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An Phríomh-Oifig Staidrimh

Population and Labour Force Projections

2006-2036

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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 2006 to 2036;
- labour force classified by age, sex and female marital status for 2006, 2011 and 2016.

The projections are based on assumptions relating to future trends in fertility, mortality, migration and labour force participation. Three sets of assumptions were chosen for fertility, one for mortality and two for migration trends up to the year 2036. 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 June to October 2004. 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 2002 Census of Population, information on births up to 2003, life tables for 2001/2003 and the results for the March-May 2004 quarter from the Quarterly National Household Survey (QNHS).

Methodology

The model used in the projections is the demographic component method which projects the base 2002 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 the previous projections covering 2001-2031¹. 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 2006 and 2036 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 intercensal periods.
- Tables 8 and 9 contain the projected labour force for 2006, 2011 and 2016 under the two migration assumptions.

More detailed results are available on the CSO website www.cso.ie (See Appendix 4).

¹ Population and Labour Force Projections 2001-2031. Pn. 7491 Stationery Office, Dublin, July 1999.

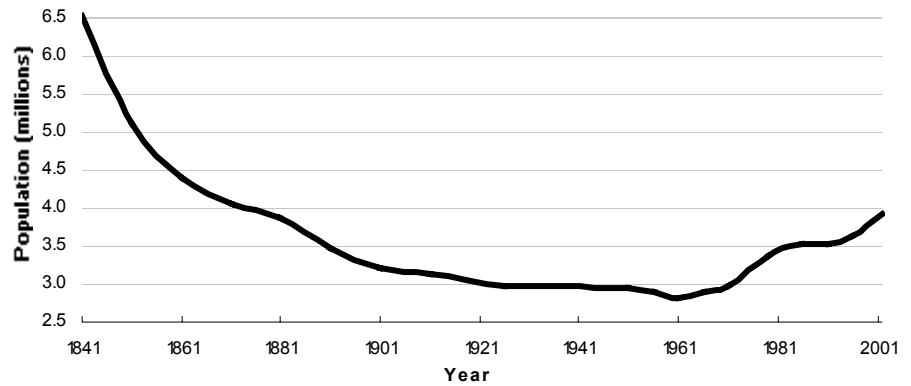
Appendix 5 contains a number of supporting tables which either informed the deliberations of the Expert Group or were derived from the results of the projection exercise.

HISTORICAL POPULATION TRENDS

The population 1841-2002

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 - 2002



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 which resumed in the early 1990s, strengthened in the most recent intercensal period. The 2002 population of 3.92 million is 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 intercensal period since 1926. The relevant components are:

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

Table A Average annual births, deaths, natural increase and estimated net migration for each intercensal period, 1926 - 2002

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

Lowest 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.

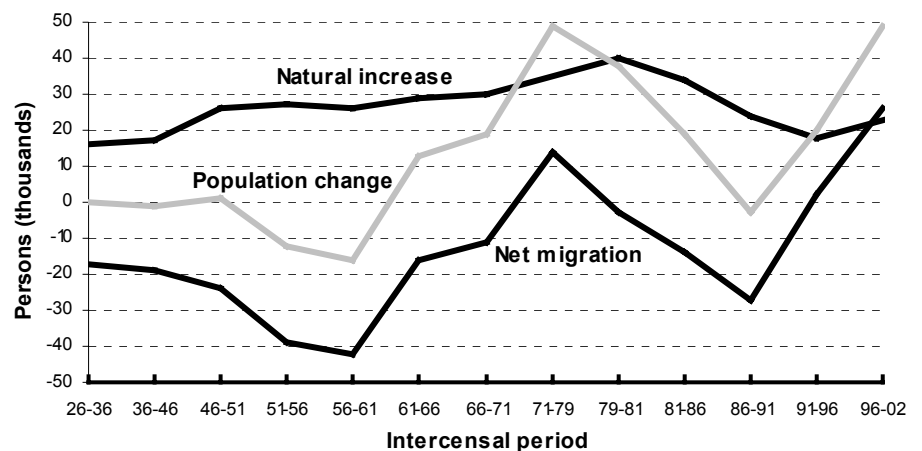
In the early 1990s there was a further decline in the average annual natural increase due to the declining birth rate. However, as a consequence of increased economic activity and employment growth there was a change around once again in the pattern of migration, with a small net inflow recorded between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

The most recent intercensal period has seen the average annual natural increase revert to the level attained during the late 1980s. Coupled with historically high net inward migration this has led to an average annual population increase on a par with that achieved during the 1970s.

The available evidence for the period since 2002 shows that the upward movement in the natural increase is continuing and also that net migration remains high, resulting in an average annual population increase of about 1.6 per cent.

Figure 2 shows average annual intercensal population change, natural increase and net migration for the period 1926–2002. The dominant influence which migration has exerted on the pattern of population change over the seventy-six year period can be clearly seen from the graph.

Figure 2 Components of population changes, 1926 - 2002



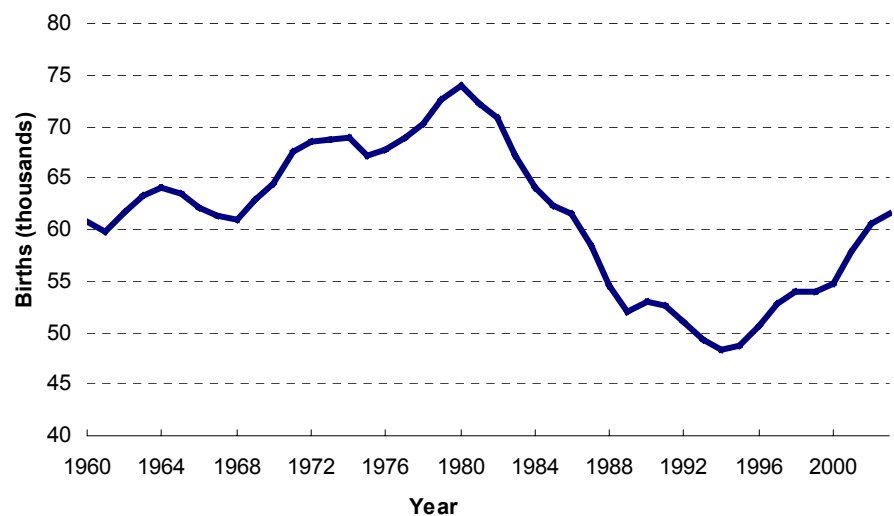
ASSUMPTIONS

Fertility

Births 1960 to date

From a fertility perspective the period from 1960 to 2003 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. Since then, births have increased each year to the 2003 level of 61,500. To summarise, annual births increased by 22 per cent between 1960 and 1980, declined by 35 per cent between 1980 and 1994 and then increased again by 27 per cent between 1994 and 2003. The situation is illustrated graphically in Figure 3.

Figure 3 Births 1960 - 2003



More women of child bearing age

To gain a deeper understanding of the trend in the number of births it is necessary to look at 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). Between the 1961 and 1981 Censuses 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. This pattern continued up to 1994, with a further 35 per cent fall in the annual number of births occurring despite an increase of over 16 per cent in the number of women aged 15-49.

The long-term decline in fertility rates has, however, been reversed with the total fertility rate increasing from 1.85 in 1994 to 1.98 in 2003. This 7 per cent increase in the fertility rate coupled with an increase of just over 20 per cent in the number of women aged 20-39 years has been responsible for the 27 per cent rise in the number of births between 1994 and 2003. In summary, while the number of women aged 20-39 has doubled between 1961 and 2003 the average number of children per woman has halved over the same period leading to a similar number of births in both years (60,000 in 1961 compared with 61,500 in 2003).

Table B contains age-specific and total fertility rates at five yearly intervals from 1960 to 1990 and for each year from 1990 to 2003.

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	19.6	53.0	93.6	134.3	79.9	14.7	0.6	1.98
2003	18.8	50.8	93.6	134.5	81.4	15.6	0.5	1.98

The five-year age groups 20-24, 25-29, 30-34, 35-39 together account for over 90 per cent of all births. 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 at that level. The fertility decline observed for women aged 25-29 years has been more gradual but has continued uninterrupted up to the present. Women aged 30-34 accounted for just over a third of all births in 2003. The long-term decline in the age-specific fertility rate of these women was halted in 1994 and has since followed an upward path. Similarly, the long-term decline in the age-specific fertility rate of women aged 35-39 was also halted in 1994 and has since increased by almost 40 per cent. Thus, over the last decade the fertility of women in their thirties has recovered to the level pertaining in the mid-1980s.

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. The TFR then increased slightly to 1.95 in 1998 before falling back to 1.90 in 2000. Over the past few years the TFR has increased again to a level of 1.98 in 2003.

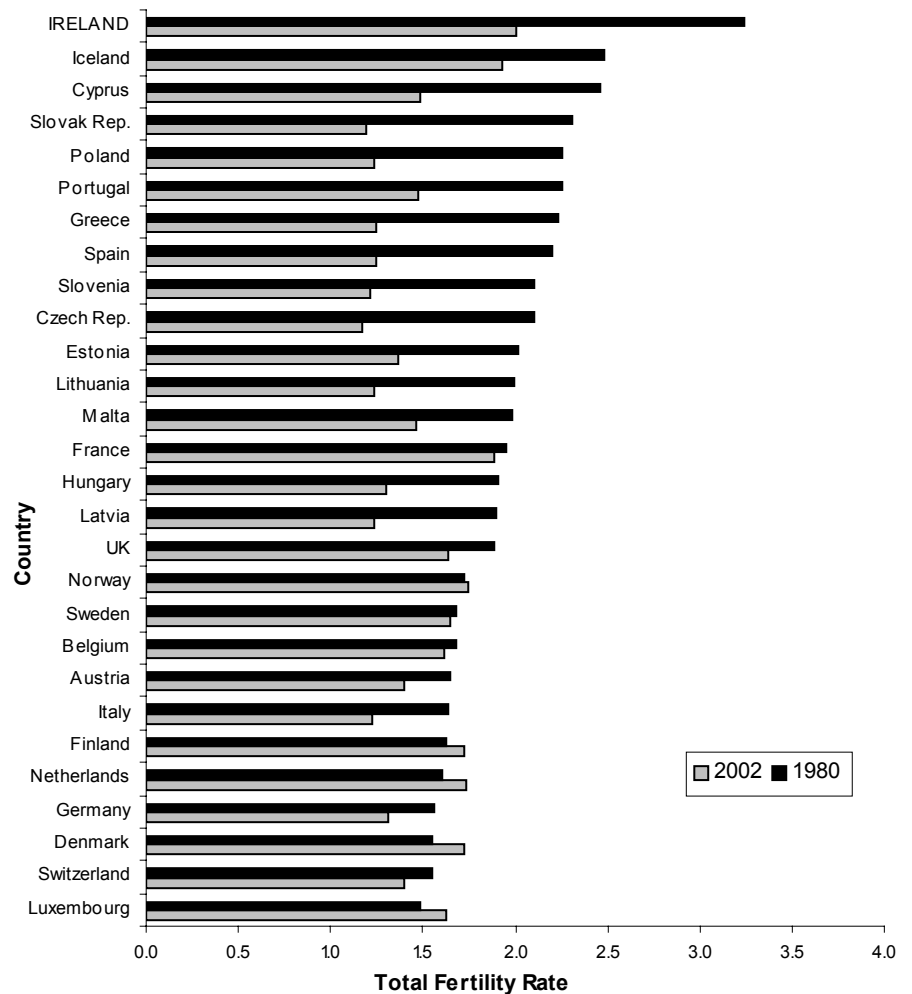
By calculating the theoretical number of births which would have occurred in 2003 if the age-specific fertility rates of 1965 still applied an indication can be obtained of the impact of the decrease in fertility rates between the mid-sixties and 2003. Using the 1965 rates, births in 2003 would have amounted to 126,000, which would have been more than double what they actually were, (i.e. 126,000 theoretical births as against an actual 2003 figure of 61,500 births).

