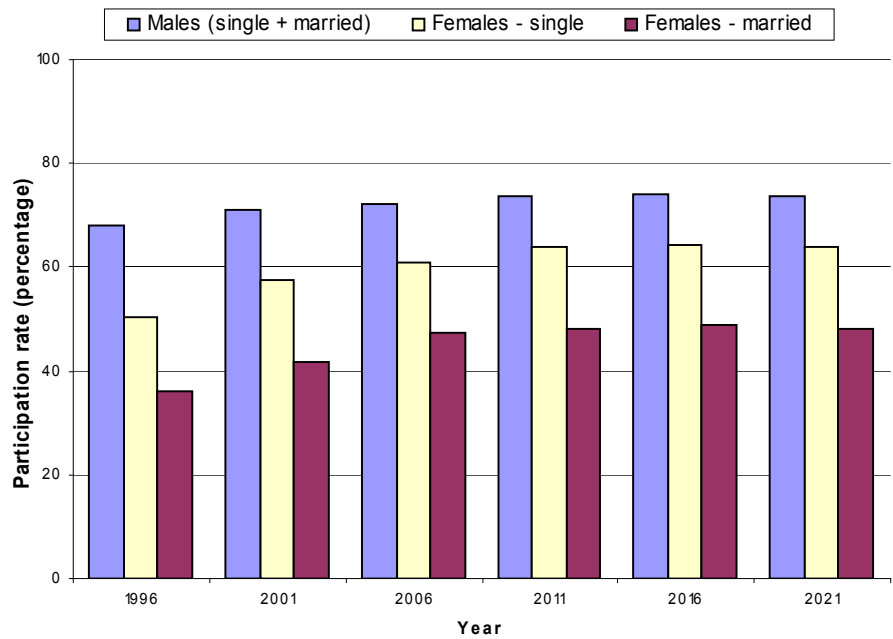
Table M compares labour force growth rates for the period 1996-2006 with those projected for 2006-2021. The projected average annual growth is less than that achieved during 1996 to 2006 for all categories. This is due to two main factors. First, the lower growth rate of the projected working age population will depress labour force growth rates. Secondly, the major gains in female labour force participation rates are assumed to moderate considerably.

Table M Actual and projected average annual growth rates of the labour force (%)

Period	Males	Married females	Other females	Total females	Persons
1996/2006	2.8	4.0	4.9	4.4	3.5
2006/2021 (M1)	2.0	2.4	1.7	2.0	2.0
2006/2021 (M2)	1.7	2.1	1.2	1.7	1.7
2006/2021 (M0)	0.6	1.1	-0.1	0.6	0.6

Table A5 in the Appendix contains historic and projected labour force participation rate data, distinguishing males as well as single and married females from 1996 to 2021. The situation is illustrated graphically in Figure 5 and shows in particular the rapid rise in the participation of females in the period 1996 to 2006.

Figure 5 Actual and projected labour force participation rates for persons aged 15 years and over



Demographic effect dominates

By holding labour force participation rates constant at their 2006 level it is possible to apportion the overall projected increase in the labour force between its *demographic* and *participation rate* effects. Table N sets out the results under all three migration assumptions.

Table N Components of labour force change, 2006 to 2021

Scenario	Males	Females			Persons
		Married	Other	Total	
Thousands					
M1					
Demographic	389.2	153.7	85.2	238.9	628.0
Participation rate	40.8	46.0	32.3	78.3	119.1
Total	430.0	199.7	117.5	317.2	747.1
M2					
Demographic	305.4	127.9	50.9	178.8	484.1
Participation rate	40.2	44.2	30.8	74.9	115.2
Total	345.6	172.0	81.7	253.7	599.3
M0					
Demographic	73.5	48.7	-34.4	14.3	87.8
Participation rate	38.3	38.6	26.8	65.4	103.7
Total	111.8	87.3	-7.6	79.7	191.5

Most of the labour force change in the case of males is accounted for by demographic effects with the impact intensifying from M0 (65.7%) through M2 (88.4%) to M1 (90.5%). For married females the demographic effect, though dominant, is not as pronounced as for males. For other females the demographic effect accounts for 72.5 per cent of the projected labour force change under M1, 62.3 per cent under M2 and has a negative impact under M0.

Migration and Labour Force Growth

The choice of migration assumption is critical in determining the projected labour force supply outcome up to 2021. The cumulative population difference due to net migration up to 2021 between assumptions M1 and M2 is 200,000 and Table N shows that this translated into a difference of just over 147,800 in the projected labour force.

Labour force demand will be a key determinant of migration over the projection period. Table O shows the relationship between migration and labour force growth for the period since 1996 and under each of the migration scenarios (M1, M2 and M0).

Table O Actual and projected average annual net migration and change in the labour force, 1996 to 2021

Period	Scenario	Average annual net migration	Average annual change in the labour force	Average annual change in the labour force
		Thousands		Percentage
Actual 1996/2006		37.0	61.1	3.5
Projected 2006/2021	M1	50.0	49.8	2.0
	M2	36.7	40.0	1.7
	M0	0.0	13.1	0.6

In the absence of migration (M0), the labour force is projected to grow at a modest 13,000 per annum over the fifteen year period 2006 to 2021, while the low migration scenario (M2) would result in an annual labour force growth of 40,000. Net immigration of 50,000 persons annually would result in an annual labour force growth rate of the same order of magnitude compared with the 61,100 average annual growth achieved between 1996 and 2006. While it is difficult to be precise about the magnitude of the likely future labour force demand, Table O illustrates that for every 10,000 shortfall/surplus in the projected labour supply an adjustment of up to 13,600 would be required to the underlying migration assumption to achieve balance between supply and demand in the labour market.

The Period 2021 to 2041

Total projected population

The population projections for the years 2021, 2026, 2031, 2036 and 2041 classified by five-year age groups and sex are given in Tables 1 to 6. The more distant the projection period from the reference year of the base population the more unreliable the assumptions are likely to be. Therefore, the projections for the period beyond 2021 are of a more conjectural nature than those for the period up to and including 2021. However, they do convey a good indication of the likely changes in the population both in terms of structure and magnitude.

Table P shows the projected population under all six scenarios.

Table P Projected population, 2021 to 2041

Year	High Fertility (F1)			Low Fertility (F2)		
	M1	M2	M0	M1	M2	M0
Thousands						
2021	5,688	5,449	4,764	5,590	5,356	4,686
2026	6,068	5,695	4,883	5,920	5,556	4,771
2031	6,417	5,901	4,976	6,220	5,719	4,829
2036	6,748	6,080	5,056	6,497	5,852	4,870
2041	7,072	6,247	5,122	6,759	5,965	4,896

The difference in population between the highest and lowest outcomes by 2041 is 2.2 million. Maintaining the TFR at 1.9 over the entire period to 2041 coupled with strong net migration - albeit declining in magnitude in the latter part of the projection period - would result in an increase in population of 67 per cent between 2006 and 2041. Under this (M1F1) scenario the projected population for 2041 would be around 7 million. At the other extreme, zero net migration (M0) allied to decreasing fertility in the period to 2016 followed by continuing low fertility in the following twenty five-year period would result in a population level of just under 5 million in 2041.

Table Q contains the population classified by broad age groups, the derived young and old dependency ratios and the population of school-going age, under the various combinations of assumptions at five-year intervals from 2021 to 2041.

Young population

The young population post 2021 is effectively determined by births occurring after 2006. Average annual numbers of births will decline under all projection combinations in the period 2021-2031 and then experience a small recovery by 2041. Projected births will be lowest under M0F2, falling to an average of 45,000 per year between 2026 and 2031 and remaining at about that level during 2031-2041.

The effect of these trends on the young population can be seen in Table Q. Under M1F1 the population 0-14 years is projected to peak at 1,203,000 in 2026 and to decline to 1,182,000 by 2041. Scenario M2F2 would yield a peak young population of 1,021,000 in 2021 with projected decreases thereafter to reach a level of 857,000 by 2041. With zero net migration and low fertility (M0F2) the young population would be 687,000 in 2041, almost half a million less than that under the M1F1 scenario.

The old population

The old population (i.e. those aged 65 years and over) is projected to increase very significantly from its 2006 level of 462,000 to around 1.4 million by 2041 under the two positive migration assumptions and to 1.3 million under the zero migration scenario. The very old population (i.e. those aged 80 years of age and over) is set to rise even more dramatically, showing a four-fold increase regardless of the scenario chosen (see Tables 1-6).

Table Q Populations projections, 2026 - 2041

Scenario	Population of school going age		Population				Annual Average % change in total population in 5-year period	Dependency ratios		
	"Primary" 5-12	"Secondary" 13-18	0-14	15-64	65+	Total		Young	Old	Total
	Thousands							Percentage		
Actual										
2006	450.5	342.3	865.1	2,905.5	462.4	4,232.9	0.00	29.8	15.9	45.7
M1F1										
2026	655.2	458.7	1,202.9	3,947.3	918.1	6,068.2	1.30	30.5	23.3	53.7
2031	647.0	494.7	1,189.8	4,151.8	1,075.7	6,417.2	1.12	28.7	25.9	54.6
2036	624.6	499.4	1,169.8	4,335.1	1,243.0	6,747.9	1.01	27.0	28.7	55.7
2041	623.7	481.3	1,181.7	4,456.2	1,434.4	7,072.2	0.94	26.5	32.2	58.7
M1F2										
2026	578.5	438.0	1,064.5	3,937.7	918.1	5,920.2	1.15	27.0	23.3	50.4
2031	565.2	443.1	1,037.5	4,106.4	1,075.7	6,219.6	0.99	25.3	26.2	51.5
2036	544.8	437.3	1,016.1	4,237.9	1,243.0	6,496.9	0.88	24.0	29.3	53.3
2041	540.4	421.2	1,016.2	4,308.5	1,434.4	6,759.0	0.79	23.6	33.3	56.9
M2F1										
2026	611.2	441.9	1,113.8	3,672.9	908.8	5,695.4	0.89	30.3	24.7	55.0
2031	583.0	463.5	1,065.3	3,774.9	1,060.5	5,900.7	0.71	28.2	28.1	56.3
2036	543.5	452.5	1,014.8	3,846.4	1,219.0	6,080.3	0.60	26.4	31.7	58.1
2041	528.5	420.5	1,000.2	3,850.3	1,396.6	6,247.1	0.54	26.0	36.3	62.2
M2F2										
2026	538.7	421.6	984.6	3,663.4	908.8	5,556.8	0.74	26.9	24.8	51.7
2031	508.1	414.2	927.1	3,730.9	1,060.5	5,718.5	0.58	24.8	28.4	53.3
2036	472.9	394.8	879.3	3,753.8	1,219.0	5,852.1	0.46	23.4	32.5	55.9
2041	456.2	366.8	856.8	3,712.0	1,396.6	5,965.4	0.38	23.1	37.6	60.7
M0F1										
2026	489.9	392.7	889.1	3,109.0	884.9	4,883.0	0.50	28.6	28.5	57.1
2031	447.2	380.0	828.9	3,121.7	1,025.6	4,976.3	0.38	26.6	32.9	59.4
2036	422.2	348.3	798.6	3,090.4	1,166.5	5,055.5	0.32	25.8	37.7	63.6
2041	425.4	320.7	804.2	3,004.5	1,313.3	5,122.0	0.26	26.8	43.7	70.5
M0F2										
2026	431.2	374.2	785.6	3,100.1	884.9	4,770.6	0.36	25.3	28.5	53.9
2031	389.3	338.8	720.5	3,083.2	1,025.6	4,829.3	0.25	23.4	33.3	56.6
2036	366.8	303.3	690.9	3,013.3	1,166.5	4,870.7	0.17	22.9	38.7	61.6
2041	366.5	279.2	687.4	2,892.4	1,313.3	4,893.0	0.09	23.8	45.4	69.2

The average annual number of deaths is projected to increase steadily from the current figure of 27,000 to over 41,000 in the period 2036-2041. The natural increase in the population (i.e. the excess of births over deaths) is projected to decline only slightly under the most aggressive population growth assumption, from an annual average of 41,000 to 35,000. Under the most pessimistic scenario (M0F2), the natural increase, though still projected to be positive, will fall to just 4,000 per annum in the period 2036-2041.