International trends of selected countries

In Ireland the total fertility rate has declined by nearly 40 per cent between 1980 and 2002. Notwithstanding this decline Ireland continues to have the highest fertility rate in the EU. Figure 4 compares the TFRs for both years for the 25 EU countries as well as Iceland, Norway and Switzerland. A number of countries experienced greater relative declines in fertility than that

observed in Ireland. These include the Slovak Republic, Poland, Czech Republic, Slovenia and Cyprus along with Greece and Spain.

Figure 4 Total fertility rates for selected countries, 1980 and 2002



Source: *Recent demographic developments in Europe 2003* (Council of Europe).

Of the countries shown in Figure 4, Ireland had the highest TFR in both 1980 and 2002. The lowest fertility rates (less than 1.3 in 2002) were experienced in a number of most recent EU accession countries: Czech Republic, Slovak Republic, Slovenia, Latvia, Lithuania and Poland as well as in the Southern European countries of Italy, Spain and Greece. The Scandinavian and Benelux countries as well as France, the United Kingdom, Iceland and Ireland were the only countries with fertility rates above 1.6 in 2002.

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 recent 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 has tended to level off. The Group considered that further significant increases were unlikely.

- The increased educational attainment and labour force participation by women are expected to exert downward pressure on fertility;
- Average family sizes will continue to decrease and childlessness will increase;
- Irish fertility rates are still very 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 1.7 to 2.0. Three variants were chosen: a high variant (F1), a medium variant (F2), and a low variant (F3):

- **F1:** TFR to increase from its 2003 level to 2.0 by 2011 and to remain constant thereafter
- **F2:** TFR to decrease to 1.85 by 2011 and to remain constant thereafter
- **F3:** TFR to decrease to 1.7 by 2011 and to remain constant thereafter

High fertility assumption

The high fertility assumption F1 assumes the total fertility rate will increase very slightly from its 2003 level of 1.98 to 2 by 2011 and then stabilise at this level until the end of the projection period (2036). This assumption allows the impact on the projections of fertility remaining at just under the theoretical replacement level to be monitored. The assumed age-specific and derived total fertility rates under assumption F1 are given in Table C.

Table C Assumed age-specific fertility rate and total fertility rate, 2006 - 2036 under fertility assumption F1

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	18.9	51.0	94.0	135.0	81.6	15.7	0.5	1.99
2011-2036	19.0	51.3	94.5	135.9	82.1	15.8	0.5	2.00

Medium fertility assumption

The medium fertility assumption F2 assumes the total fertility rate will decrease from its 2003 level of 1.98 to 1.85 by 2011 and then stabilise at this level until the end of the projection period (2036). The Group considered that this assumption would allow Ireland to remain close to the top of the EU fertility table while allowing for a gradual decrease to take place. In 2002 only France, Iceland and Ireland had a TFR greater than 1.85.

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 D.

Table D Assumed age-specific fertility rate and total fertility rate, 2006 - 2036 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	18.3	49.5	91.2	131.1	79.3	15.2	0.5	1.93
2011-2036	17.6	47.5	87.5	125.7	76.0	14.6	0.5	1.85

Low fertility assumption

The low fertility assumption F3 assumes the total fertility rate will decrease more sharply from its 2003 level of 1.98 to reach 1.7 by 2011. The maintenance of the TFR at 1.7, which is the average rate for northern European countries at present, illustrates the impact of persistent lower fertility levels on the projected population. The assumed age-specific and derived total fertility rates under assumption F3 are given in Table E.

Table E Assumed age-specific fertility rate and total fertility rate, 2006 - 2036 under fertility assumption F3

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	17.8	48.0	88.4	127.0	76.8	14.7	0.5	1.87
2011-2036	16.1	53.6	80.4	115.5	69.8	13.4	0.4	1.70

Previous projections

Three fertility assumptions were used in the last set of projections (published in 1999) covering the period 2001 to 2031. The high variant assumed the TFR would increase from its 1998 level of 1.93 to 2.0 by 2001 and then remain constant. The medium variant assumed the TFR would remain constant at its 1998 level to 2001, decrease to 1.75 by 2011 and remain constant thereafter, while the low variant assumed the TFR would remain constant at its 1998 level to 2001, decrease to 1.5 by 2011 and then remain constant.

The fertility rate assumed under the high variant in this last set of projections is quite similar to the out-turn to date, i.e. a steady increase in the TFR to 1.98 by 2002. Accordingly, the projected births under this scenario did not differ markedly from the actual births registered in the period.

Mortality

National trends

Life expectancy at birth for males increased from 57.4 years in 1926 to 75.1 years in 2002, representing a gain of 17.7 years over the seventy six-year period. The corresponding female rates were 57.9 and 80.3 years, respectively, which represents a gain of 22.4 years. The differential between male and female life expectancy at birth has increased from 0.5 years in 1926 to 5.2 years in 2002. Table F shows that the gains achieved were not uniformly distributed by age.

Table F Gains in life expectancy at various ages 1926 - 2002

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
1926-2002	17.7	11.2	1.9	22.4	16.5	4.1

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 4.1 years for males between 1986 and 2002 while the increase for females over the same period was 3.7 years. The improvements have been most notable in the older age groups and have also been very marked in the period 1996 to 2002, with a gain of 2.1 years in life expectancy at birth for males and a corresponding gain for females of 1.7 years. Improved living conditions coupled with further developments in medical care are considered to be the main contributing factors.

International comparisons

Despite these improvements, life expectancy for both males and females in Ireland remains relatively low by comparison with many other European countries, as illustrated in Table G. Male life expectancy in Ireland ranks 15th highest of the 28 countries listed, while female life expectancy ranks 19th. When the same countries are ranked in terms of life expectancies in 1970, Ireland's position is essentially unchanged, despite the large improvements in life expectancy during the period 1970 to 2002.

Table G Life expectancy at various ages for selected European countries

Country	Year	Males				Females			
		0	1	15	65	0	1	15	65
Austria	2002	75.8	75.2	61.3	16.3	81.7	80.9	67.0	19.7
Belgium	2002	75.1	74.5	60.7	15.8	81.1	80.4	66.6	19.7
Cyprus	2000/2001	76.1	75.5	61.7	16.5	81.0	80.4	66.6	19.1
Czech Rep.	2002	72.1	71.5	57.7	14.0	78.7	78.0	64.2	17.4
Denmark	2002	74.8	74.2	60.3	15.4	79.5	78.8	64.9	18.3
Estonia	2002	65.3	64.7	51.1	12.7	77.1	76.5	62.7	17.3
Finland	2002	74.9	74.1	60.3	15.8	81.5	80.7	66.8	19.6
France	2001	75.5	74.9	61.1	16.9	82.9	82.2	68.4	21.3
Germany	2001	75.5	74.8	61.0	16.0	81.3	80.6	66.7	19.6
Greece	1999	75.5	75.0	61.2	16.3	80.6	80.1	66.2	18.7
Hungary	2002	68.4	67.9	54.1	13.1	76.7	76.3	62.4	17.0
Iceland	2000	78.0	77.3	63.5	18.1	81.4	80.5	66.7	19.6
Ireland	2002	75.1	74.6	60.8	15.4	80.3	79.7	65.8	18.7
Italy	2000	76.6	75.9	62.1	16.5	82.5	81.8	68.0	20.4
Latvia	2002	64.8	64.5	50.9	12.5	76.0	75.7	62.1	16.9
Lithuania	2002	66.3	65.8	52.2	13.3	77.5	77.1	63.3	17.7
Luxembourg	2002	74.9	74.3	60.7	15.9	81.5	80.9	67.1	19.9
Malta	2002	75.8	75.2	61.4	15.0	80.5	80.1	66.2	18.9
Netherlands	2002	76.0	75.4	61.6	15.6	80.7	80.1	66.2	19.3
Norway	2002	76.4	75.7	61.9	16.2	81.5	80.8	66.9	19.7
Poland	2002	70.4	70.0	56.2	14.0	78.7	78.2	64.4	17.9
Portugal	2002	73.8	73.2	59.5	15.6	80.5	79.9	66.1	19.0
Slovak Rep.	2002	69.9	69.4	55.6	13.3	77.8	77.4	63.6	17.0
Slovenia	2002	72.7	72.1	58.3	14.6	80.5	79.7	65.9	18.9
Spain	2000	75.7	75.0	61.2	16.5	82.5	81.9	68.0	20.4
Sweden	2002	77.7	77.0	63.2	16.9	82.1	81.4	67.5	20.0
Switzerland	2002	77.8	77.1	63.3	17.4	83.0	82.3	68.4	21.0
United Kingdom	2000	75.5	74.9	61.1	15.7	80.2	79.6	65.7	18.9

Source: *Recent demographic developments in Europe 2003 (Council of Europe).*

This table shows that the life expectancy of females is now 81 years or over in thirteen of these countries, while the life expectancy of males is 76 years or over in seven countries.

Mortality assumptions

There is a general consensus internationally among demographers that the improvements in life expectancy will continue for the foreseeable future. The Expert Group agreed with this and proposed that the average rate of improvement in life expectancy over the sixteen-year period 1986 to 2002 should be maintained over the life-time of the projections, with the exception of the 20 to 29 age group for both males and females. The period 1986 to 2002 showed a slight disimprovement in mortality rates for males and females aged 20 to 29 years while the period 1996 to 2002 showed a modest improvement. The Group considered that it was reasonable to assume that this modest improvement would continue and thus the time period used as the basis of the projection for this age group is 1996 to 2002.

These assumptions would result in a female life expectancy at birth of 86.9 years in 2036 and a male life expectancy at birth of 82.5 years. These projected rates are about four years higher than the current highest rates observed for the countries listed in Table G. 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.

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:

- 75.1 years in 2002 to 82.5 years in 2036 for males
- 80.3 years in 2002 to 86.9 years in 2036 for females

Previous projections

In the last set of projections life expectancy at birth was assumed to improve to 77.8 years for males and 84.0 years for females by 2031. The actual improvement between 1996 and 2002 significantly exceeded the projected level – by over 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 26,000 in the most recent intercensal period.

Following the large exodus in the 1950s, emigration declined rapidly in the 1960s leading to a reversal in the migration flow with a net average annual inflow of 14,000 being recorded in the 1970s. However, the trend of inward migration in the 1970s was short-lived. With the onset of the recession in the early 1980s large net outflows again materialised, particularly in the latter half of the decade when outflows on a par with those of the 1950s were again recorded. The first half of the 1990s saw net migration oscillating around zero. The main cause of the reduction in net outward migration on this occasion was the deterioration in foreign labour markets that deterred many from emigrating and also led to return migration of Irish people from abroad.