The young population (865,100) was considerably higher than the old population (462,400) in 2006 and this excess of young over old is projected to continue under M1F1 and M2F1 up to 2031 after which it will begin to reverse. The dominance of the old population will occur earlier in the case of the other four scenarios. By 2036 it is projected that there will be more older persons than younger persons under all scenarios. The excess will widen further by 2041 at which stage it is projected that there will be almost twice as many old persons (1,313,300) as young (687,400) under M0F2.

Population structure

The changing population structure is best illustrated by comparing the breakdown of the population by five-year age groups and sex in 2006 and 2041 as depicted by their respective population pyramids. Figures 6 and 7 contain the relevant population pyramids for 2006 and 2041, for M1F1 and M0F2, respectively – the two extremes of the projections. Both graphs illustrate the major expansion projected to take place in the number of persons aged 50 years and over. In the M1F1 scenario all age groups are projected to increase – the result of strong though declining net inward migration and the maintenance of a fertility rate of just under two children per woman. Under M0F2 the projected decline in fertility to a Northern European level of 1.65 children per woman coupled with zero net inward migration would see a very sharp fall in the number of young persons.

Figure 6 Population pyramids for 2006 and 2041 (M1F1)

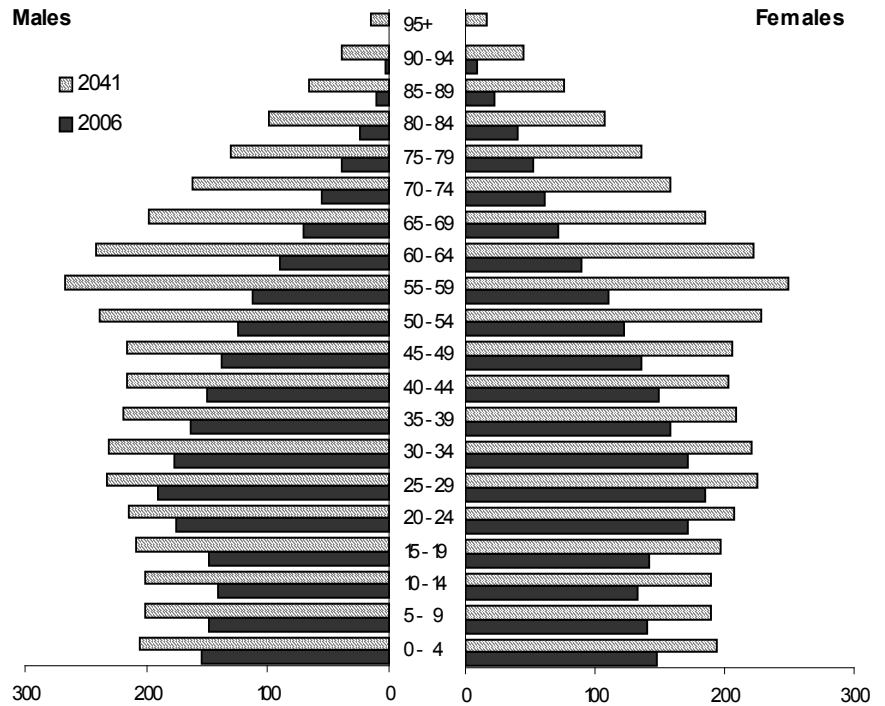
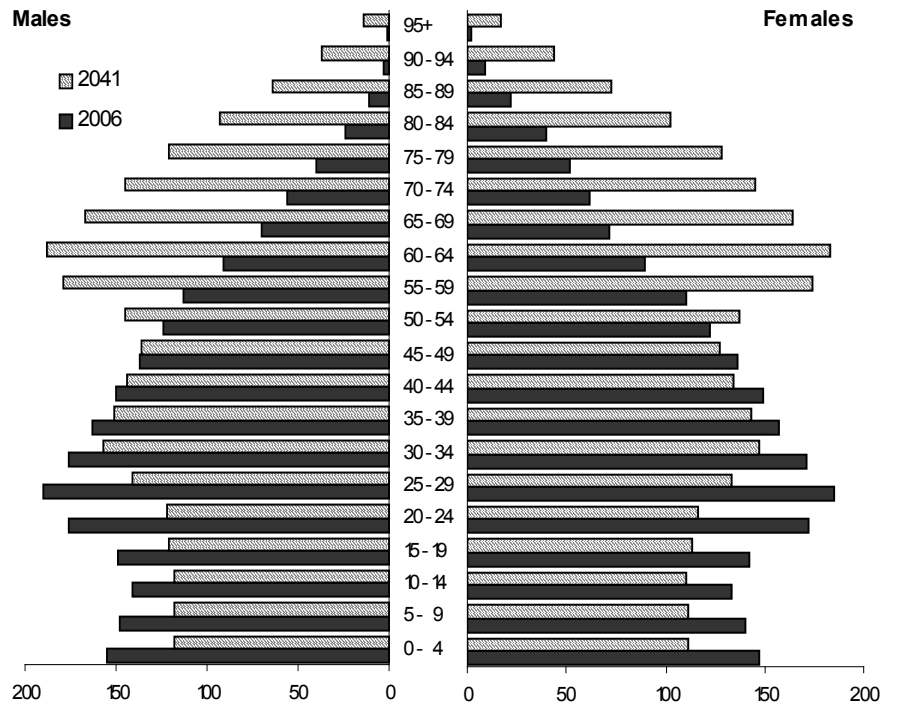


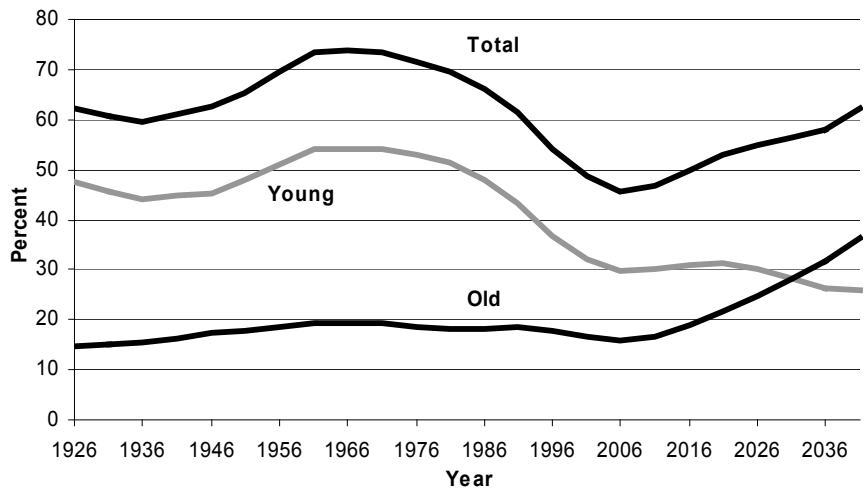
Figure 7 Population pyramids for 2006 and 2041 (M0F2)



Dependency ratios

As previously mentioned the young dependency ratio is projected to be in the range 28 to 32 per cent in the period up to 2021. Thereafter it will decline under all scenarios and finish in the range 23-27 per cent by 2041. The old dependency ratio is projected to progress in the opposite direction; it will increase steadily from 2006 onwards with the rate of increase quickening after 2011. By 2041 it will be more than double that of 2006 under all scenarios. The two ratios combined give the total dependency ratio. This has declined steadily since 1966 to reach a low point in 2006 but it is now projected to increase under all combinations of assumptions to reach values of between 57 per cent (M1F2) and 71 per cent (M0F1) by 2041. A representative picture is given in Figure 8, which contains the young, old and total dependency ratios for the period 1926-2006 and forward to 2041 under the M2F1 scenario.

Figure 8 Actual and projected (M2F1) dependency ratios



TABLES

Table 1 Actual and projected population classified by sex and age group, 2006 - 2041 (M1F1)

Sex and age group	Persons in April of each year							
	2006	2011	2016	2021	2026	2031	2036	2041
Thousands								
Persons								
0 - 4 years	302.3	346.7	386.3	400.8	388.5	375.4	380.7	400.4
5 - 9 "	288.5	318.2	360.4	397.8	410.1	397.9	384.8	390.1
10 - 14 "	274.2	299.6	327.7	368.3	404.2	416.5	404.3	391.2
15 - 19 "	290.9	278.8	303.0	329.7	369.0	404.8	417.2	405.0
20 - 24 "	347.5	321.4	301.1	316.9	335.4	374.6	410.4	422.8
25 - 29 "	375.2	439.5	398.8	363.8	364.8	383.2	422.4	458.3
30 - 34 "	347.9	430.4	486.3	437.3	393.9	395.0	413.5	452.7
35 - 39 "	320.4	376.6	454.5	505.9	452.5	409.3	410.4	428.9
40 - 44 "	299.8	335.9	389.5	464.9	513.6	460.5	417.6	418.8
45 - 49 "	273.8	308.5	343.3	395.3	469.0	517.7	465.0	422.3
50 - 54 "	246.4	278.2	312.1	345.9	396.8	470.3	518.9	466.8
55 - 59 "	223.9	246.7	278.1	311.4	344.6	395.4	468.5	516.9
60 - 64 "	179.8	220.9	243.7	274.8	307.6	340.8	391.1	463.6
65 - 69 "	141.2	173.5	213.9	236.8	267.5	300.2	333.1	382.8
70 - 74 "	117.5	130.8	162.5	201.8	224.8	255.2	287.3	319.9
75 - 79 "	91.4	101.7	115.8	146.3	183.7	206.3	235.8	266.9
80 - 84 "	64.4	70.3	81.4	95.6	123.6	157.4	178.9	206.5
85 years and over	47.8	60.4	75.0	94.3	118.6	156.6	207.9	258.2
Total	4,232.9	4,738.2	5,233.3	5,687.5	6,068.2	6,417.2	6,747.9	7,072.2
Males								
0 - 4 years	154.7	178.2	198.7	206.2	200.0	193.2	195.9	206.1
5 - 9 "	148.1	162.5	185.0	204.4	210.9	204.6	197.9	200.6
10 - 14 "	140.7	153.8	167.4	189.1	207.7	214.2	208.0	201.2
15 - 19 "	148.7	142.9	155.3	168.3	189.4	208.0	214.5	208.3
20 - 24 "	175.5	159.6	150.3	159.2	168.6	189.6	208.2	214.7
25 - 29 "	190.2	221.8	198.6	182.0	183.4	192.8	213.9	232.5
30 - 34 "	176.4	221.7	248.6	220.7	199.4	200.9	210.3	231.3
35 - 39 "	162.8	193.7	236.3	260.5	230.0	208.8	210.3	219.7
40 - 44 "	150.4	172.4	201.8	242.8	265.4	235.1	214.0	215.5
45 - 49 "	137.4	155.3	176.5	205.0	245.0	267.6	237.6	216.6
50 - 54 "	124.1	140.3	157.7	178.3	206.1	246.0	268.6	238.9
55 - 59 "	113.2	124.3	140.2	157.3	177.5	205.3	245.0	267.5
60 - 64 "	90.6	110.9	122.1	138.0	154.9	175.0	202.5	241.8
65 - 69 "	69.9	86.3	106.3	117.7	133.5	150.3	170.2	197.3
70 - 74 "	55.8	63.2	79.5	99.0	110.5	126.1	142.6	162.1
75 - 79 "	39.7	46.4	54.3	70.0	88.5	99.9	114.8	130.7
80 - 84 "	24.5	28.5	35.4	43.3	57.5	74.1	84.7	98.7
85 years and over	14.8	20.0	27.4	37.8	51.0	70.4	95.5	120.0
Total	2,117.3	2,381.8	2,641.4	2,879.6	3,079.3	3,261.9	3,434.5	3,603.5
Females								
0 - 4 years	147.7	168.5	187.6	194.6	188.6	182.2	184.8	194.3
5 - 9 "	140.4	155.7	175.4	193.4	199.3	193.3	186.9	189.5
10 - 14 "	133.5	145.9	160.3	179.2	196.5	202.4	196.4	190.0
15 - 19 "	142.2	135.9	147.6	161.4	179.6	196.9	202.7	196.8
20 - 24 "	172.0	161.8	150.8	157.7	166.8	185.0	202.2	208.1
25 - 29 "	185.0	217.7	200.2	181.8	181.4	190.4	208.6	225.8
30 - 34 "	171.5	208.7	237.7	216.6	194.6	194.1	203.2	221.4
35 - 39 "	157.7	182.9	218.2	245.4	222.5	200.5	200.1	209.2
40 - 44 "	149.3	163.6	187.7	222.1	248.3	225.5	203.6	203.2
45 - 49 "	136.4	153.2	166.8	190.3	224.0	250.1	227.4	205.7
50 - 54 "	122.3	137.9	154.4	167.7	190.7	224.3	250.4	227.9
55 - 59 "	110.7	122.4	137.8	154.1	167.1	190.1	223.5	249.5
60 - 64 "	89.1	110.0	121.6	136.7	152.7	165.8	188.6	221.8
65 - 69 "	71.4	87.2	107.5	119.0	134.0	149.8	162.9	185.5
70 - 74 "	61.7	67.6	83.0	102.8	114.2	129.0	144.7	157.7
75 - 79 "	51.8	55.3	61.4	76.3	95.2	106.5	120.9	136.2
80 - 84 "	39.9	41.8	46.0	52.3	66.1	83.3	94.1	107.9
85 years and over	33.1	40.4	47.7	56.4	67.6	86.2	112.4	138.3
Total	2,115.6	2,356.4	2,591.9	2,807.9	2,988.9	3,155.3	3,313.4	3,468.7

Table 2 Actual and projected population classified by sex and age group, 2006 - 2041 (M1F2)

Sex and age group	Persons in April of each year							
	2006	2011	2016	2021	2026	2031	2036	2041
Thousands								
Persons								
0 - 4 years	302.3	337.0	350.5	348.8	337.9	325.7	327.3	338.0
5 - 9 "	288.5	318.2	350.7	362.0	358.1	347.3	335.1	336.7
10 - 14 "	274.2	299.6	327.7	358.7	368.4	364.5	353.7	341.5
15 - 19 "	290.9	278.8	303.0	329.7	359.4	369.1	365.2	354.5
20 - 24 "	347.5	321.4	301.1	316.9	335.4	365.0	374.7	370.9
25 - 29 "	375.2	439.5	398.8	363.8	364.8	383.2	412.9	422.6
30 - 34 "	347.9	430.4	486.3	437.3	393.9	395.0	413.5	443.1
35 - 39 "	320.4	376.6	454.5	505.9	452.5	409.3	410.4	428.9
40 - 44 "	299.8	335.9	389.5	464.9	513.6	460.5	417.6	418.8
45 - 49 "	273.8	308.5	343.3	395.3	469.0	517.7	465.0	422.3
50 - 54 "	246.4	278.2	312.1	345.9	396.8	470.3	518.9	466.8
55 - 59 "	223.9	246.7	278.1	311.4	344.6	395.4	468.5	516.9
60 - 64 "	179.8	220.9	243.7	274.8	307.6	340.8	391.1	463.6
65 - 69 "	141.2	173.5	213.9	236.8	267.5	300.2	333.1	382.8
70 - 74 "	117.5	130.8	162.5	201.8	224.8	255.2	287.3	319.9
75 - 79 "	91.4	101.7	115.8	146.3	183.7	206.3	235.8	266.9
80 - 84 "	64.4	70.3	81.4	95.6	123.6	157.4	178.9	206.5
85 years and over	47.8	60.4	75.0	94.3	118.6	156.6	207.9	258.2
Total	4,232.9	4,728.5	5,187.9	5,590.1	5,920.2	6,219.6	6,496.9	6,759.0
Males								
0 - 4 years	154.7	173.2	180.2	179.4	173.9	167.6	168.4	173.9
5 - 9 "	148.1	162.5	180.0	186.0	184.1	178.6	172.3	173.1
10 - 14 "	140.7	153.8	167.4	184.1	189.3	187.4	181.9	175.6
15 - 19 "	148.7	142.9	155.3	168.3	184.4	189.6	187.7	182.2
20 - 24 "	175.5	159.6	150.3	159.2	168.6	184.7	189.9	188.0
25 - 29 "	190.2	221.8	198.6	182.0	183.4	192.8	208.9	214.1
30 - 34 "	176.4	221.7	248.6	220.7	199.4	200.9	210.3	226.4
35 - 39 "	162.8	193.7	236.3	260.5	230.0	208.8	210.3	219.7
40 - 44 "	150.4	172.4	201.8	242.8	265.4	235.1	214.0	215.5
45 - 49 "	137.4	155.3	176.5	205.0	245.0	267.6	237.6	216.6
50 - 54 "	124.1	140.3	157.7	178.3	206.1	246.0	268.6	238.9
55 - 59 "	113.2	124.3	140.2	157.3	177.5	205.3	245.0	267.5
60 - 64 "	90.6	110.9	122.1	138.0	154.9	175.0	202.5	241.8
65 - 69 "	69.9	86.3	106.3	117.7	133.5	150.3	170.2	197.3
70 - 74 "	55.8	63.2	79.5	99.0	110.5	126.1	142.6	162.1
75 - 79 "	39.7	46.4	54.3	70.0	88.5	99.9	114.8	130.7
80 - 84 "	24.5	28.5	35.4	43.3	57.5	74.1	84.7	98.7
85 years and over	14.8	20.0	27.4	37.8	51.0	70.4	95.5	120.0
Total	2,117.3	2,376.8	2,618.0	2,829.4	3,003.1	3,160.2	3,305.2	3,442.2
Females								
0 - 4 years	147.7	163.8	170.2	169.3	164.0	158.1	158.9	164.1
5 - 9 "	140.4	155.7	170.7	176.0	174.0	168.7	162.8	163.6
10 - 14 "	133.5	145.9	160.3	174.6	179.1	177.1	171.8	165.9
15 - 19 "	142.2	135.9	147.6	161.4	175.0	179.5	177.5	172.3
20 - 24 "	172.0	161.8	150.8	157.7	166.8	180.3	184.9	182.9
25 - 29 "	185.0	217.7	200.2	181.8	181.4	190.4	203.9	208.5
30 - 34 "	171.5	208.7	237.7	216.6	194.6	194.1	203.2	216.7
35 - 39 "	157.7	182.9	218.2	245.4	222.5	200.5	200.1	209.2
40 - 44 "	149.3	163.6	187.7	222.1	248.3	225.5	203.6	203.2
45 - 49 "	136.4	153.2	166.8	190.3	224.0	250.1	227.4	205.7
50 - 54 "	122.3	137.9	154.4	167.7	190.7	224.3	250.4	227.9
55 - 59 "	110.7	122.4	137.8	154.1	167.1	190.1	223.5	249.5
60 - 64 "	89.1	110.0	121.6	136.7	152.7	165.8	188.6	221.8
65 - 69 "	71.4	87.2	107.5	119.0	134.0	149.8	162.9	185.5
70 - 74 "	61.7	67.6	83.0	102.8	114.2	129.0	144.7	157.7
75 - 79 "	51.8	55.3	61.4	76.3	95.2	106.5	120.9	136.2
80 - 84 "	39.9	41.8	46.0	52.3	66.1	83.3	94.1	107.9
85 years and over	33.1	40.4	47.7	56.4	67.6	86.2	112.4	138.3
Total	2,115.6	2,351.7	2,569.9	2,760.7	2,917.2	3,059.5	3,191.7	3,316.8

Table 3 Actual and projected population classified by sex and age group, 2006 - 2041 (M2F1)

Sex and age group	Persons in April of each year							
	2006	2011	2016	2021	2026	2031	2036	2041
Thousands								
Persons								
0 - 4 years	302.3	342.8	372.4	374.6	350.4	327.1	324.0	335.7
5 - 9 "	288.5	316.0	353.2	380.6	379.5	355.4	332.2	329.1
10 - 14 "	274.2	298.1	323.2	358.8	383.9	382.8	358.7	335.4
15 - 19 "	290.9	277.5	299.4	323.2	356.8	381.9	380.8	356.7
20 - 24 "	347.5	313.1	287.2	300.8	312.1	345.7	370.7	369.7
25 - 29 "	375.2	424.7	368.1	327.6	318.9	330.3	363.8	388.9
30 - 34 "	347.9	421.9	458.7	393.9	340.8	332.2	343.5	377.1
35 - 39 "	320.4	372.0	439.2	471.5	400.1	347.1	338.6	349.9
40 - 44 "	299.8	333.4	381.1	445.7	474.2	403.1	350.4	341.9
45 - 49 "	273.8	307.0	338.4	384.6	446.8	475.3	404.7	352.3
50 - 54 "	246.4	277.1	308.9	339.4	384.1	446.1	474.7	404.7
55 - 59 "	223.9	246.0	275.9	307.2	336.8	381.3	443.1	471.6
60 - 64 "	179.8	220.3	242.2	271.8	302.4	332.0	376.1	437.5
65 - 69 "	141.2	173.1	212.7	234.7	263.8	294.2	323.7	367.4
70 - 74 "	117.5	130.5	161.7	200.4	222.3	251.2	281.2	310.3
75 - 79 "	91.4	101.5	115.3	145.4	182.0	203.8	231.8	260.9
80 - 84 "	64.4	70.2	81.2	95.1	122.7	155.8	176.5	202.9
85 years and over	47.8	60.4	74.9	94.0	118.0	155.5	206.0	255.1
Total	4,232.9	4,685.5	5,093.8	5,449.2	5,695.4	5,900.7	6,080.3	6,247.1
Males								
0 - 4 years	154.7	176.2	191.6	192.8	180.4	168.4	166.8	172.9
5 - 9 "	148.1	161.4	181.4	195.7	195.3	183.0	171.0	169.4
10 - 14 "	140.7	153.0	165.1	184.3	197.4	197.0	184.7	172.7
15 - 19 "	148.7	142.2	153.6	165.1	183.3	196.5	196.1	183.7
20 - 24 "	175.5	156.0	144.3	152.0	158.1	176.4	189.5	189.1
25 - 29 "	190.2	214.4	183.8	164.7	161.3	167.5	185.7	198.8
30 - 34 "	176.4	216.9	233.9	198.7	172.5	169.1	175.3	193.5
35 - 39 "	162.8	191.0	227.4	241.7	202.6	176.5	173.1	179.3
40 - 44 "	150.4	170.8	196.7	231.5	243.5	204.5	178.6	175.3
45 - 49 "	137.4	154.4	173.5	198.6	232.0	244.1	205.4	179.6
50 - 54 "	124.1	139.6	155.8	174.4	198.4	231.8	243.8	205.5
55 - 59 "	113.2	123.8	138.9	154.8	172.8	196.8	230.0	242.1
60 - 64 "	90.6	110.7	121.3	136.3	151.9	169.9	193.6	226.5
65 - 69 "	69.9	86.1	105.8	116.6	131.5	147.0	164.8	188.3
70 - 74 "	55.8	63.1	79.1	98.3	109.3	124.0	139.2	156.7
75 - 79 "	39.7	46.3	54.1	69.5	87.7	98.6	112.7	127.5
80 - 84 "	24.5	28.5	35.3	43.1	57.2	73.4	83.6	96.8
85 years and over	14.8	20.0	27.3	37.7	50.8	70.0	94.7	118.5
Total	2,117.3	2,354.4	2,568.9	2,756.0	2,886.0	2,994.3	3,088.8	3,176.4
Females								
0 - 4 years	147.7	166.5	180.8	181.8	170.0	158.7	157.2	162.9
5 - 9 "	140.4	154.6	171.8	184.9	184.2	172.4	161.2	159.7
10 - 14 "	133.5	145.1	158.1	174.5	186.4	185.7	174.0	162.7
15 - 19 "	142.2	135.2	145.8	158.1	173.5	185.4	184.8	173.0
20 - 24 "	172.0	157.1	143.0	148.8	153.9	169.3	181.2	180.6
25 - 29 "	185.0	210.3	184.3	162.9	157.6	162.8	178.1	190.1
30 - 34 "	171.5	205.1	224.8	195.2	168.3	163.1	168.2	183.6
35 - 39 "	157.7	181.0	211.8	229.8	197.5	170.7	165.4	170.6
40 - 44 "	149.3	162.6	184.4	214.2	230.7	198.6	171.8	166.6
45 - 49 "	136.4	152.5	164.8	186.0	214.8	231.2	199.3	172.7
50 - 54 "	122.3	137.5	153.1	165.1	185.6	214.4	230.8	199.1
55 - 59 "	110.7	122.1	137.0	152.4	164.0	184.5	213.1	229.5
60 - 64 "	89.1	109.7	120.9	135.5	150.5	162.1	182.5	210.9
65 - 69 "	71.4	86.9	106.9	118.0	132.3	147.2	158.9	179.1
70 - 74 "	61.7	67.5	82.6	102.1	113.0	127.2	142.0	153.6
75 - 79 "	51.8	55.2	61.2	75.9	94.3	105.2	119.0	133.5
80 - 84 "	39.9	41.8	45.9	52.0	65.5	82.4	92.9	106.1
85 years and over	33.1	40.4	47.6	56.2	67.2	85.5	111.3	136.6
Total	2,115.6	2,331.1	2,524.8	2,693.2	2,809.4	2,906.4	2,991.6	3,070.7