Table H shows the annual migration flows for recent years. Since 1996 there has been a downward trend in the number of emigrants, together with a strong rise in the number of immigrants, peaking in 2002. Net immigration in recent years reached a high point in 2002 of 41,000 but has fallen back somewhat to about 32,000 in 2004. These changes reflect the very strong performance of the Irish economy and of the labour market over this period.

Table H Estimated migration, 1995 - 2004

Year ending April	Out-migration	In-migration	Net migration
Thousands			
1995	33.1	31.2	-1.9
1996	31.2	39.2	8.0
1997	25.3	44.5	19.2
1998	28.6	46.0	17.4
1999	31.5	48.9	17.4
2000	26.6	52.6	26.0
2001	26.2	59.0	32.8
2002	25.6	66.9	41.3
2003	20.7	50.5	29.8
2004	18.5	50.1	31.6

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, particularly those assumed for the latter part of the projection period. In this context, the Group decided to focus on providing from a current perspective 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 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 very 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 high and 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 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 remaining at the current level of 30,000 in the period 2002 to 2016 followed by a slowing down to 20,000 in the period 2016 to 2026 and eventually to 15,000 per annum in the period 2026 to 2036. This would result in an average annual net inflow of 22,600 over the projection period. This scenario would be consistent with the Irish economy and labour market continuing to perform strongly relative to other countries over the long term.

Under migration scenario M2, average annual net migration is assumed to be 30,000 for the period 2002 to 2006, falling back to 20,000 in the period 2006 to 2011. Net migration is assumed to fall further to 10,000 during 2011 to 2016, falling again to 5,000 per annum for the period 2016 to 2036. This would result in an average annual net inflow of nearly 11,000 over the projection period. This scenario would be consistent with a more modest performance for the Irish economy and labour market, in line with current EU average growth rates, over the projection period.

M1: Immigration continuing at a high level and then moderating

- +30,000 per annum in 2002/2006
- +30,000 per annum in 2006/2011
- +30,000 per annum in 2011/2016
- +20,000 per annum in 2016/2021
- +20,000 per annum in 2021/2026
- +15,000 per annum in 2026/2031
- +15,000 per annum in 2031/2036

M2: Immigration continuing at more moderate levels

- +30,000 per annum in 2002/2006
- +20,000 per annum in 2006/2011
- +10,000 per annum in 2011/2016
- + 5,000 per annum in 2016/2021
- + 5,000 per annum in 2021/2026
- + 5,000 per annum in 2026/2031
- + 5,000 per annum in 2031/2036

The gross flow components of these migration assumptions are given in Table I.

Table I Assumed average annual migration flows, 2002 - 2036

Scenario	2002-2006	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	2031-2036
Thousands							
M1							
Immigration	51	51	51	41	40	35	35
Emigration	21	21	21	21	20	20	20
Net migration	30	30	30	20	20	15	15
M2							
Immigration	51	41	30	25	25	25	25
Emigration	21	21	20	20	20	20	20
Net migration	30	20	10	5	5	5	5

Previous projections

The previous projections assumed that net migration would be 115,000 for the period 1996 to 2002 under the high (M1) scenario and 80,000 under the low (M2) scenario. Based on the results of the 2002 Census, the derived intercensal net migration figure was significantly higher at 154,000.

In the period 2002-2006 the previous projections had migration assumptions which varied from annual net migration of 15,000 (M1) to 5,000 (M2). Both of these are significantly at variance with the estimated net migration for the early part of this period: net migration in 2003 and 2004 is estimated to have been around 30,000 in each year.

Thus the new migration assumptions represent a substantial upward revision in the projected impact of migration on future population growth.

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 2002 to 2036.

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 2016.

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 2016, 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 rates. 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 J shows the percentage of females who were married in each age group as measured by the 1991, 1996 and 2002 Censuses of Population along with the rates assumed for 2006, 2011 and 2016.

Table J Percentage of females married classified by age group, 1991 to 2016

Age group	Actual			Assumed		
	1991	1996	2002	2006	2011	2016
25-29 years	56.7	41.5	26.8	23.0	21.0	20.0
30-34 "	80.0	73.1	60.6	56.0	52.0	50.0
35-39 "	87.2	84.3	78.4	74.0	71.0	68.0
40-44 "	89.9	88.1	85.4	81.0	76.0	73.0
45-49 "	90.3	89.9	88.2	86.0	81.0	77.0
50-54 "	89.1	90.2	90.0	89.0	86.0	81.0
55-59 "	87.0	89.0	90.6	90.0	89.0	86.0
60-64 "	84.6	87.0	89.9	90.0	90.0	89.0
65 years and over	80.2	81.9	84.6	86.0	87.0	87.0

The trend in the number of marriages was steadily downwards from a level of 21,800 in 1980 to about 15,600 in 1997. Since then there has been a recovery in the number of marriages, with 20,300 recorded for 2003. The table above shows a sharp decline in the percentage of married females in the younger age groups, particularly those aged 25-29 years.

For the 25-29 age groups it is assumed that the downward trend in the proportion of married females will continue, albeit at a much more moderate pace. For females aged 30 to 54 the proportions married are assumed to drop by a further 9 to 12 percentage points up to 2016. The proportions are assumed to drop by about 5 percentage points for females aged 55 to 59 years and to remain about the same for older females.

Participation in education

In the 15-19 year age group 77 per cent of males were in education in 2002 compared with 86 per cent for females. The relevant proportions are assumed to increase to 84 per cent and 92 per cent, respectively, by 2016. Participation in education is less pronounced for 20-24 year olds. In 2002 the proportions were 26 per cent and 31 per cent for males and females, respectively. These are assumed to increase to 32 per cent and 36 per cent, respectively, by 2016, 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 historic education participation rates for 1991, 1996 and 2002 along with the projected rates for 2006, 2011 and 2016 are given in Table K.

Table K Education participation rates, 1991 - 2016 (%)

Age group	Actual			Assumed		
	1991	1996	2002	2006	2011	2016
Males						
15-19 years	70	77	77	80	82	84
20-24 "	17	23	26	28	30	32
Females						
15-19 years	77	84	86	89	91	92
20-24 "	17	26	31	33	35	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 10-11 per cent for males and about 12-13 per cent for females in 2002 and 2004. These rates are expected to remain largely unchanged up to 2016. The rates for 20-24 year olds were about 22-23 per cent for males and in the range 20-25 per cent for females in 2002 and 2004. These rates are expected to remain at around 25 per cent for both males and females up to 2016.

For non-students aged 15-24 participation rates are assumed to remain close to 2004 levels in the period to 2016. The recent historic and projected participation rates for students and non-students aged 15-24 are given in Table L.

The actual participation rates for 1991, 1996, 2002 and 2004 as well as the assumed participation rates for 2006, 2011 and 2016 are given in Table A5 of Appendix 5 for males, married females and single females, respectively.

Table L Labour Force participation rates, 1991 - 2016 (%)

Category and sex	Age group	Actual			Assumed		
		1991	1996	2002	2006	2011	2016
Students							
Males	15-19 years	3.3	4.3	11.1	10.0	10.0	10.0
	20-24 "	3.5	6.8	21.7	24.0	25.0	25.0
Females	15-19 "	3.3	4.8	13.1	12.0	12.0	12.0
	20-24 "	8.4	6.2	20.3	25.0	25.0	25.0
Non-students							
Males	15-19 years	92.8	90.2	90.7	89.0	90.0	90.0
	20-24 "	94.8	95.1	94.7	95.0	95.0	96.0
Females	15-19 "	86.8	84.4	80.1	78.0	79.0	80.0
	20-24 "	84.6	87.7	85.9	85.0	86.0	87.0

It is assumed on the basis of recent trends that participation rates of males in the 25-54 age group, which accounts for over two-thirds of the male labour force, will remain largely unchanged over the projection period at the actual rates recorded in 2004.

There have been dramatic gains in the labour force participation rates of married females in the recent past. The average annual increase for married females aged 25-64 years over the period 1991 to 2004 ranged from 1.7 per cent for 25-29 year olds to 5.9 per cent for 50-54 year olds.

Notwithstanding these increases, Ireland still lags somewhat behind many countries of the EU in terms of the labour force participation rates of married females. It is, therefore, assumed that the catching up process will continue with increases for married females of all ages, and in particular for those aged 35-39 years and aged 50-59 years.

Minor increases are assumed in the participation rates of males aged 55 years and over reflecting a tightening of the labour market supply of younger people and the removal of some barriers to people continuing to work at older ages.

Males:

- Increase in LFPR of 20-24 year old students
- Minor increases in LFPR of males aged 55 and over because of tightening labour force supply

Females 15-24:

- Slight increases in the LFPR of non-students

Married females:

- Continued increases in LFPR of all married females

Other females:

- Slight increases in LFPR of other females

Summary of Assumptions

Fertility

- **F1:** TFR to increase from its 2003 level to 2.0 by 2011 and to remain constant thereafter
- **F2:** TFR to decrease to 1.85 by 2011 and to remain constant thereafter
- **F3:** TFR to decrease to 1.7 by 2011 and to remain constant thereafter

Mortality

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

- 75.1 years in 2002 to 82.47 years in 2036 for males
- 80.3 years in 2002 to 86.86 years in 2036 for females

Migration

M1: Immigration continuing at a high level and then moderating

- +30,000 per annum in 2002/2006
- +30,000 per annum in 2006/2011
- +30,000 per annum in 2011/2016
- +20,000 per annum in 2016/2021
- +20,000 per annum in 2021/2026
- +15,000 per annum in 2026/2031
- +15,000 per annum in 2031/2036

M2: Immigration continuing at more moderate levels

- +30,000 per annum in 2002/2006
- +20,000 per annum in 2006/2011
- +10,000 per annum in 2011/2016
- + 5,000 per annum in 2016/2021
- + 5,000 per annum in 2021/2026
- + 5,000 per annum in 2026/2031
- + 5,000 per annum in 2031/2036

Labour force

Males:

- Increase in LFPR of 20-24 year old students
- Minor increases in LFPR of males aged 55 and over because of tightening labour force supply

Females 15-24:

- Slight increases in the LFPR of non-students

Married females:

- Continued increases in LFPR of all married females

Other females:

- Slight 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 2006-2016 and 2016-2036, respectively. Six population variants are given for both periods. These are M1F1, M1F2, M1F3, M2F1, M2F2 and M2F3. The one mortality assumption underlies all these projections. For the labour force just two projections for the period 2006-2016 only are presented since different fertility assumptions do not have any direct impact on the level of the workforce over such a relatively short period of time.

The main results of the projections are set out in tabular form in Tables 1 to 9 at the end of this section.

- Tables 1 to 6 give the projected population classified by five-year age group and sex at five-year intervals from 2006 to 2036 with 2001² shown for comparison purposes.
- The projected numbers of births, deaths and net migration under the six combinations of assumptions are set out for five-year periods from 2001 to 2036 in Table 7. This table also contains comparable historical intercensal data from 1926 onwards in order to facilitate comparisons with past trends.
- In Tables 8 and 9 the projected labour force is classified by five-year age group, sex and female marital status for the years 2006, 2011 and 2016. Corresponding data for 2001 are also given.