Table 4 Actual and projected population classified by sex and age group, 2006 - 2041 (M2F2)

Sex and age group	Persons in April of each year							
	2006	2011	2016	2021	2026	2031	2036	2041
Thousands								
Persons								
0 - 4 years	302.3	333.3	337.8	325.8	304.5	283.5	277.9	282.0
5 - 9 "	288.5	316.0	343.7	346.1	330.8	309.5	288.6	283.0
10 - 14 "	274.2	298.1	323.2	349.3	349.3	334.1	312.8	291.8
15 - 19 "	290.9	277.5	299.4	323.2	347.3	347.4	332.1	310.9
20 - 24 "	347.5	313.1	287.2	300.8	312.1	336.2	336.3	321.1
25 - 29 "	375.2	424.7	368.1	327.6	318.9	330.3	354.4	354.5
30 - 34 "	347.9	421.9	458.7	393.9	340.8	332.2	343.5	367.7
35 - 39 "	320.4	372.0	439.2	471.5	400.1	347.1	338.6	349.9
40 - 44 "	299.8	333.4	381.1	445.7	474.2	403.1	350.4	341.9
45 - 49 "	273.8	307.0	338.4	384.6	446.8	475.3	404.7	352.3
50 - 54 "	246.4	277.1	308.9	339.4	384.1	446.1	474.7	404.7
55 - 59 "	223.9	246.0	275.9	307.2	336.8	381.3	443.1	471.6
60 - 64 "	179.8	220.3	242.2	271.8	302.4	332.0	376.1	437.5
65 - 69 "	141.2	173.1	212.7	234.7	263.8	294.2	323.7	367.4
70 - 74 "	117.5	130.5	161.7	200.4	222.3	251.2	281.2	310.3
75 - 79 "	91.4	101.5	115.3	145.4	182.0	203.8	231.8	260.9
80 - 84 "	64.4	70.2	81.2	95.1	122.7	155.8	176.5	202.9
85 years and over	47.8	60.4	74.9	94.0	118.0	155.5	206.0	255.1
Total	4,232.9	4,676.0	5,049.7	5,356.4	5,556.8	5,718.5	5,852.1	5,965.4
Males								
0 - 4 years	154.7	171.4	173.8	167.7	156.8	146.0	143.1	145.2
5 - 9 "	148.1	161.4	176.6	177.9	170.2	159.3	148.5	145.6
10 - 14 "	140.7	153.0	165.1	179.4	179.7	171.9	161.1	150.3
15 - 19 "	148.7	142.2	153.6	165.1	178.5	178.7	171.0	160.1
20 - 24 "	175.5	156.0	144.3	152.0	158.1	171.5	171.8	164.1
25 - 29 "	190.2	214.4	183.8	164.7	161.3	167.5	180.8	181.1
30 - 34 "	176.4	216.9	233.9	198.7	172.5	169.1	175.3	188.7
35 - 39 "	162.8	191.0	227.4	241.7	202.6	176.5	173.1	179.3
40 - 44 "	150.4	170.8	196.7	231.5	243.5	204.5	178.6	175.3
45 - 49 "	137.4	154.4	173.5	198.6	232.0	244.1	205.4	179.6
50 - 54 "	124.1	139.6	155.8	174.4	198.4	231.8	243.8	205.5
55 - 59 "	113.2	123.8	138.9	154.8	172.8	196.8	230.0	242.1
60 - 64 "	90.6	110.7	121.3	136.3	151.9	169.9	193.6	226.5
65 - 69 "	69.9	86.1	105.8	116.6	131.5	147.0	164.8	188.3
70 - 74 "	55.8	63.1	79.1	98.3	109.3	124.0	139.2	156.7
75 - 79 "	39.7	46.3	54.1	69.5	87.7	98.6	112.7	127.5
80 - 84 "	24.5	28.5	35.3	43.1	57.2	73.4	83.6	96.8
85 years and over	14.8	20.0	27.3	37.7	50.8	70.0	94.7	118.5
Total	2,117.3	2,349.5	2,546.2	2,708.2	2,814.6	2,900.5	2,971.2	3,031.3
Females								
0 - 4 years	147.7	161.9	164.0	158.1	147.7	137.5	134.8	136.8
5 - 9 "	140.4	154.6	167.1	168.2	160.6	150.2	140.0	137.3
10 - 14 "	133.5	145.1	158.1	169.9	169.7	162.1	151.7	141.6
15 - 19 "	142.2	135.2	145.8	158.1	168.9	168.7	161.1	150.8
20 - 24 "	172.0	157.1	143.0	148.8	153.9	164.7	164.5	157.0
25 - 29 "	185.0	210.3	184.3	162.9	157.6	162.8	173.5	173.4
30 - 34 "	171.5	205.1	224.8	195.2	168.3	163.1	168.2	179.0
35 - 39 "	157.7	181.0	211.8	229.8	197.5	170.7	165.4	170.6
40 - 44 "	149.3	162.6	184.4	214.2	230.7	198.6	171.8	166.6
45 - 49 "	136.4	152.5	164.8	186.0	214.8	231.2	199.3	172.7
50 - 54 "	122.3	137.5	153.1	165.1	185.6	214.4	230.8	199.1
55 - 59 "	110.7	122.1	137.0	152.4	164.0	184.5	213.1	229.5
60 - 64 "	89.1	109.7	120.9	135.5	150.5	162.1	182.5	210.9
65 - 69 "	71.4	86.9	106.9	118.0	132.3	147.2	158.9	179.1
70 - 74 "	61.7	67.5	82.6	102.1	113.0	127.2	142.0	153.6
75 - 79 "	51.8	55.2	61.2	75.9	94.3	105.2	119.0	133.5
80 - 84 "	39.9	41.8	45.9	52.0	65.5	82.4	92.9	106.1
85 years and over	33.1	40.4	47.6	56.2	67.2	85.5	111.3	136.6
Total	2,115.6	2,326.5	2,503.5	2,648.2	2,742.2	2,818.1	2,880.9	2,934.0

Table 5 Actual and projected population classified by sex and age group, 2006 - 2041 (M0F1)

Sex and age group	Persons in April of each year							
	2006	2011	2016	2021	2026	2031	2036	2041
Thousands								
Persons								
0 - 4 years	302.3	323.3	318.5	295.1	268.1	258.3	264.8	273.7
5 - 9 "	288.5	305.1	326.1	321.3	298.0	271.0	261.2	267.6
10 - 14 "	274.2	290.2	306.7	327.8	323.0	299.7	272.7	262.9
15 - 19 "	290.9	270.8	286.8	303.4	324.4	319.7	296.4	269.4
20 - 24 "	347.5	271.1	251.2	267.3	283.9	304.9	300.2	277.0
25 - 29 "	375.2	350.4	274.3	254.5	270.6	287.3	308.3	303.6
30 - 34 "	347.9	379.4	354.8	279.0	259.3	275.4	292.1	313.2
35 - 39 "	320.4	349.1	380.7	356.4	280.8	261.2	277.3	294.0
40 - 44 "	299.8	320.4	349.2	381.0	356.8	281.6	262.0	278.2
45 - 49 "	273.8	299.2	320.1	349.0	380.8	356.9	282.1	262.7
50 - 54 "	246.4	271.8	297.5	318.7	347.7	379.6	356.0	281.8
55 - 59 "	223.9	242.4	268.2	294.2	315.6	344.6	376.4	353.3
60 - 64 "	179.8	217.5	236.7	262.8	289.0	310.5	339.5	371.3
65 - 69 "	141.2	171.0	208.5	228.3	254.7	280.8	302.4	331.2
70 - 74 "	117.5	129.4	159.0	195.8	216.1	242.3	268.1	289.7
75 - 79 "	91.4	100.8	113.7	142.5	177.8	197.9	223.4	248.7
80 - 84 "	64.4	69.9	80.3	93.6	120.2	152.1	171.3	195.5
85 years and over	47.8	60.2	74.5	93.0	116.3	152.6	201.3	248.2
Total	4,232.9	4,421.9	4,606.9	4,763.7	4,883.0	4,976.3	5,055.5	5,122.0
Males								
0 - 4 years	154.7	166.5	164.0	152.0	138.1	133.0	136.4	141.0
5 - 9 "	148.1	156.1	167.9	165.5	153.5	139.6	134.5	137.9
10 - 14 "	140.7	149.0	157.0	168.9	166.4	154.4	140.5	135.5
15 - 19 "	148.7	139.0	147.3	155.3	167.2	164.8	152.8	138.9
20 - 24 "	175.5	137.9	128.4	136.8	144.8	156.7	154.3	142.3
25 - 29 "	190.2	177.0	139.7	130.2	138.6	146.7	158.6	156.2
30 - 34 "	176.4	192.7	179.8	142.6	133.3	141.7	149.7	161.6
35 - 39 "	162.8	177.3	193.7	180.9	143.9	134.6	143.0	151.1
40 - 44 "	150.4	162.8	177.4	193.9	181.3	144.4	135.2	143.6
45 - 49 "	137.4	150.0	162.5	177.2	193.8	181.3	144.7	135.5
50 - 54 "	124.1	136.3	149.1	161.8	176.6	193.2	180.8	144.6
55 - 59 "	113.2	121.7	134.2	147.2	160.0	174.8	191.4	179.3
60 - 64 "	90.6	109.2	118.2	131.0	144.1	157.0	171.8	188.3
65 - 69 "	69.9	85.1	103.7	113.2	126.1	139.3	152.2	166.8
70 - 74 "	55.8	62.5	77.8	96.1	105.9	118.8	131.8	144.6
75 - 79 "	39.7	45.9	53.4	68.2	85.6	95.5	107.9	120.6
80 - 84 "	24.5	28.4	35.0	42.5	56.0	71.6	81.0	92.7
85 years and over	14.8	19.9	27.2	37.4	50.1	68.7	92.6	115.2
Total	2,117.3	2,217.5	2,316.3	2,400.7	2,465.4	2,516.1	2,559.1	2,595.6
Females								
0 - 4 years	147.7	156.8	154.5	143.1	130.0	125.3	128.4	132.7
5 - 9 "	140.4	149.0	158.2	155.8	144.5	131.4	126.6	129.8
10 - 14 "	133.5	141.2	149.7	158.9	156.5	145.2	132.2	127.4
15 - 19 "	142.2	131.8	139.5	148.1	157.2	154.9	143.6	130.5
20 - 24 "	172.0	133.2	122.8	130.5	139.1	148.3	145.9	134.7
25 - 29 "	185.0	173.4	134.7	124.3	132.0	140.6	149.8	147.4
30 - 34 "	171.5	186.7	175.1	136.4	126.1	133.8	142.4	151.5
35 - 39 "	157.7	171.8	187.0	175.5	137.0	126.6	134.3	143.0
40 - 44 "	149.3	157.6	171.8	187.0	175.6	137.1	126.9	134.6
45 - 49 "	136.4	149.2	157.5	171.8	187.0	175.6	137.4	127.2
50 - 54 "	122.3	135.5	148.4	156.9	171.1	186.4	175.1	137.2
55 - 59 "	110.7	120.7	134.0	147.0	155.5	169.8	185.0	174.0
60 - 64 "	89.1	108.3	118.5	131.9	144.9	153.5	167.7	183.0
65 - 69 "	71.4	85.9	104.8	115.1	128.5	141.5	150.2	164.4
70 - 74 "	61.7	66.9	81.2	99.8	110.2	123.5	136.3	145.1
75 - 79 "	51.8	54.8	60.4	74.3	92.1	104.8	115.4	128.1
80 - 84 "	39.9	41.5	45.3	51.1	64.1	80.4	90.3	102.8
85 years and over	33.1	40.3	47.3	55.6	66.2	83.9	108.7	133.0
Total	2,115.6	2,204.4	2,290.6	2,363.0	2,417.6	2,460.2	2,496.4	2,526.4