² While the projections use the 2002 census based populations the 2001 population estimates are used in the results tables to allow cohort comparisons to be carried out.

The Period 2006 to 2016

Total projected population

Table M summarises the total population arising under the six combinations of fertility and migration.

Table M Projected population 2006 - 2016

Year	Strong net immigration (M1)			Declining net immigration (M2)		
	F1	F2	F3	F1	F2	F3
Thousands						
2006	4,168	4,166	4,164	4,168	4,166	4,164
2011	4,505	4,487	4,469	4,452	4,435	4,416
2016	4,854	4,810	4,765	4,688	4,645	4,601

Under the highest variant (M1F1) the population is projected to grow by just over one million between 2001 and 2016 - an average annual rate of population increase of almost 1.6 per cent. This is roughly equivalent to the historically high population growth rate observed during the decade 1971-1981 and exceeds the average annual growth rate of 1.3 per cent observed during the most recent intercensal period 1996-2002. Under the lowest variant (M2F3) the overall population in 2016 is projected to be over 750,000 higher than the estimated level in 2001. The range of population outcomes shown for 2016 (i.e. the difference between the populations projected under the highest and lowest variants) is therefore just over 250,000.

.. migration the key factor..

The difference in the impact of the two migration assumptions on the level of the projected population in 2016 is between 164,000 and 166,000 depending on which fertility assumption is used. The fertility effect, on the other hand, is 87,000 or 89,000 depending on whether migration assumption M1 or M2 is used. Migration, therefore, accounts for about two-thirds of the total difference between the highest and lowest population levels projected for 2016.

Table N shows the population by broad age group under the various combinations of assumptions for five-year intervals from 2006 to 2016. 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 since 1981 mainly reflecting the sharp fall in births from the 1980 peak. By 2001 children aged 0-14 years were over 216,000 fewer in number than in 1981.

Those aged 0-14 years in 2001 will have aged fifteen years by 2016 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 2001 and 2016 will vary, therefore, largely in accordance with the fertility assumption chosen.

Under the combination of the high fertility and continuing high immigration assumptions (M1F1), the number of 0-14 year olds is projected to increase from its 2001 level of 827,500 to 1,046,000 by 2016. This would be on a par with the 1981 peak level and would represent an increase of 219,000 or 26.5 per cent between 2001 and 2016. Under the medium fertility assumption (F2) the number of children in 2016 would be 17 to 21 per cent higher than the 2001 level depending on the migration assumption used. Finally, the combination of low fertility and declining immigration (M2F3) would lead to a lower, though still significant increase of 98,000 (11.9 per cent) when compared with the 2001 level.

Table N Population projections, 2006 - 2016

Scenario	Population of school going age		Population				Average annual % change in total population in 5-year period	Dependency ratios		
	"Primary" 5-12	"Secondary" 13-18	0-14	15-64	65 years and over	Total		Young	Old	Total
	Thousands							Percentage		
Actual										
2001	433.9	375.3	827.5	2,589.8	429.8	3,847.2	0.00	32.0	16.6	48.5
M1F1										
2006	447.4	341.3	868.0	2,834.0	465.6	4,167.7	1.61	30.6	16.4	47.1
2011	502.0	331.1	961.0	3,012.8	531.1	4,504.9	1.57	31.9	17.6	49.5
2016	560.1	365.1	1,046.4	3,176.7	631.1	4,854.2	1.50	32.9	19.9	52.8
M1F2										
2006	447.4	341.3	866.2	2,834.0	465.6	4,165.8	1.60	30.6	16.4	47.0
2011	500.2	331.1	943.1	3,012.8	531.1	4,487.0	1.50	31.3	17.6	48.9
2016	542.3	365.1	1,002.1	3,176.7	631.1	4,809.9	1.40	31.5	19.9	51.4
M1F3										
2006	447.4	341.3	864.2	2,834.0	465.6	4,163.9	1.59	30.5	16.4	46.9
2011	498.2	331.1	924.7	3,012.8	531.1	4,468.6	1.42	30.7	17.6	48.3
2016	523.9	365.1	957.3	3,176.7	631.1	4,765.1	1.29	30.1	19.9	50.0
M2F1										
2006	447.4	341.3	868.0	2,834.0	465.6	4,167.7	1.61	30.6	16.4	47.1
2011	498.3	329.6	952.3	2,970.3	529.9	4,452.5	1.33	32.1	17.8	49.9
2016	546.0	359.8	1,012.2	3,048.9	626.8	4,687.9	1.04	33.2	20.6	53.8
M2F2										
2006	447.4	341.3	866.2	2,834.0	465.6	4,165.8	1.60	30.6	16.4	47.0
2011	496.4	329.6	934.6	2,970.3	529.9	4,434.8	1.26	31.5	17.8	49.3
2016	528.3	359.8	969.2	3,048.9	626.8	4,644.9	0.93	31.8	20.6	52.3
M2F3										
2006	447.4	341.3	864.2	2,834.0	465.6	4,163.9	1.59	30.5	16.4	46.9
2011	494.5	329.6	916.3	2,970.3	529.9	4,416.5	1.19	30.8	17.8	48.7
2016	510.0	359.8	925.6	3,048.9	626.8	4,601.3	0.82	30.4	20.6	50.9

In the absence of migration, the young population would still increase (by approximately two per cent under F3 and eleven per cent under F1). These growth levels are, however, much lower than those noted above for either the M1 or M2 scenarios thus highlighting once again the sensitivity of the projections to the choice of migration assumption.

**..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 2001-2016. The projected increases vary from 17.6 per cent under M2F3 to 29 per cent under M1F1. In the absence of migration the 15-year increase in the population of primary school-going age would be between 8 per cent and 15.6 per cent depending on which fertility scenario is chosen.

The outlook for children of “secondary” school age (i.e. persons aged 13-18 years) is more certain. Under all combinations of assumptions numbers are projected to continue to decline until 2011 and to then experience a recovery by 2016. The high immigration assumption yields a similar number of persons aged 13-18 years in 2016 compared with 2001 while under the low immigration assumptions the projected 2016 values will be slightly less.

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 just over 31 per cent in 2002. Table N shows that this ratio will remain largely unchanged over the next decade or so, i.e. in the range 30 to 33 per cent, under all assumptions.

..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 intercensal 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 61,500 in 2003. As a result, in the most recent intercensal period 1996-2002 the average annual number of births has risen to 54,000.

Under assumptions F1 and F2 the number of births is projected to continue its upward path with an average of 71,000 births projected for 2011-2016 under M1F1 compared with 65,000 for the same period under M1F2. In the same migration context the low fertility assumption F3 would result in an average annual number of births of 60,000 during 2011-2016. For the lower migration scenario M2 the average annual number of births in the 2011-2016 period would be approximately 2,000-3,000 lower on each fertility assumption.

In the absence of migration the average annual number of births would be some 5,000-6,000 lower in the 2006-2011 period, and 9,000-11,000 lower in the 2011-2016 period, compared with that projected under the M1 scenario.

**The population of working
age**

In examining the population aged 15-64 in the period to 2016 reference only needs to be made to the migration effect as the different fertility assumptions have no impact on this age group. Only two scenarios are therefore considered, namely those corresponding to M1 and M2. With nearly all of the migration estimated to affect the 15-64 age group the difference between the two migration assumptions will, therefore, be seen to impact almost entirely on the this age group up to 2016.

The population aged 15-64 has increased at every census since 1961 from its then low point of 1,626,000 to 2,590,000 in 2001. Under M1 – the continuing high net immigration assumption – the population aged 15-64 is

projected to increase by 587,000 between 2001 and 2016 representing an average annual increase of about 1.4 per cent. Under M2 the increase during the period 2001-2016 would be 459,000 persons or 1.1 per cent per annum.

Both these projected population growth rates are lower than the 1.7 per cent rate recorded between 1991 and 2001. 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 late 1970s and 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 late 1940s and the 1950s.

By way of contrast, looking at the period 2004-2016 the number of entrants to the working age population will diminish because of the fall in the number of births in the 1990s. It is clear that the assumed higher net immigration flows over the next decade or so will only partially counterbalance this decline.

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 and 9.

Increasing labour force

Under migration assumption M1, which assumes net inward migration continuing at an average annual rate of 30,000 up to 2016, the labour force is projected to increase from 1.92 to 2.37 million in the twelve-year period 2004-2016. This represents an overall increase of over 450,000 or an average annual increase of just under 38,000. This projected increase compares with an average annual gain of 43,500 during the thirteen-year period 1991/2004. Females are projected to account for 236,000 or 52 per cent of the overall increase. In relative terms this represents an increase of 30 per cent, well ahead of the 19 per cent increase projected for males. This differential follows from the assumptions that anticipate both lower female marriage rates and greater labour force participation by married females. Both categories of females – single and married – are projected to have similar rates of labour force growth between 2004 and 2016.

Under the M2 scenario of lower immigration the labour force is projected to increase at a slower average annual rate of 29,000 over the period to reach 2.27 million in 2016. Females will again account for the greatest share (54%) of the projected increase. The impact of assumed lower immigration causes the projected average annual labour force growth to fall from 1.8 per cent under M1 to 1.4 per cent under M2.

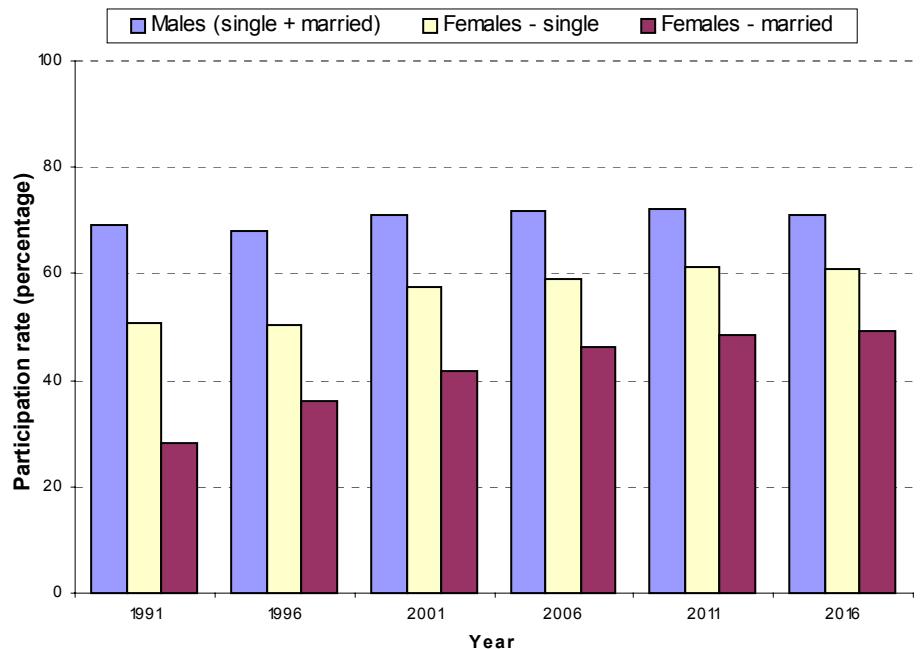
Table O compares labour force growth rates for the period 1991-2004 with those projected for 2004-2016. The projected average annual rate of increase is less than that achieved during 1991-2004 for all categories. This is due to two main factors. First, the lower growth noted above for the adult population will serve in turn to depress the labour force growth rates. Secondly in the case of females, the remarkable increase in labour force participation rates experienced between 1991 and 2004, as Irish rates rapidly converged towards those of comparable European States, is projected to continue to moderate.