Table 6 Actual and projected population classified by sex and age group, 2001 - 2036 (M0F2)

Sex and age group	Persons in April of each year							
	2006	2011	2016	2021	2026	2031	2036	2041
Thousands								
Persons								
0 - 4 years	302.3	314.4	288.8	256.5	233.0	223.7	226.7	229.5
5 - 9 "	288.5	305.1	317.2	291.6	259.3	235.8	226.6	229.6
10 - 14 "	274.2	290.2	306.7	318.8	293.3	261.0	237.5	228.3
15 - 19 "	290.9	270.8	286.8	303.4	315.5	290.0	257.8	234.3
20 - 24 "	347.5	271.1	251.2	267.3	283.9	296.1	270.6	238.4
25 - 29 "	375.2	350.4	274.3	254.5	270.6	287.3	299.4	274.0
30 - 34 "	347.9	379.4	354.8	279.0	259.3	275.4	292.1	304.3
35 - 39 "	320.4	349.1	380.7	356.4	280.8	261.2	277.3	294.0
40 - 44 "	299.8	320.4	349.2	381.0	356.8	281.6	262.0	278.2
45 - 49 "	273.8	299.2	320.1	349.0	380.8	356.9	282.1	262.7
50 - 54 "	246.4	271.8	297.5	318.7	347.7	379.6	356.0	281.8
55 - 59 "	223.9	242.4	268.2	294.2	315.6	344.6	376.4	353.3
60 - 64 "	179.8	217.5	236.7	262.8	289.0	310.5	339.5	371.3
65 - 69 "	141.2	171.0	208.5	228.3	254.7	280.8	302.4	331.2
70 - 74 "	117.5	129.4	159.0	195.8	216.1	242.3	268.1	289.7
75 - 79 "	91.4	100.8	113.7	142.5	177.8	197.9	223.4	248.7
80 - 84 "	64.4	69.9	80.3	93.6	120.2	152.1	171.3	195.5
85 years and over	47.8	60.2	74.5	93.0	116.3	152.6	201.3	248.2
Total	4,232.9	4,413.0	4,568.3	4,686.4	4,770.6	4,829.3	4,870.7	4,893.0
Males								
0 - 4 years	154.7	161.9	148.7	132.1	120.0	115.2	116.8	118.2
5 - 9 "	148.1	156.1	163.4	150.2	133.6	121.5	116.7	118.3
10 - 14 "	140.7	149.0	157.0	164.3	151.1	134.5	122.4	117.6
15 - 19 "	148.7	139.0	147.3	155.3	162.6	149.5	132.9	120.9
20 - 24 "	175.5	137.9	128.4	136.8	144.8	152.1	139.0	122.5
25 - 29 "	190.2	177.0	139.7	130.2	138.6	146.7	154.0	141.0
30 - 34 "	176.4	192.7	179.8	142.6	133.3	141.7	149.7	157.1
35 - 39 "	162.8	177.3	193.7	180.9	143.9	134.6	143.0	151.1
40 - 44 "	150.4	162.8	177.4	193.9	181.3	144.4	135.2	143.6
45 - 49 "	137.4	150.0	162.5	177.2	193.8	181.3	144.7	135.5
50 - 54 "	124.1	136.3	149.1	161.8	176.6	193.2	180.8	144.6
55 - 59 "	113.2	121.7	134.2	147.2	160.0	174.8	191.4	179.3
60 - 64 "	90.6	109.2	118.2	131.0	144.1	157.0	171.8	188.3
65 - 69 "	69.9	85.1	103.7	113.2	126.1	139.3	152.2	166.8
70 - 74 "	55.8	62.5	77.8	96.1	105.9	118.8	131.8	144.6
75 - 79 "	39.7	45.9	53.4	68.2	85.6	95.5	107.9	120.6
80 - 84 "	24.5	28.4	35.0	42.5	56.0	71.6	81.0	92.7
85 years and over	14.8	19.9	27.2	37.4	50.1	68.7	92.6	115.2
Total	2,117.3	2,212.9	2,296.4	2,360.9	2,407.5	2,440.4	2,463.9	2,477.7
Females								
0 - 4 years	147.7	152.5	140.1	124.4	113.0	108.5	110.0	111.3
5 - 9 "	140.4	149.0	153.8	141.4	125.8	114.4	109.9	111.4
10 - 14 "	133.5	141.2	149.7	154.6	142.2	126.5	115.1	110.6
15 - 19 "	142.2	131.8	139.5	148.1	152.9	140.5	124.9	113.5
20 - 24 "	172.0	133.2	122.8	130.5	139.1	143.9	131.6	115.9
25 - 29 "	185.0	173.4	134.7	124.3	132.0	140.6	145.4	133.1
30 - 34 "	171.5	186.7	175.1	136.4	126.1	133.8	142.4	147.2
35 - 39 "	157.7	171.8	187.0	175.5	137.0	126.6	134.3	143.0
40 - 44 "	149.3	157.6	171.8	187.0	175.6	137.1	126.9	134.6
45 - 49 "	136.4	149.2	157.5	171.8	187.0	175.6	137.4	127.2
50 - 54 "	122.3	135.5	148.4	156.9	171.1	186.4	175.1	137.2
55 - 59 "	110.7	120.7	134.0	147.0	155.5	169.8	185.0	174.0
60 - 64 "	89.1	108.3	118.5	131.9	144.9	153.5	167.7	183.0
65 - 69 "	71.4	85.9	104.8	115.1	128.5	141.5	150.2	164.4
70 - 74 "	61.7	66.9	81.2	99.8	110.2	123.5	136.3	145.1
75 - 79 "	51.8	54.8	60.4	74.3	92.1	102.4	115.4	128.1
80 - 84 "	39.9	41.5	45.3	51.1	64.1	80.4	90.3	102.8
85 years and over	33.1	40.3	47.3	55.6	66.2	83.9	108.7	133.0
Total	2,115.6	2,200.1	2,271.8	2,325.5	2,363.1	2,389.0	2,406.8	2,415.4

Table 7 Average annual births, deaths, natural increase and estimated net migration for each intercensal period, 1926 - 2041

Period	Total births	Total deaths	Natural increase	Change in population	Estimated net migration
Thousands					
Actual					
1926 - 1936	58	42	16	0	-17
1936 - 1946	60	43	17	-1	-19
1946 - 1951	66	40	26	1	-24
1951 - 1956	63	36	27	-12	-39
1956 - 1961	61	34	26	-16	-42
1961 - 1966	63	33	29	13	-16
1966 - 1971	63	33	30	19	-11
1971 - 1979	69	33	35	49	14
1979 - 1981	73	33	40	38	-3
1981 - 1986	67	33	34	19	-14
1986 - 1991	56	32	24	-3	-27
1991 - 1996	50	31	18	20	2
1996 - 2002	54	31	23	49	26
2002 - 2006	61	28	33	81	48
Projected					
M1F1					
2006-2011	68	27	41	101	60
2011-2016	76	27	49	99	50
2016-2021	79	28	51	91	40
2021-2026	77	31	46	76	30
2026-2031	74	35	40	70	30
2031-2036	75	39	36	66	30
2036-2041	79	44	35	65	30
M1F2					
2006-2011	66	27	39	99	60
2011-2016	69	27	42	92	50
2016-2021	69	28	40	80	40
2021-2026	67	31	36	66	30
2026-2031	64	35	30	60	30
2031-2036	65	39	25	55	30
2036-2041	67	44	22	52	30
M2F1					
2006-2011	68	27	41	91	50
2011-2016	74	27	47	82	35
2016-2021	74	28	46	71	25
2021-2026	70	31	39	49	10
2026-2031	65	34	31	41	10
2031-2036	64	39	26	36	10
2036-2041	67	43	23	33	10
M2F2					
2006-2011	66	27	39	89	50
2011-2016	67	27	40	75	35
2016-2021	65	28	36	61	25
2021-2026	61	31	30	40	10
2026-2031	56	34	22	32	10
2031-2036	55	39	17	27	10
2036-2041	56	43	13	23	10
M0F1					
2006-2011	65	27	38	38	0
2011-2016	64	27	37	37	0
2016-2021	59	28	31	31	0
2021-2026	54	30	24	24	0
2026-2031	52	33	19	19	0
2031-2036	53	37	16	16	0
2036-2041	55	41	13	13	0
M0F2					
2006-2011	63	27	36	36	0
2011-2016	58	27	31	31	0
2016-2021	51	28	24	24	0
2021-2026	46	30	17	17	0
2026-2031	45	33	12	12	0
2031-2036	45	37	8	8	0
2036-2041	46	41	4	4	0

Table 8 Actual and projected labour force classified by sex and age group, 2006 - 2021 (M1)