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

Period	Males	Married females	Other females	Total females	Persons
1991/2004	1.9	4.7	3.4	4.1	2.7
2004/2016 (M1)	1.5	2.2	2.2	2.2	1.8
2004/2016 (M2)	1.1	1.9	1.6	1.8	1.4

Table A5 in the Appendix contains historic and projected labour force participation rate data, distinguishing males along with both single and married females from 1991 to 2016. The situation is illustrated graphically in Figure 5 and shows in particular the rapid rise in the participation of married females.

Figure 5 Actual and projected (M1) labour force participation rates for persons aged 15 years and over



Demographic effect dominates

By holding labour force participation rates constant at their 2004 level it is possible to apportion the overall projected increase in the labour force between its *demographic* and *participation rate* effects. Table P sets out the components under both migration assumptions.

Table P Components of labour force change, 2004 - 2016

Scenario	Males	Females			Persons
		Married	Other	Total	
Thousands					
M1					
Demographic	185.2	41.6	90.5	132.1	317.3
Participation rate	32.0	90.1	13.9	104.0	135.9
Total	217.1	131.7	104.4	236.1	453.3
M2					
Demographic	129.4	26.7	61.2	87.9	217.4
Participation rate	31.5	87.9	13.2	101.2	132.6
Total	160.9	114.7	74.4	189.1	350.0

The labour force participation rate effect for M1 is broadly similar to that for M2. However, as might be expected, the demographic effect is much stronger for the former because of the greater net inward migration.

Of the categories shown in Table P the demographic effect is largest in the case of males and accounts for 80-85 per cent of the overall labour force

change projected for 2004 to 2016. The demographic effect also dominates for single females. The assumed participation rate effect exerts the greatest influence on the projected change for married females. Under M1 it accounts for over two-thirds of the overall change while for M2 it is over three-quarters.

At the overall level the projected changes in the labour force to 2016 will arise mainly because of demographic factors. Under M1 these demographic factors account for 70 per cent of the projected change in the labour force between 2004 and 2016 while for M2 the corresponding figure is 62 per cent.

Migration and Labour Force Growth

The choice of migration assumption is critical in determining the projected labour force supply outcome up to 2016. The cumulative population difference due to net migration up to 2016 between assumptions M1 and M2 is 150,000 and Table P shows that this translated into a difference of just over 100,000 in the projected labour force.

Labour force demand will be a key determinant of migration over the projection period. Table Q shows the relationship between migration and labour force growth for the period since 1991 and under each of the two migration scenarios (M1 and M2). In addition the projected growth in the labour force in the absence of migration (M0)³ is shown for comparative purposes.

Table Q Actual and projected average annual net migration and change in the labour force, 1991 - 2016

Period	Scenario	Average annual net migration	Average annual change in the labour force	Average annual change in the labour force
		Thousands		Percentage
Actual 1991/2004		16.7	43.5	2.7
Projected 2004/2016	M1	30.0	37.8	1.8
	M2	17.5	29.2	1.4
	M0	0.0	16.9	0.8

In the absence of migration (M0), the labour force is projected to grow at a modest 17,000 per annum over the next twelve years, while the low migration scenario (M2) would result in an annual labour force growth of 29,000. Net immigration of 30,000 persons annually would result in an annual labour force growth rate of 38,000 compared with the 43,500 growth achieved between 1991 and 2004. While it is difficult to be precise about the magnitude of the likely future labour force demand, Table Q illustrates that for every 10,000 shortfall/surplus in the projected labour supply an adjustment of approximately 15,000 would be required to the underlying migration assumption to achieve balance between supply and demand in the labour market.

³ M0 assumes gross inflows and outflows of 20,000 annually over the course of the projection period.

The Period 2016 to 2036

Total projected population

The population projections for the years 2016, 2021, 2026, 2031 and 2036 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 for the base population the more uncertain the assumptions are likely to be. Therefore, the projections for the period beyond 2016 are of a more conjectural nature than those for the period up to and including 2016. However, they do convey a good indication of the likely changes in the population both in terms of structure and magnitude.

Table R shows the projected population under all six scenarios.

Table R Projected population 2016-2036

Year	Strong net immigration (M1)			Declining net immigration (M2)		
	F1	F2	F3	F1	F2	F3
Thousands						
2016	4,854	4,810	4,765	4,688	4,645	4,601
2021	5,140	5,070	4,999	4,870	4,803	4,736
2026	5,399	5,304	5,208	5,016	4,927	4,838
2031	5,613	5,492	5,370	5,140	5,029	4,917
2036	5,820	5,669	5,518	5,259	5,121	4,983

The range of outcomes projected for the population in 2036 is about 837,000. Maintaining the TFR at 2.0 over the entire period to 2036 coupled with strong net immigration - albeit declining in magnitude in the latter part of the projection period - would result in an increase in population in excess of 50 per cent between 2001 and 2036. Under this (M1F1) scenario the projected population for 2036 would be over 5.8 million. At the other extreme, declining net immigration (M2) allied to decreasing fertility in the period to 2011 followed by continuing low fertility in the following twenty five-year period would result in a population level of close to 5 million in 2036.

Table S 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 2016 to 2036.

Young population

The young population post 2016 is effectively determined by births occurring after 2001. Table 7 shows that the projected average annual number of births will decline under all projection combinations in the period 2016-2031 and then experience a small recovery in 2031-2036. The rate of decline will be more pronounced under the low fertility scenario. Under M1F1 the average number of births is projected to decline from 70,000 during 2016-2021 to 66,000 during 2026-2031 and then to recover to 68,000 births during 2031-2036. Projected births will be lowest under M2F3, falling to an average annual of 48,000 between 2026 and 2031 and remaining at that level during 2031-2036. Given that fertility rates are assumed to be constant under all three fertility variants from 2011 onwards, the variation in the number of births reflects the projected trend in the number of females of child bearing age, especially those aged 20-39.

The effect of these trends on the young population can be seen in Table S. Under M1F1 the population 0-14 years is projected to peak at 1,085,000 in 2021 and to decline to 1,032,000 by 2036. Scenario M2F3 would yield a peak young population of 926,000 in 2016 with projected decreases thereafter to reach a level of 750,000 by 2036.

Table S Population projections, 2021 - 2036

Scenario	Population of school going age		Population				Average annual % change in total population in 5-year period	Dependency ratios		
	"Primary" 5-12	"Secondary" 13-18	0-14	15-64	65 years and over	Total		Young	Old	Total
	Thousands							Percentage		
Actual										
2001	433.9	375.3	827.5	2,589.8	429.8	3,847.2	0.00	32.0	16.6	48.5
M1F1										
2021	589.7	412.7	1,084.8	3,314.1	741.3	5,140.1	1.15	32.7	22.4	55.1
2026	587.9	442.1	1,075.0	3,457.7	866.2	5,398.9	0.99	31.1	25.1	56.1
2031	563.3	449.9	1,044.2	3,566.8	1,002.3	5,613.3	0.78	29.3	28.1	57.4
2036	548.2	434.3	1,032.4	3,642.6	1,145.3	5,820.3	0.73	28.3	31.4	59.8
M1F2										
2021	551.7	406.4	1,016.3	3,312.2	741.3	5,069.9	1.06	30.7	22.4	53.1
2026	546.0	417.5	997.5	3,439.9	866.2	5,303.6	0.91	29.0	25.2	54.2
2031	522.8	418.2	966.9	3,522.6	1,002.3	5,491.8	0.70	27.4	28.5	55.9
2036	507.0	403.6	950.8	3,572.6	1,145.3	5,668.7	0.64	26.6	32.1	58.7
M1F3										
2021	513.4	399.9	947.5	3,310.3	741.3	4,999.0	0.96	28.6	22.4	51.0
2026	504.1	392.5	920.0	3,421.5	866.2	5,207.7	0.82	26.9	25.3	52.2
2031	482.3	386.5	889.9	3,477.9	1,002.3	5,370.1	0.62	25.6	28.8	54.4
2036	466.1	372.9	870.2	3,502.1	1,145.3	5,517.6	0.54	24.8	32.7	57.6
M2F1										
2021	558.9	401.9	1,016.9	3,119.8	733.3	4,870.0	0.76	32.6	23.5	56.1
2026	534.4	421.6	970.5	3,192.1	853.4	5,016.0	0.59	30.4	26.7	57.1
2031	493.3	413.9	914.9	3,241.6	983.9	5,140.4	0.49	28.2	30.4	58.6
2036	471.5	383.2	892.8	3,247.3	1,119.0	5,259.1	0.46	27.5	34.5	62.0
M2F2										
2021	522.1	395.7	952.0	3,118.0	733.3	4,803.2	0.67	30.5	23.5	54.1
2026	495.6	397.4	899.4	3,174.4	853.4	4,927.2	0.51	28.3	26.9	55.2
2031	457.3	384.0	846.2	3,198.7	983.9	5,028.8	0.41	26.5	30.8	57.2
2036	435.5	355.6	820.8	3,180.8	1,119.0	5,120.7	0.36	25.8	35.2	61.0
M2F3										
2021	485.1	389.1	886.7	3,116.0	733.3	4,736.0	0.58	28.5	23.5	52.0
2026	456.8	372.9	828.4	3,156.2	853.4	4,838.0	0.43	26.2	27.0	53.3
2031	421.3	354.1	777.9	3,155.3	983.9	4,917.0	0.32	24.7	31.2	55.8
2036	399.7	327.9	749.9	3,113.8	1,119.0	4,982.8	0.27	24.1	35.9	60.0

The old population

The old population (i.e. those aged 65 years and over) is projected to increase very significantly from its 2001 level of 430,000 to over 1.1 million by 2036 under all combinations of assumptions chosen. The very old population (i.e. those aged 80 years of age and over) is set to rise even more dramatically from the 2001 level of 98,000 to a projected 323,000 in 2036.

The average annual number of deaths will increase steadily from a current figure of under 30,000 to over 40,000 in the period 2031-2036. The natural increase in the population (i.e. the excess of births over deaths) is projected to decline under all combinations of assumptions. However, it will remain positive under all scenarios over the course of the projection period.

Population structure

The young population (827,500) was almost double the old population (430,000) in 2001. However, by 2036 it is projected that there will be more older persons than younger persons with the excess being most pronounced in the case of the M2F3 scenario (i.e. 1,119,000 persons aged 65 years and over compared with just 750,000 persons aged 0-14 years).

The changing population structure is best illustrated by comparing the breakdown of the population by five-year age groups and sex in 2001 and 2036 as depicted by their respective population pyramids. Figures 6 and 7 contain the relevant population pyramids for 2001 and 2036 for M1F1 and M2F3, 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 two children per woman. Under M2F3 the fall in fertility to a Northern European level of 1.7 children per woman coupled with moderate and declining net inward migration would see a fall in the number of young persons.