Year and sex	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 +	Total
Thousands												
2006 ⁶												
Persons	77.1	258.9	326.2	295.0	259.4	240.7	216.5	182.4	140.4	80.8	40.5	2,118.0
Males	44.9	140.9	176.3	165.5	152.8	141.1	126.3	106.5	86.5	52.8	29.7	1,223.2
Females ⁷	32.3	118.1	149.9	129.6	106.6	99.6	90.2	75.9	53.9	27.9	10.9	894.8
- married	0.0	0.0	30.7	67.2	73.8	79.5	76.7	66.5	47.1	24.4	9.0	475.0
- other	32.3	118.1	119.2	62.4	32.8	20.0	13.5	9.4	6.9	3.5	1.8	419.8
2011												
Persons	74.7	239.3	384.3	368.5	310.0	275.2	249.3	210.4	155.3	102.7	51.6	2,421.5
Males	40.8	127.1	204.1	208.4	182.1	162.0	144.4	122.1	95.7	66.6	39.1	1,392.4
Females	33.9	112.2	180.2	160.1	127.8	113.2	104.9	88.4	59.6	36.2	12.5	1,029.0
- married	0.0	0.0	35.9	79.7	86.9	87.7	86.2	76.5	51.8	31.7	10.1	546.3
- other	33.9	112.2	144.3	80.4	41.0	25.5	18.6	11.9	7.8	4.5	2.5	482.7
2016												
Persons	80.5	224.4	350.7	420.1	378.8	323.4	281.9	237.1	177.9	115.7	74.2	2,664.5
Males	43.2	119.1	182.7	233.7	222.1	189.7	165.9	138.0	109.4	74.5	54.5	1,532.7
Females	37.4	105.3	167.9	186.4	156.6	133.7	116.0	99.1	68.5	41.2	19.7	1,131.8
- married	0.0	0.0	31.9	89.7	105.4	101.0	94.2	85.6	59.5	36.1	16.5	620.0
- other	37.4	105.3	136.0	96.7	51.3	32.6	21.8	13.5	9.0	5.1	3.1	511.8
2021												
Persons	86.8	237.7	322.0	379.8	423.0	389.0	327.1	264.7	202.7	133.4	99.0	2,865.2
Males	45.5	126.7	167.4	207.5	244.8	228.2	192.7	156.9	124.3	85.6	73.6	1,653.1
Females	41.3	110.9	154.5	172.4	178.1	160.8	134.4	107.9	78.4	47.8	25.5	1,212.0
- married	0.0	0.0	28.0	79.6	118.5	118.2	107.7	93.0	67.2	41.4	21.2	674.7
- other	41.3	110.9	126.5	92.8	59.6	42.6	26.7	14.9	11.2	6.5	4.2	537.3

⁶ Source: Quarterly National Household Survey, Quarter 2, 2006

⁷ Females aged 15 – 24 are not distinguished by marital status

Table 9 Actual and projected labour force classified by sex and age group, 2006 - 2021 (M2)

Year and sex	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 +	Total
Thousands												
2006 ⁶												
Persons	77.1	258.9	326.2	295.0	259.4	240.7	216.5	182.4	140.4	80.8	40.5	2,118.0
Males	44.9	140.9	176.3	165.5	152.8	141.1	126.3	106.5	86.5	52.8	29.7	1,223.2
Females ⁷	32.3	118.1	149.9	129.6	106.6	99.5	90.2	75.9	54.0	27.9	10.8	894.8
married	0.0	0.0	30.7	67.2	73.8	79.5	76.7	66.5	47.1	24.4	9.0	475.0
other	32.3	118.1	119.2	62.4	32.8	20.0	13.5	9.4	6.9	3.5	1.8	419.8
2011												
Persons	74.4	233.2	371.3	361.1	306.1	273.0	248.0	209.6	154.8	102.5	51.5	2,385.6
Males	40.7	124.2	197.2	203.9	179.5	160.5	143.6	121.5	95.4	66.4	39.0	1,371.9
Females	33.7	108.9	174.1	157.2	126.5	112.5	104.5	88.1	59.5	36.1	12.5	1,013.7
married	0.0	0.0	34.7	78.2	86.0	87.1	85.9	76.2	51.7	31.6	10.0	541.5
other	33.7	108.9	139.4	79.0	40.5	25.4	18.6	11.9	7.8	4.5	2.5	472.2
2016												
Persons	79.6	214.2	323.8	396.1	365.8	316.2	277.7	234.6	176.5	115.0	73.9	2,573.3
Males	42.7	114.3	169.1	219.9	213.7	184.9	163.1	136.3	108.4	74.0	54.3	1,480.7
Females	36.9	99.8	154.6	176.2	152.1	131.4	114.6	98.3	68.1	41.0	19.6	1,092.6
married	0.0	0.0	29.4	84.8	102.3	99.3	93.0	84.9	59.2	35.9	16.5	605.3
other	36.9	99.8	125.2	91.4	49.8	32.1	21.6	13.4	8.9	5.1	3.1	487.3
2021												
Persons	85.0	225.6	290.0	342.2	394.0	372.7	318.0	259.6	199.9	131.9	98.4	2,717.3
Males	44.6	121.0	151.6	186.8	227.2	217.6	186.7	153.4	122.3	84.5	73.1	1,568.8
Females	40.4	104.6	138.5	155.3	166.8	155.1	131.3	106.2	77.6	47.4	25.3	1,148.6
married	0.0	0.0	25.1	71.7	111.0	114.0	105.2	91.5	66.5	41.0	21.1	647.1
other	40.4	104.6	113.4	83.6	55.8	41.1	26.1	14.7	11.1	6.4	4.2	501.5

⁶ Source: Quarterly National Household Survey, Quarter 2, 2006

⁷ Females aged 15 – 24 are not distinguished by marital status

Table 10 Actual and projected labour force classified by sex and age group, 2006 - 2021 (M0)

Year and sex	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 +	Total
Thousands												
2006 ⁶												
Persons	77.1	258.9	326.2	295.0	259.4	240.7	216.5	182.4	140.4	80.8	40.5	2,118.0
Males	44.9	140.9	176.3	165.5	152.8	141.1	126.3	106.5	86.5	52.8	29.7	1,223.2
Females ⁷	32.3	118.1	149.9	129.6	106.6	99.6	90.2	75.9	53.9	27.9	10.9	894.8
married	0.0	0.0	30.7	67.2	73.8	79.5	76.7	66.5	47.1	24.4	9.0	475.0
other	32.3	118.1	119.2	62.4	32.8	20.0	13.5	9.4	6.9	3.5	1.8	419.8
2011												
Persons	72.6	202.2	306.4	324.3	286.8	262.1	241.6	205.4	152.5	101.2	51.1	2,206.3
Males	39.7	109.8	162.9	181.2	166.6	153.1	139.5	118.6	93.7	65.5	38.7	1,269.3
Females	32.8	92.4	143.6	143.2	120.2	109.1	102.1	86.8	58.8	35.6	12.4	936.9
married	0.0	0.0	28.6	71.2	81.7	84.5	84.0	75.1	51.0	31.2	10.0	517.2
other	32.8	92.4	115.0	71.9	38.5	24.6	18.1	11.7	7.7	4.4	2.4	419.7
2016												
Persons	76.2	187.5	241.5	306.3	316.3	289.1	262.3	225.7	171.3	112.3	72.8	2,261.3
Males	41.0	101.8	128.5	169.0	182.1	166.8	152.8	130.5	104.7	72.1	53.5	1,302.6
Females	35.3	85.8	113.0	137.3	134.2	122.3	109.5	95.3	66.6	40.2	19.3	958.7
married	0.0	0.0	21.5	66.1	90.3	92.5	88.9	82.3	57.9	35.2	16.2	550.8
other	35.3	85.8	91.5	71.2	43.9	29.9	20.6	13.0	8.7	5.0	3.1	407.9
2021												
Persons	79.8	200.7	225.4	242.6	297.4	317.7	287.9	243.3	191.0	127.3	96.3	2,309.6
Males	42.0	108.9	119.8	134.1	170.0	182.3	166.6	142.4	116.3	81.2	71.5	1,335.0
Females	37.9	91.8	105.6	108.6	127.4	135.4	121.3	100.9	74.8	46.1	24.8	974.5
married	0.0	0.0	19.1	50.1	84.8	99.5	97.2	87.0	64.1	39.9	20.7	562.3
other	37.9	91.8	86.5	58.4	42.6	35.9	24.1	13.9	10.7	6.2	4.1	412.2

⁶ Source: Quarterly National Household Survey, Quarter 2, 2006

⁷ Females aged 15 – 24 are not distinguished by marital status

APPENDICES

Appendix 1

Membership of Expert Group

Aidan Punch Chairperson	Central Statistics Office
Padraig Dalton	Central Statistics Office
Deirdre Cullen	Central Statistics Office
Kieran Walsh	Central Statistics Office
Joseph Keating	Central Statistics Office
Helen Cahill Secretary	Central Statistics Office
Tom Healy	Department of Education and Science
Máire O'Mahony	Department of Environment and Local Government
Bruce McCormack	Department of Environment and Local Government
Niall Cussen	Department of Environment and Local Government
Loretta O'Sullivan	Department of Finance
Hugh Magee	Department of Health and Children
Paul Morrin	Department of Social, Community and Family Affairs
Aedan Hall	Department of the Taoiseach
Damien Courtney	Cork Institute of Technology
Brian Hughes	Dublin Institute of Technology
Edgar Morgenroth	Economic and Social Research Institute
Adele Bergin	Economic and Social Research Institute
Jim Walsh	National University of Ireland, Maynooth
William Hynes	University College Dublin
Brendan Walsh	University College Dublin
Shane Whelan	University College Dublin

Appendix 2

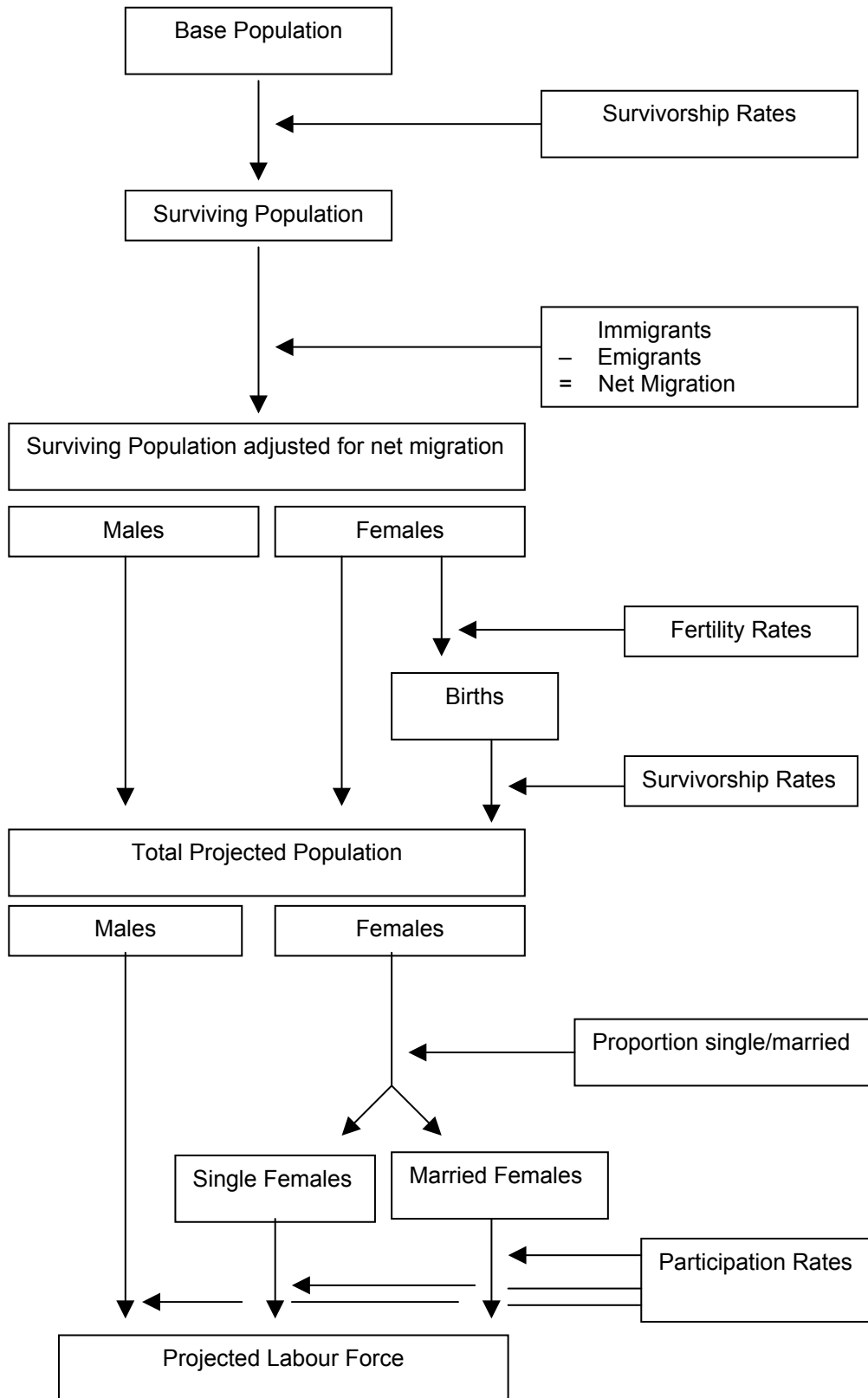
Description of population and labour force projection model 2006 - 2041