Figure 6 Population pyramids for 2001 and 2036 (M1F1)

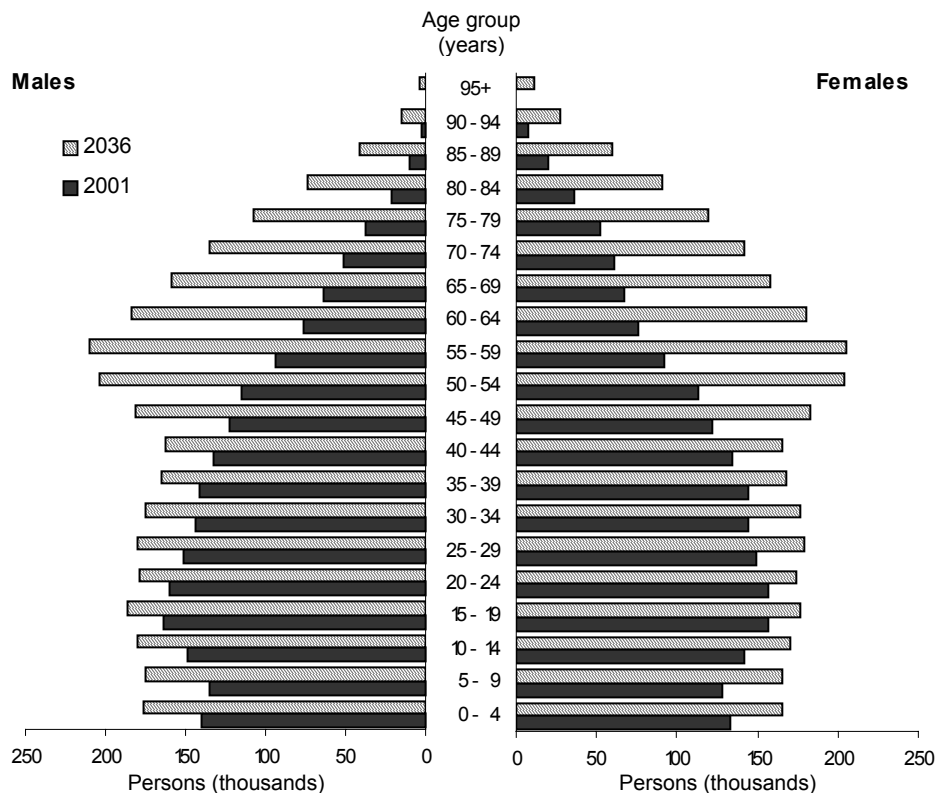
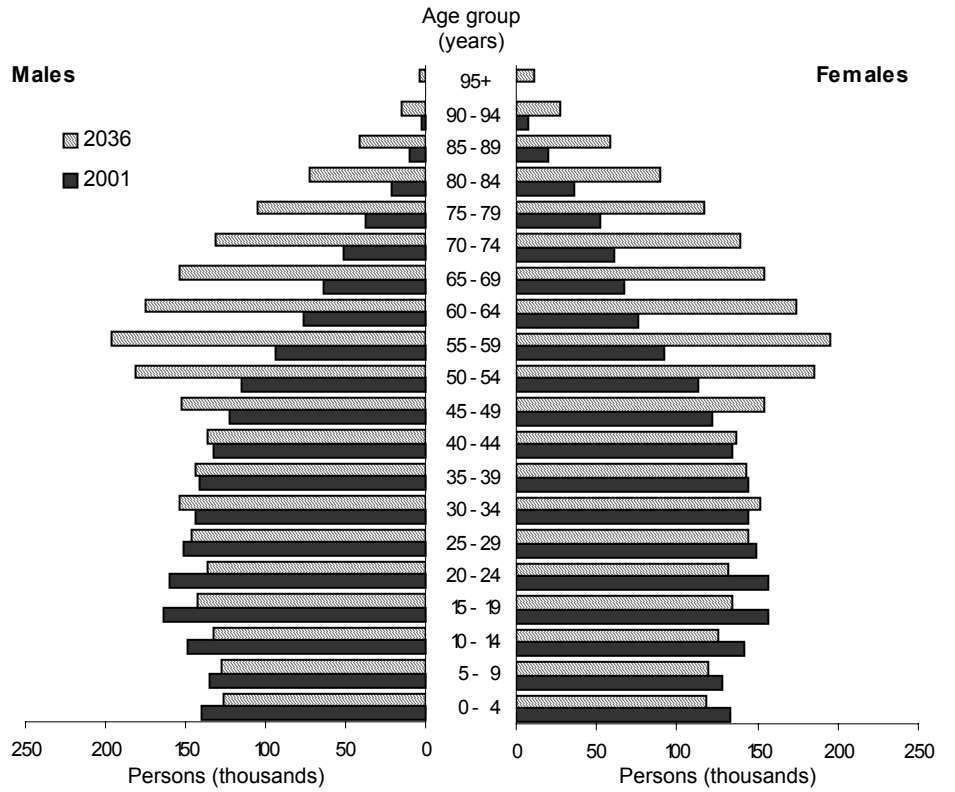


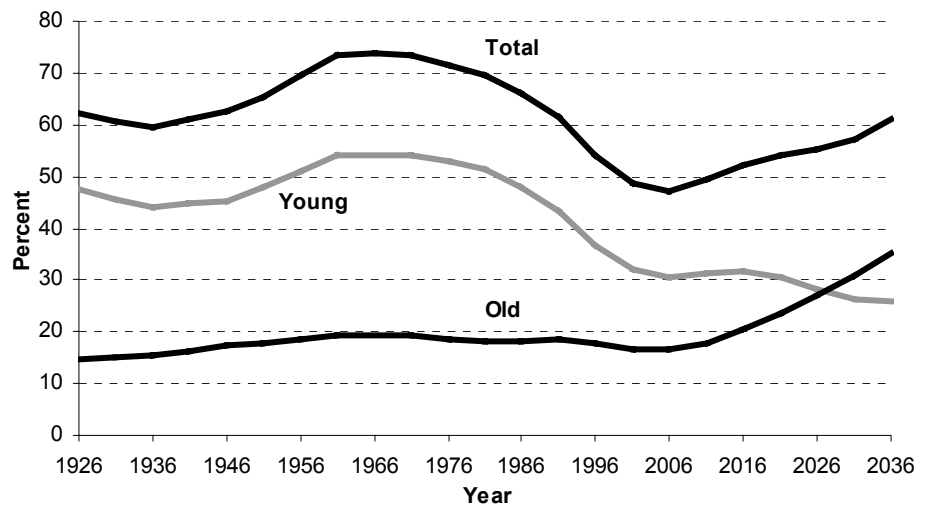
Figure 7 Population pyramids for 2001 and 2036 (M2F3)



Dependency ratios

As already mentioned, the young dependency ratio is expected to remain fairly static in the range 30-33 percent in the period up to 2016. Thereafter it will decline under all scenarios and finish in the range 24-28 per cent by 2036. The old dependency ratio is projected to increase from 2006 onwards with the rate of increase quickening after 2011. The total dependency ratio will be at a minimum of 47 per cent in 2006 but is projected to increase under all combinations of assumptions thereafter to reach values of between 58 and 62 per cent by 2036. A representative picture is given in Figure 8 which contains the young, old and total dependency ratios for the period 1926-2001 and forward to 2036 under the M2F2 scenario.

Figure 8 Actual and projected (M2F2) dependency ratios



TABLES

Table 1 Actual and projected population classified by sex and age group, 2001 - 2036 (M1F1)

Sex and age group	Persons in April of each year							
	2001 ¹	2006	2011	2016	2021	2026	2031	2036
Thousands								
Persons								
0 - 4 years	273.2	309.8	343.4	360.1	352.6	336.7	331.5	342.1
5 - 9 "	263.7	287.5	322.7	356.3	370.1	362.5	345.3	340.1
10 - 14 "	290.6	270.7	294.9	330.1	362.0	375.8	367.4	350.2
15 - 19 "	320.4	288.2	269.0	293.2	327.2	359.1	372.2	363.8
20 - 24 "	317.6	314.5	280.7	261.6	277.4	312.7	340.3	353.3
25 - 29 "	300.8	357.1	353.1	319.5	287.1	303.1	331.6	359.2
30 - 34 "	288.6	338.6	389.5	385.6	344.1	311.4	323.4	351.9
35 - 39 "	285.1	312.9	355.9	406.7	398.3	356.8	322.0	334.0
40 - 44 "	267.6	295.1	322.1	365.0	412.9	404.6	362.0	327.5
45 - 49 "	243.9	271.5	299.9	326.9	368.1	415.9	407.0	364.9
50 - 54 "	228.2	246.6	273.7	302.2	328.1	369.2	416.4	407.9
55 - 59 "	185.8	226.6	246.0	273.3	301.1	327.1	367.9	415.2
60 - 64 "	151.7	182.9	222.9	242.8	269.8	297.9	324.0	365.0
65 - 69 "	130.8	144.4	175.6	215.0	235.0	262.4	290.7	317.4
70 - 74 "	111.8	118.3	132.2	162.6	200.5	221.2	248.8	277.5
75 - 79 "	89.2	92.2	100.1	114.0	142.6	178.2	199.3	226.9
80 - 84 "	57.6	63.7	68.1	75.9	88.5	113.6	144.7	165.0
85 years and over	40.4	46.9	55.1	63.6	74.7	90.7	118.8	158.5
Total	3,847.2	4,167.7	4,504.9	4,854.2	5,140.1	5,398.9	5,613.3	5,820.3
Males								
0 - 4 years	140.4	159.4	176.9	185.5	181.6	173.5	170.8	176.3
5 - 9 "	135.5	147.1	165.8	183.3	190.5	186.6	177.8	175.1
10 - 14 "	149.0	138.6	150.4	169.0	185.8	193.0	188.7	179.9
15 - 19 "	164.3	147.6	137.6	149.4	167.5	184.3	191.1	186.8
20 - 24 "	160.5	156.4	139.4	129.4	138.0	156.8	171.9	178.7
25 - 29 "	151.2	178.4	174.0	157.1	140.8	149.5	165.0	180.1
30 - 34 "	144.2	169.7	195.2	190.8	169.7	153.3	159.8	175.2
35 - 39 "	141.2	157.3	179.2	204.6	197.8	176.7	159.0	165.6
40 - 44 "	133.0	147.2	162.8	184.6	208.3	201.5	179.8	162.3
45 - 49 "	122.4	135.5	150.0	165.5	186.4	210.0	202.9	181.4
50 - 54 "	115.5	123.7	136.8	151.4	166.2	187.0	210.3	203.5
55 - 59 "	94.0	114.3	123.2	136.4	150.6	165.6	186.2	209.6
60 - 64 "	75.9	91.8	111.5	120.8	134.0	148.4	163.4	184.2
65 - 69 "	64.0	71.2	86.9	106.2	115.7	129.2	143.7	159.1
70 - 74 "	51.1	56.1	63.5	78.8	97.2	107.2	120.8	135.6
75 - 79 "	37.1	39.7	45.3	52.6	66.7	83.8	94.0	107.6
80 - 84 "	21.7	24.1	27.0	31.9	38.3	50.2	64.7	74.3
85 years and over	12.2	14.2	16.8	20.2	25.2	32.0	43.6	59.3
Total	1,913.1	2,072.3	2,242.1	2,417.6	2,560.4	2,688.5	2,793.5	2,894.8
Females								
0 - 4 years	132.8	150.5	166.5	174.6	170.9	163.2	160.7	165.9
5 - 9 "	128.2	140.4	156.9	173.0	179.6	175.9	167.6	165.0
10 - 14 "	141.6	132.1	144.5	161.1	176.2	182.8	178.6	170.2
15 - 19 "	156.2	140.5	131.4	143.8	159.7	174.8	181.1	176.9
20 - 24 "	157.1	158.1	141.3	132.2	139.4	155.9	168.4	174.6
25 - 29 "	149.6	178.7	179.2	162.3	146.3	153.5	166.6	179.1
30 - 34 "	144.4	168.9	194.3	194.8	174.3	158.1	163.5	176.6
35 - 39 "	143.9	155.6	176.7	202.1	200.6	180.1	163.0	168.4
40 - 44 "	134.6	147.9	159.3	180.4	204.6	203.1	182.2	165.2
45 - 49 "	121.5	135.9	149.9	161.3	181.7	205.9	204.1	183.4
50 - 54 "	112.7	122.9	136.9	150.8	161.8	182.2	206.1	204.5
55 - 59 "	91.8	112.4	122.8	136.9	150.5	161.6	181.7	205.6
60 - 64 "	75.8	91.1	111.4	122.0	135.8	149.5	160.6	180.8
65 - 69 "	66.8	73.3	88.7	108.8	119.3	133.3	146.9	158.3
70 - 74 "	60.8	62.2	68.6	83.8	103.3	114.0	128.0	141.9
75 - 79 "	52.1	52.5	54.8	61.4	75.9	94.4	105.3	119.3
80 - 84 "	35.9	39.7	41.1	44.0	50.2	63.4	80.0	90.6
85 years and over	28.2	32.7	38.4	43.5	49.5	58.7	75.2	99.1
Total	1,934.1	2,095.4	2,262.8	2,436.6	2,579.7	2,710.5	2,819.8	2,925.5