Projections of the population have been compiled on an annual basis up to 2041. The model used is the demographic component method which projects the base 2006 population forward under the chosen assumptions governing births, deaths and net migration. This is illustrated graphically in Figure A.

The 2006 Census of Population data are first disaggregated by age and sex. The death and gross migration rates which these groups are assumed to experience in the following year are then applied. The assumed fertility rates are applied to the female population aged 15-49. The population projected in this way then becomes the base population for the following year. The whole procedure is repeated.

One hundred different single year age groups are distinguished (0-1 to 99+) for both males and females. After the base population is aged a year the appropriate survivorship ratios (see Appendix 3) are applied to it. Next the assumed migration effects are included. The assumed outward and inward flows are broken down by age and sex on the basis of the distributions estimated for the inter-censal period 2002-2006. This yields the surviving population adjusted for net migration but without an estimate of the number of children born in the year. The age specific fertility rates for the projection year are applied to the projected female population to estimate the projected births. These births are then divided into males and females on the basis of the ratios experienced for recent years. The appropriate survivorship ratios are then applied to male and female births before these are added in to yield the total projected population.

The assumed labour force participation rates are applied to the projected population aged 15 years and over to give the projected labour force.

Figure A**Diagram of population and labour force projection model**

Appendix 3

Glossary of technical terms

Age specific fertility rate: The age specific fertility rate for a particular age group is the number of live births to women in that age group per 1,000 females in the same age group.

Labour force participation rate: The number of persons at work or unemployed (either looking for first regular job or having lost or given up previous job) in a particular age group expressed as a percentage of all persons in that age group.

Life expectancy: The average number of additional years a person would live if current mortality trends were to continue. The expectation of life at birth represents the mean length of life of individuals who are subjected since birth to current mortality trends. Life expectancy is usually compiled on the basis of a life table showing the probability of dying at each age for a given population according to the age specific death rates prevailing in a given period.

Net Migration: The net effect of immigration and emigration. A positive entry denotes that inward migration exceeds outward migration and vice-versa.

Old dependency ratio: The population aged 65 years and over expressed as a percentage of the population aged 15-64 years.

Survivorship ratio: The survivorship ratio at age x , S_x , is calculated as

$$S_x = L_x / L_{x-1}$$

where L_x is the population aged between x and $x+1$ assuming that 100,000 births occur each year according to the Life Tables.

Total dependency ratio: The sum of the young and old dependency ratios.

Total fertility rate (TFR): The TFR represents the theoretical average number of children who would be born alive to a woman during her lifetime if she were to pass through her child bearing years (ages 15-49) conforming to the age specific fertility rates of a given year. The rate refers to a theoretical female cohort.

The TFR is compiled by summing the age specific fertility rates for the relevant five-year age groups, dividing by 1,000 and multiplying by 5. The small number of births for which the age of the mother is not stated is distributed in proportion to the stated categories.

Young dependency ratio: The population aged 0-14 years expressed as a percentage of the population aged 15-64 years.

Appendix 4

Availability of data

Detailed results of the projections are available in Excel and comma delimited formats on the CSO website (see http://www.cso.ie/releasespublications/po_lab_project.htm). The detailed data files contain projections of the population for each year from 2006 to 2041 classified by sex and single year of age. Births, deaths and net migration are analysed by sex only. The detailed projections are provided for the six combinations of fertility and migration assumptions distinguished in the publication (i.e. M1F1, M1F2, M2F1, M2F2, M0F1 and M0F2).

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Appendix 5

SUPPORTING TABLES

Table A1 Population classified by sex at each census since 1841

Census year	Persons	Males	Females
Thousands			
1841	6,529	3,222	3,306
1851	5,112	2,494	2,617
1861	4,402	2,169	2,233
1871	4,053	1,992	2,061
1881	3,870	1,912	1,958
1891	3,469	1,729	1,740
1901	3,222	1,610	1,612
1911	3,140	1,590	1,550
1926	2,972	1,507	1,465
1936	2,968	1,520	1,448
1946	2,955	1,495	1,460
1951	2,961	1,507	1,454
1956	2,898	1,463	1,435
1961	2,818	1,417	1,402
1966	2,884	1,449	1,435
1971	2,978	1,496	1,482
1979	3,368	1,693	1,675
1981	3,443	1,729	1,714
1986	3,541	1,770	1,771
1991	3,526	1,753	1,772
1996	3,626	1,800	1,826
2002	3,917	1,946	1,971
2006	4,240	2,121	2,119

Table A2 Females in selected age groups at each census since 1926

Census year	Females aged 20-39 years	Females aged 15-49 years
Thousands		
1926	404	709
1936	408	694
1946	413	704
1951	389	670
1961	313	598
1966	316	607
1971	339	627
1979	442	750
1981	466	780
1986	505	839
1991	501	869
1996	537	934
2002	618	1,032
2006	684	1,112

Table A3 Life expectancy at various ages, 1925 - 2006

Period	Age in years										
	0	5	10	30	40	50	60	70	80	90	
Males											
1	1925-1927	57.4	59.5	55.2	38.4	30.4	22.7	15.8	10.0	5.8	3.3
2	1935-1937	58.2	60.1	55.8	38.5	30.3	22.4	15.5	10.0	6.0	3.1
3	1940-1942	59.0	60.7	56.3	38.9	30.6	22.5	15.4	9.6	5.7	3.6
4	1945-1947	60.5	61.5	56.9	39.2	30.6	22.4	15.1	9.2	5.3	3.2
5	1950-1952	64.5	63.6	58.8	40.3	31.3	22.8	15.4	9.2	5.0	2.7
6	1960-1962	68.1	65.7	60.8	41.7	32.4	23.5	15.8	9.7	5.1	2.5
7	1965-1967	68.6	65.7	60.8	41.7	32.2	23.4	15.6	9.7	5.2	2.6
8	1970-1972	68.8	65.5	60.6	41.5	32.1	23.3	15.6	9.7	5.4	2.8
9	1978-1980	69.5	65.7	60.8	41.7	32.2	23.3	15.7	9.5	5.3	2.9
10	1980-1982	70.1	66.1	61.3	42.1	32.6	23.6	15.9	9.7	5.4	2.9
11	1985-1987	71.0	66.8	61.9	42.7	33.1	24.0	16.0	9.7	5.3	2.8
12	1990-1992	72.3	68.0	63.1	43.9	34.4	25.2	17.0	10.4	5.8	3.0
13	1995-1997	73.0	68.6	63.6	44.5	35.1	25.8	17.5	10.6	5.9	3.0
14	2001-2003	75.1	70.7	65.7	46.5	37.0	27.8	19.2	11.9	6.5	3.3
*	2004-2006	76.7	72.1	67.2	47.9	38.3	29.0	20.4	12.8	7.1	3.9
Females											
1	1925-1927	57.9	59.2	54.9	38.6	30.8	23.2	16.4	10.7	6.5	3.7
2	1935-1937	59.6	60.4	56.1	39.2	31.2	23.3	16.2	10.6	6.5	3.4
3	1940-1942	61.0	61.4	56.9	39.9	31.6	23.5	16.3	10.4	6.4	4.2
4	1945-1947	62.4	62.5	57.9	40.5	32.1	23.9	16.4	10.2	6.0	3.8
5	1950-1952	67.1	65.4	60.6	42.2	33.3	24.7	16.8	10.2	5.6	3.2
6	1960-1962	71.9	69.0	64.1	44.7	35.3	26.3	18.1	11.0	5.9	3.0
7	1965-1967	72.9	69.6	64.8	45.2	35.7	26.6	18.4	11.2	6.1	3.1
8	1970-1972	73.5	70.0	65.1	45.6	36.0	27.0	18.7	11.5	6.2	3.2
9	1978-1980	75.0	71.0	66.1	46.5	36.8	27.6	19.2	11.9	6.4	3.4
10	1980-1982	75.6	71.5	66.6	47.0	37.3	28.0	19.5	12.2	6.7	3.5
11	1985-1987	76.7	72.4	67.5	47.8	38.1	28.7	20.1	12.6	6.8	3.3
12	1990-1992	77.9	73.5	68.6	48.9	39.2	29.8	21.1	13.5	7.4	3.6
13	1995-1997	78.5	74.1	69.1	49.5	39.8	30.3	21.5	13.7	7.5	3.7
14	2001-2003	80.3	75.7	70.8	51.1	41.4	31.9	22.9	14.8	8.2	4.1
*	2004-2006	81.5	76.8	71.9	52.2	42.4	32.9	23.9	15.7	8.8	4.6

* The 2005 Life Tables referenced here were produced by the CSO as a special exercise for this projections publication. A set of Life Tables for 2005-2007 using Census 2006 data will be published during 2008

Table A4 Projected life expectancy at various ages, 2010 - 2042

Period	Age in years										
	0	5	10	30	40	50	60	70	80	90	
Males											
16	2010-2012	79.7	75.0	70.0	50.6	41.0	31.5	22.6	14.7	8.5	4.3
17	2015-2017	81.6	76.9	71.9	52.4	42.7	33.2	24.2	16.0	9.4	4.8
18	2020-2022	83.1	78.4	73.4	53.8	44.1	34.5	25.4	17.1	10.2	5.2
19	2025-2027	84.3	79.5	74.5	54.9	45.2	35.5	26.3	17.9	10.8	5.5
20	2030-2032	85.1	80.3	75.3	55.7	45.9	36.3	27.0	18.5	11.3	5.7
21	2035-2037	85.8	81.0	76.0	56.3	46.6	36.9	27.6	19.0	11.7	6.0
22	2040-2042	86.5	81.7	76.7	57.0	47.2	37.5	28.2	19.5	12.1	6.2
Females											
16	2010-2012	83.2	78.5	73.5	53.8	44.0	34.4	25.3	16.8	9.6	4.7
17	2015-2017	84.4	79.7	74.7	55.0	45.1	35.6	26.3	17.7	10.3	5.0
18	2020-2022	85.5	80.7	75.8	56.0	46.1	36.5	27.2	18.5	10.8	5.2
19	2025-2027	86.3	81.6	76.6	56.8	46.9	37.2	27.9	19.1	11.3	5.5
20	2030-2032	87.0	82.2	77.2	57.4	47.5	37.9	28.5	19.6	11.7	5.7
21	2035-2037	87.6	82.8	77.9	58.0	48.1	38.4	29.0	20.1	12.1	5.9
22	2040-2042	88.3	83.4	78.5	58.6	48.7	39.0	29.6	20.6	12.5	6.1