¹ Source: Population and Migration Estimates, 2001

Table 2 Actual and projected population classified by sex and age group, 2001 - 2036 (M1F2)

Sex and age group	Persons in April of each year							
	2001 ¹	2006	2011	2016	2021	2026	2031	2036
Thousands								
Persons								
0 - 4 years	273.2	308.0	327.4	333.6	326.6	311.6	305.3	311.8
5 - 9 "	263.7	287.5	320.8	340.3	343.7	336.5	320.2	314.0
10 - 14 "	290.6	270.7	294.9	328.2	346.0	349.4	341.4	325.1
15 - 19 "	320.4	288.2	269.0	293.2	325.4	343.1	345.8	337.8
20 - 24 "	317.6	314.5	280.7	261.6	277.4	310.9	324.3	327.0
25 - 29 "	300.8	357.1	353.1	319.5	287.1	303.1	329.8	343.2
30 - 34 "	288.6	338.6	389.5	385.6	344.1	311.4	323.4	350.0
35 - 39 "	285.1	312.9	355.9	406.7	398.3	356.8	322.0	334.0
40 - 44 "	267.6	295.1	322.1	365.0	412.9	404.6	362.0	327.5
45 - 49 "	243.9	271.5	299.9	326.9	368.1	415.9	407.0	364.9
50 - 54 "	228.2	246.6	273.7	302.2	328.1	369.2	416.4	407.9
55 - 59 "	185.8	226.6	246.0	273.3	301.1	327.1	367.9	415.2
60 - 64 "	151.7	182.9	222.9	242.8	269.8	297.9	324.0	365.0
65 - 69 "	130.8	144.4	175.6	215.0	235.0	262.4	290.7	317.4
70 - 74 "	111.8	118.3	132.2	162.6	200.5	221.2	248.8	277.5
75 - 79 "	89.2	92.2	100.1	114.0	142.6	178.2	199.3	226.9
80 - 84 "	57.6	63.7	68.1	75.9	88.5	113.6	144.7	165.0
85 years and over	40.4	46.9	55.1	63.6	74.7	90.7	118.8	158.5
Total	3,847.2	4,165.8	4,487.0	4,809.9	5,069.9	5,303.6	5,491.8	5,668.7
Males								
0 - 4 years	140.4	158.4	168.7	171.9	168.2	160.5	157.3	160.6
5 - 9 "	135.5	147.1	164.8	175.1	176.9	173.2	164.8	161.6
10 - 14 "	149.0	138.6	150.4	168.1	177.6	179.4	175.3	167.0
15 - 19 "	164.3	147.6	137.6	149.4	166.5	176.1	177.6	173.5
20 - 24 "	160.5	156.4	139.4	129.4	138.0	155.8	163.7	165.2
25 - 29 "	151.2	178.4	174.0	157.1	140.8	149.5	164.1	171.9
30 - 34 "	144.2	169.7	195.2	190.8	169.7	153.3	159.8	174.3
35 - 39 "	141.2	157.3	179.2	204.6	197.8	176.7	159.0	165.6
40 - 44 "	133.0	147.2	162.8	184.6	208.3	201.5	179.8	162.3
45 - 49 "	122.4	135.5	150.0	165.5	186.4	210.0	202.9	181.4
50 - 54 "	115.5	123.7	136.8	151.4	166.2	187.0	210.3	203.5
55 - 59 "	94.0	114.3	123.2	136.4	150.6	165.6	186.2	209.6
60 - 64 "	75.9	91.8	111.5	120.8	134.0	148.4	163.4	184.2
65 - 69 "	64.0	71.2	86.9	106.2	115.7	129.2	143.7	159.1
70 - 74 "	51.1	56.1	63.5	78.8	97.2	107.2	120.8	135.6
75 - 79 "	37.1	39.7	45.3	52.6	66.7	83.8	94.0	107.6
80 - 84 "	21.7	24.1	27.0	31.9	38.3	50.2	64.7	74.3
85 years and over	12.2	14.2	16.8	20.2	25.2	32.0	43.6	59.3
Total	1,913.1	2,071.3	2,232.9	2,394.8	2,524.3	2,639.4	2,731.0	2,816.8
Females								
0 - 4 years	132.8	149.6	158.7	161.7	158.3	151.1	148.0	151.2
5 - 9 "	128.2	140.4	156.0	165.2	166.8	163.3	155.4	152.3
10 - 14 "	141.6	132.1	144.5	160.2	168.4	170.0	166.0	158.1
15 - 19 "	156.2	140.5	131.4	143.8	158.9	167.1	168.3	164.3
20 - 24 "	157.1	158.1	141.3	132.2	139.4	155.0	160.6	161.8
25 - 29 "	149.6	178.7	179.2	162.3	146.3	153.5	165.7	171.3
30 - 34 "	144.4	168.9	194.3	194.8	174.3	158.1	163.5	175.7
35 - 39 "	143.9	155.6	176.7	202.1	200.6	180.1	163.0	168.4
40 - 44 "	134.6	147.9	159.3	180.4	204.6	203.1	182.2	165.2
45 - 49 "	121.5	135.9	149.9	161.3	181.7	205.9	204.1	183.4
50 - 54 "	112.7	122.9	136.9	150.8	161.8	182.2	206.1	204.5
55 - 59 "	91.8	112.4	122.8	136.9	150.5	161.6	181.7	205.6
60 - 64 "	75.8	91.1	111.4	122.0	135.8	149.5	160.6	180.8
65 - 69 "	66.8	73.3	88.7	108.8	119.3	133.3	146.9	158.3
70 - 74 "	60.8	62.2	68.6	83.8	103.3	114.0	128.0	141.9
75 - 79 "	52.1	52.5	54.8	61.4	75.9	94.4	105.3	119.3
80 - 84 "	35.9	39.7	41.1	44.0	50.2	63.4	80.0	90.6
85 years and over	28.2	32.7	38.4	43.5	49.5	58.7	75.2	99.1
Total	1,934.1	2,094.5	2,254.1	2,415.1	2,545.6	2,664.2	2,760.8	2,851.9

¹ Source: Population and Migration Estimates, 2001

Table 3 Actual and projected population classified by sex and age group, 2001 - 2036 (M1F3)

Sex and age group	Persons in April of each year							
	2001 ¹	2006	2011	2016	2021	2026	2031	2036
Thousands								
Persons								
0 - 4 years	273.2	306.0	310.9	307.2	300.6	286.5	279.4	282.2
5 - 9 "	263.7	287.5	318.9	323.8	317.3	310.5	295.2	288.0
10 - 14 "	290.6	270.7	294.9	326.3	329.6	323.0	315.4	300.0
15 - 19 "	320.4	288.2	269.0	293.2	323.4	326.7	319.5	311.9
20 - 24 "	317.6	314.5	280.7	261.6	277.4	308.9	307.9	300.7
25 - 29 "	300.8	357.1	353.1	319.5	287.1	303.1	327.9	326.9
30 - 34 "	288.6	338.6	389.5	385.6	344.1	311.4	323.4	348.1
35 - 39 "	285.1	312.9	355.9	406.7	398.3	356.8	322.0	334.0
40 - 44 "	267.6	295.1	322.1	365.0	412.9	404.6	362.0	327.5
45 - 49 "	243.9	271.5	299.9	326.9	368.1	415.9	407.0	364.9
50 - 54 "	228.2	246.6	273.7	302.2	328.1	369.2	416.4	407.9
55 - 59 "	185.8	226.6	246.0	273.3	301.1	327.1	367.9	415.2
60 - 64 "	151.7	182.9	222.9	242.8	269.8	297.9	324.0	365.0
65 - 69 "	130.8	144.4	175.6	215.0	235.0	262.4	290.7	317.4
70 - 74 "	111.8	118.3	132.2	162.6	200.5	221.2	248.8	277.5
75 - 79 "	89.2	92.2	100.1	114.0	142.6	178.2	199.3	226.9
80 - 84 "	57.6	63.7	68.1	75.9	88.5	113.6	144.7	165.0
85 years and over	40.4	46.9	55.1	63.6	74.7	90.7	118.8	158.5
Total	3,847.2	4,163.9	4,468.6	4,765.1	4,999.0	5,207.7	5,370.1	5,517.6
Males								
0 - 4 years	140.4	157.4	160.2	158.3	154.9	147.6	144.0	145.4
5 - 9 "	135.5	147.1	163.8	166.6	163.3	159.8	151.9	148.3
10 - 14 "	149.0	138.6	150.4	167.1	169.2	165.8	162.0	154.1
15 - 19 "	164.3	147.6	137.6	149.4	165.5	167.6	164.0	160.1
20 - 24 "	160.5	156.4	139.4	129.4	138.0	154.8	155.3	151.7
25 - 29 "	151.2	178.4	174.0	157.1	140.8	149.5	163.1	163.5
30 - 34 "	144.2	169.7	195.2	190.8	169.7	153.3	159.8	173.3
35 - 39 "	141.2	157.3	179.2	204.6	197.8	176.7	159.0	165.6
40 - 44 "	133.0	147.2	162.8	184.6	208.3	201.5	179.8	162.3
45 - 49 "	122.4	135.5	150.0	165.5	186.4	210.0	202.9	181.4
50 - 54 "	115.5	123.7	136.8	151.4	166.2	187.0	210.3	203.5
55 - 59 "	94.0	114.3	123.2	136.4	150.6	165.6	186.2	209.6
60 - 64 "	75.9	91.8	111.5	120.8	134.0	148.4	163.4	184.2
65 - 69 "	64.0	71.2	86.9	106.2	115.7	129.2	143.7	159.1
70 - 74 "	51.1	56.1	63.5	78.8	97.2	107.2	120.8	135.6
75 - 79 "	37.1	39.7	45.3	52.6	66.7	83.8	94.0	107.6
80 - 84 "	21.7	24.1	27.0	31.9	38.3	50.2	64.7	74.3
85 years and over	12.2	14.2	16.8	20.2	25.2	32.0	43.6	59.3
Total	1,913.1	2,070.3	2,223.5	2,371.8	2,487.8	2,590.1	2,668.4	2,739.0
Females								
0 - 4 years	132.8	148.6	150.7	148.9	145.7	138.9	135.4	136.8
5 - 9 "	128.2	140.4	155.1	157.2	154.0	150.7	143.2	139.8
10 - 14 "	141.6	132.1	144.5	159.2	160.4	157.1	153.4	145.9
15 - 19 "	156.2	140.5	131.4	143.8	157.9	159.1	155.5	151.8
20 - 24 "	157.1	158.1	141.3	132.2	139.4	154.1	152.7	149.0
25 - 29 "	149.6	178.7	179.2	162.3	146.3	153.5	164.8	163.4
30 - 34 "	144.4	168.9	194.3	194.8	174.3	158.1	163.5	174.8
35 - 39 "	143.9	155.6	176.7	202.1	200.6	180.1	163.0	168.4
40 - 44 "	134.6	147.9	159.3	180.4	204.6	203.1	182.2	165.2
45 - 49 "	121.5	135.9	149.9	161.3	181.7	205.9	204.1	183.4
50 - 54 "	112.7	122.9	136.9	150.8	161.8	182.2	206.1	204.5
55 - 59 "	91.8	112.4	122.8	136.9	150.5	161.6	181.7	205.6
60 - 64 "	75.8	91.1	111.4	122.0	135.8	149.5	160.6	180.8
65 - 69 "	66.8	73.3	88.7	108.8	119.3	133.3	146.9	158.3
70 - 74 "	60.8	62.2	68.6	83.8	103.3	114.0	128.0	141.9
75 - 79 "	52.1	52.5	54.8	61.4	75.9	94.4	105.3	119.3
80 - 84 "	35.9	39.7	41.1	44.0	50.2	63.4	80.0	90.6
85 years and over	28.2	32.7	38.4	43.5	49.5	58.7	75.2	99.1
Total	1,934.1	2,093.6	2,245.2	2,393.3	2,511.2	2,617.7	2,701.8	2,778.6