Table A5 Labour force participation rates, 1991 - 2021 (%)

Age group	Actual*			Assumed		
	1996	2002	2006	2011	2016	2021
Males						
25 - 29	92.1	91.5	92.7	92.0	92.0	92.0
30 - 34	94.8	93.8	93.8	94.0	94.0	94.0
35 - 39	93.9	93.8	93.9	94.0	94.0	94.0
40 - 44	92.8	92.1	93.8	94.0	94.0	94.0
45 - 49	89.7	89.8	91.9	93.0	94.0	94.0
50 - 54	84.3	85.4	85.8	87.0	87.5	88.0
55 - 59	72.6	75.2	76.4	77.0	78.0	79.0
60 - 64	51.8	55.7	58.3	60.0	61.0	62.0
65 and over	15.3	15.1	14.5	16.0	18.0	20.0
Married females						
25 - 29	66.8	65.7	70.1	75.0	76.0	77.0
30 - 34	59.8	65.7	71.2	72.0	74.0	75.0
35 - 39	55.4	61.3	63.8	66.0	68.0	69.0
40 - 44	49.9	64.0	64.8	67.0	69.0	70.0
45 - 49	41.8	61.6	65.2	67.0	68.0	69.0
50 - 54	35.2	50.5	61.4	63.0	63.0	63.0
55 - 59	26.5	37.2	47.3	47.0	48.0	49.0
60 - 64	14.8	21.5	30.4	32.0	33.0	34.0
65 and over	2.6	2.9	4.1	4.0	5.5	6.0
Other females						
25 - 29	85.3	86.6	84.4	85.0	86.0	87.0
30 - 34	83.7	84.8	80.9	82.0	83.0	84.0
35 - 39	80.8	80.8	78.1	80.0	81.0	81.0
40 - 44	79.7	79.6	75.3	78.0	79.0	80.0
45 - 49	78.0	73.4	72.0	76.0	77.0	78.0
50 - 54	69.3	66.3	67.5	72.0	73.0	74.0
55 - 59	55.3	47.1	61.5	64.0	65.0	66.0
60 - 64	35.4	37.7	40.0	41.0	42.0	43.0
65 and over	5.8	4.1	4.9	6.0	7.0	8.0

* Source: Labour Force Survey 1996; Quarterly National Household Surveys 2002, 2006

Table A6 Actual and projected labour force, 1996 - 2021

Year	Males	Females			Persons
		Married	Other	Total	
Thousands					
Actual*					
1996	925.1	322.1	260.2	582.3	1,507.4
2002	1,076.6	414.5	349.8	764.3	1,840.9
2006	1,223.2	475.0	419.8	894.8	2,118.0
M1					
2011	1,392.4	546.3	482.7	1,029.0	2,421.5
2016	1,532.7	620.0	511.8	1,131.8	2,664.5
2021	1,653.1	674.7	537.3	1,212.0	2,865.2
M2					
2011	1,371.9	541.5	472.2	1,013.7	2,385.6
2016	1,480.7	605.3	487.3	1,092.6	2,573.3
2021	1,568.8	647.1	501.5	1,148.5	2,717.3
M0					
2011	1,269.3	517.2	419.7	936.9	2,206.2
2016	1,302.6	550.8	407.9	958.7	2,261.3
2021	1,335.0	562.3	412.2	974.5	2,309.5

* Source: Labour Force Surveys 1996; Quarterly National Household Surveys 2002, 2006

Table A7 Labour force participation Rates (ILO) of females aged 15 years or over distinguishing mothers by number of dependant children 2000 to 2007

	Age group								Total
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50+	
2000									
Mothers (wives or partners with children or lone mothers)	*	54.2	62.2	59.5	58.2	58.4	53.8	28.6	49.0
No dependant children	*	*	*	*	*	63.9	58.0	24.1	29.7
One dependent child	*	59.3	75.0	75.1	67.9	64.3	56.2	31.2	54.8
Two dependent children	*	39.0	53.2	60.0	63.0	61.0	53.6	38.8	56.5
Three or more dependent children	*	*	39.9	42.8	49.5	52.3	48.2	39.8	47.7
Wives (or partners) without children	*	85.7	94.5	94.5	89.3	75.3	64.2	17.9	44.4
Other females (ie children in family units or other females not in family units)	26.2	69.1	92.2	91.3	88.1	80.4	73.2	12.2	45.9
All Females	26.3	67.8	82.4	71.1	64.3	61.6	56.7	20.3	47.1
2002									
Mothers (wives or partners with children or lone mothers)	*	48.7	59.2	60.7	59.5	62.8	60.7	31.7	51.5
No dependant children	*	*	*	*	*	62.4	62.8	26.3	32.1
One dependent child	*	56.0	72.3	75.9	72.8	68.7	63.7	35.5	58.3
Two dependent children	*	25.2	50.7	60.6	63.8	65.4	62.1	43.6	59.0
Three or more dependent children	*	*	26.6	41.3	48.6	56.6	53.0	38.0	48.2
Wives (or partners) without children	*	88.1	92.5	96.0	86.5	80.2	68.4	20.3	46.9
Other females (ie children in family units or other females not in family units)	22.0	66.5	92.6	91.3	86.5	82.5	72.4	13.9	46.3
All Females	22.3	65.2	81.3	73.0	65.1	66.2	62.8	22.7	48.8
2004									
Mothers (wives or partners with children or lone mothers)	*	47.8	58.4	58.6	59.4	63.6	61.4	35.7	52.8
No dependant children	*	*	*	*	*	71.8	64.7	29.5	35.6
One dependent child	*	54.6	72.6	73.9	72.8	69.7	64.6	39.3	59.3
Two dependent children	*	29.6	45.2	59.3	63.7	66.0	61.7	48.9	58.8
Three or more dependent children	*	*	34.1	36.2	48.5	56.9	54.3	44.3	48.9
Wives (or partners) without children	*	86.8	92.7	91.9	87.2	78.6	67.3	22.3	46.6
Other females (ie children in family units or other females not in family units)	19.7	67.9	89.1	90.5	88.7	78.7	75.1	14.7	46.6
All Females	20.0	66.0	79.4	71.8	65.6	66.1	63.4	25.0	49.4
2006									
Mothers (wives or partners with children or lone mothers)	*	53.2	61.3	64.2	60.9	63.9	63.9	39.6	55.7
No dependant children	*	*	*	*	*	76.8	67.8	35.7	41.2
One dependent child	*	62.3	70.4	78.8	75.0	71.3	64.6	40.7	61.9
Two dependent children	*	21.7	52.6	63.0	63.8	65.8	65.7	51.6	61.1
Three or more dependent children	*	*	37.7	40.0	49.7	56.2	57.4	49.7	50.7
Wives (or partners) without children	*	89.6	92.6	95.1	90.2	77.5	73.1	27.0	50.8
Other females (ie children in family units or other females not in family units)	22.5	69.7	90.2	89.9	87.7	79.4	74.1	17.9	49.4
All Females	22.8	68.8	81.3	75.4	67.0	66.3	66.0	28.9	52.5

* Population estimates of less than 1,000 are deemed too small for publication purposes due to reliability concerns. Sampling or other survey errors are greater in respect of smaller values or estimates of change.

Appendix 6

Method of projecting mortality⁸

Mortality rates were projected by estimating the current rate of improvement by single year of age and sex and assuming that this rate of improvement will decline over a twenty-five year period to a long-term average improvement rate not dissimilar to the rates observed in the long-term past. The analysis showed that the current rate of decline of mortality for males averaged around 5 per cent per annum across most ages, with surprisingly little variation. For females, the current rate of decline oscillated with age around an average rate of 3.5 per cent per annum. It was assumed that there would be no mortality improvements at ages from 100 years and upwards.

The Expert Group judged it reasonable to apply the same rate of decline to male and female mortality rates in the estimates for the long-term future and, following reflection, a long term rate of 1.5 per cent per annum was settled upon as not unreasonable for all ages up to age 90 years from 2031 onwards. For each year between 2005 and 2031, the mortality declines for that year were calculated by linear interpolation.

Estimating the current rate of improvement in mortality

- A graduated life table was prepared for 2004-2006 following the same methodology as that employed for previous Irish Life Tables. The annualised percentage fall in mortality at each age for each sex was calculated from the graduated tables. This gave the average rate of improvement per annum over the three year period 2002 to 2005.
- There were large fluctuations in the mortality declines at the early ages but from age 11 years to age 90 years, the annual rate of decline tended to oscillate about 5 per cent for males and, with somewhat greater amplitude, about 3.5 per cent for females.
- It was found that replacing the age-specific current rates of decline in mortality with the average rate of 5 per cent per annum for males and 3.5 per cent per annum for females up to age 90 years produced almost identical life expectancies at age 0 years and at age 65 years, both now and for each projected year. It was decided to adopt the averaged rate at each age in place of the calculated age-specific rates to ensure that projected age-specific mortality rates are mutually consistent (so, for example, that projected mortality rates in each future year increase with increasing age at the older ages).
- A zero per cent improvement (i.e. no improvement) was assumed for ages of 100 years and over. For ages 91 years to 99 years, the current rate of improvement was estimated by linear interpolation between the assumed rate of improvement at age 90 years (5% for males and 3.5% for females) and the zero per cent rate of improvement at age 100 years.

Projecting mortality improvements from 2031 onwards

- The average rate of improvement over the 76-year period 1926-2002 was 1.43 per cent per annum for males and 2.1 per cent per annum for females (when calculated as a simple average of the rates of improvement at each age from age 0 years to age 100 years over that period). There is a pronounced age structure effect to the improvements, with the rate of improvement generally lowering with increasing age. However, over more recent periods, the age pattern is less pronounced with later ages now showing large improvements. Also, in more recent decades, males are recording larger proportionate falls in mortality rates than females.
- It is difficult to settle on an annual rate of mortality improvement assumed to hold from 2031 onwards. Following discussion, the Expert Group decided that an annual decline of 1.5 per cent was reasonable to apply to both sexes up to age 90 years, as it is not very dissimilar to the average rate of mortality decline over the long term past. Moreover, when the other elements of the projection approach are taken into account, estimates of period life expectancies which emerge in 2041 are close to those produced by the projection methodology employed in the last projection. For ages of 100 years and over, no mortality improvements from calendar year 2031 were assumed. For ages 91 years to age 99 years, the rate of improvement was estimated by linear interpolation in each projected calendar year.

⁸ The Expert Group are indebted to Dr Shane Whelan, UCD specifically for his input into mortality part of the projection work. The methodology employed is described in greater detail in Recent Trends in Mortality and Morbidity in Ireland, Symposium to the Statistical and Social Inquiry Society of Ireland, 24th January 2008.

Projecting mortality improvements between 2005 and 2031

- As explained above, the projection methodology estimated the current rate of mortality decline for the year 2005 for each sex at each age. This turned out to be approximately 5 per cent per annum for males, and approximately 3.5 per cent per annum for females, up to age 90 years. For any calendar year after 2031, the reduction in mortality over that year is assumed to be 1.5 per cent for each sex and at each age up to age 90 years. For all years between 2005 and 2031, the mortality declines for that year at each age is a simple linear interpolation between the decline in 2005 and that assumed in 2031. For ages of 100 years and over, no improvements were assumed either now or in the future while for ages between 90 years and 100 years, the rates of mortality decline were estimated by linear interpolation in each future calendar year.