¹ Source: Population and Migration Estimates, 2001

Table 4 Actual and projected population classified by sex and age group, 2001 - 2036 (M2F1)

Sex and age group	Persons in April of each year							
	2001 ¹	2006	2011	2016	2021	2026	2031	2036
Thousands								
Persons								
0 - 4 years	273.2	309.8	339.0	342.1	319.7	293.9	286.4	297.5
5 - 9 "	263.7	287.5	320.0	346.2	347.9	325.5	299.8	292.3
10 - 14 "	290.6	270.7	293.3	324.0	349.3	351.0	328.7	303.0
15 - 19 "	320.4	288.2	267.6	289.1	319.1	344.4	346.1	323.8
20 - 24 "	317.6	314.5	271.5	244.7	261.8	291.8	317.1	318.8
25 - 29 "	300.8	357.1	340.0	283.7	250.4	267.6	297.5	322.7
30 - 34 "	288.6	338.6	381.9	356.1	296.0	262.9	280.0	309.8
35 - 39 "	285.1	312.9	351.6	389.9	362.1	302.3	269.3	286.4
40 - 44 "	267.6	295.1	319.6	355.4	392.2	364.6	305.2	272.4
45 - 49 "	243.9	271.5	298.4	321.2	356.1	393.0	365.7	306.8
50 - 54 "	228.2	246.6	272.6	298.3	320.6	355.6	392.5	365.8
55 - 59 "	185.8	226.6	245.1	270.3	295.8	318.4	353.5	390.6
60 - 64 "	151.7	182.9	222.1	240.4	265.6	291.6	314.7	350.1
65 - 69 "	130.8	144.4	175.0	213.0	231.7	257.4	283.9	307.7
70 - 74 "	111.8	118.3	131.8	161.3	198.1	217.6	243.8	270.7
75 - 79 "	89.2	92.2	100.0	113.4	141.2	175.9	195.8	222.2
80 - 84 "	57.6	63.7	68.0	75.6	87.9	112.4	142.7	162.0
85 years and over	40.4	46.9	55.1	63.5	74.3	90.1	117.7	156.4
Total	3,847.2	4,167.7	4,452.5	4,687.9	4,870.0	5,016.0	5,140.4	5,259.1
Males								
0 - 4 years	140.4	159.4	174.6	176.2	164.7	151.4	147.5	153.2
5 - 9 "	135.5	147.1	164.4	178.2	179.1	167.6	154.4	150.5
10 - 14 "	149.0	138.6	149.7	166.2	179.6	180.5	169.0	155.8
15 - 19 "	164.3	147.6	136.9	147.5	163.7	177.1	178.0	166.5
20 - 24 "	160.5	156.4	135.8	122.9	131.8	148.0	161.4	162.3
25 - 29 "	151.2	178.4	167.6	140.8	124.8	133.7	149.9	163.2
30 - 34 "	144.2	169.7	191.0	175.7	146.8	131.0	139.8	155.9
35 - 39 "	141.2	157.3	176.8	195.3	178.8	150.1	134.4	143.2
40 - 44 "	133.0	147.2	161.3	178.9	196.6	180.3	151.8	136.2
45 - 49 "	122.4	135.5	149.1	162.1	179.3	197.0	180.9	152.7
50 - 54 "	115.5	123.7	136.1	149.1	161.8	179.0	196.8	181.0
55 - 59 "	94.0	114.3	122.7	134.7	147.5	160.4	177.8	195.7
60 - 64 "	75.9	91.8	111.1	119.5	131.6	144.8	158.0	175.6
65 - 69 "	64.0	71.2	86.5	105.2	113.9	126.4	139.9	153.5
70 - 74 "	51.1	56.1	63.3	78.0	95.9	105.2	118.0	131.8
75 - 79 "	37.1	39.7	45.2	52.3	65.9	82.6	92.2	105.1
80 - 84 "	21.7	24.1	27.0	31.8	38.0	49.6	63.7	72.8
85 years and over	12.2	14.2	16.7	20.1	25.1	31.8	43.1	58.4
Total	1,913.1	2,072.3	2,215.9	2,334.4	2,425.1	2,496.5	2,556.4	2,613.4
Females								
0 - 4 years	132.8	150.5	164.4	165.9	155.0	142.5	138.9	144.2
5 - 9 "	128.2	140.4	155.6	168.0	168.8	157.9	145.4	141.8
10 - 14 "	141.6	132.1	143.6	157.8	169.7	170.5	159.7	147.2
15 - 19 "	156.2	140.5	130.7	141.6	155.4	167.3	168.1	157.3
20 - 24 "	157.1	158.1	135.7	121.7	130.0	143.8	155.7	156.5
25 - 29 "	149.6	178.7	172.4	142.9	125.6	133.9	147.6	159.5
30 - 34 "	144.4	168.9	190.8	180.5	149.2	131.9	140.2	154.0
35 - 39 "	143.9	155.6	174.9	194.6	183.3	152.2	134.9	143.2
40 - 44 "	134.6	147.9	158.3	176.4	195.6	184.4	153.4	136.2
45 - 49 "	121.5	135.9	149.2	159.0	176.8	196.0	184.9	154.1
50 - 54 "	112.7	122.9	136.4	149.2	158.8	176.5	195.7	184.8
55 - 59 "	91.8	112.4	122.4	135.6	148.3	158.0	175.7	194.9
60 - 64 "	75.8	91.1	111.0	120.9	134.0	146.8	156.7	174.5
65 - 69 "	66.8	73.3	88.5	107.8	117.7	131.0	144.0	154.2
70 - 74 "	60.8	62.2	68.5	83.3	102.2	112.3	125.8	138.9
75 - 79 "	52.1	52.5	54.7	61.1	75.3	93.3	103.6	117.1
80 - 84 "	35.9	39.7	41.0	43.8	49.9	62.8	79.0	89.2
85 years and over	28.2	32.7	38.4	43.4	49.3	58.3	74.6	98.0
Total	1,934.1	2,095.4	2,236.6	2,353.5	2,444.9	2,519.5	2,584.0	2,645.7

¹ Source: Population and Migration Estimates, 2001

Table 5 Actual and projected population classified by sex and age group, 2001 - 2036 (M2F2)

Sex and age group	Persons in April of each year							
	2001 ¹	2006	2011	2016	2021	2026	2031	2036
Thousands								
Persons								
0 - 4 years	273.2	308.0	323.2	316.7	296.0	271.9	263.5	270.5
5 - 9 "	263.7	287.5	318.2	330.3	322.6	301.8	277.7	269.4
10 - 14 "	290.6	270.7	293.3	322.1	333.5	325.7	305.0	280.9
15 - 19 "	320.4	288.2	267.6	289.1	317.2	328.5	320.8	300.1
20 - 24 "	317.6	314.5	271.5	244.7	261.8	290.0	301.3	293.6
25 - 29 "	300.8	357.1	340.0	283.7	250.4	267.6	295.7	307.0
30 - 34 "	288.6	338.6	381.9	356.1	296.0	262.9	280.0	308.0
35 - 39 "	285.1	312.9	351.6	389.9	362.1	302.3	269.3	286.4
40 - 44 "	267.6	295.1	319.6	355.4	392.2	364.6	305.2	272.4
45 - 49 "	243.9	271.5	298.4	321.2	356.1	393.0	365.7	306.8
50 - 54 "	228.2	246.6	272.6	298.3	320.6	355.6	392.5	365.8
55 - 59 "	185.8	226.6	245.1	270.3	295.8	318.4	353.5	390.6
60 - 64 "	151.7	182.9	222.1	240.4	265.6	291.6	314.7	350.1
65 - 69 "	130.8	144.4	175.0	213.0	231.7	257.4	283.9	307.7
70 - 74 "	111.8	118.3	131.8	161.3	198.1	217.6	243.8	270.7
75 - 79 "	89.2	92.2	100.0	113.4	141.2	175.9	195.8	222.2
80 - 84 "	57.6	63.7	68.0	75.6	87.9	112.4	142.7	162.0
85 years and over	40.4	46.9	55.1	63.5	74.3	90.1	117.7	156.4
Total	3,847.2	4,165.8	4,434.8	4,644.9	4,803.2	4,927.2	5,028.8	5,120.7
Males								
0 - 4 years	140.4	158.4	166.5	163.2	152.5	140.0	135.8	139.4
5 - 9 "	135.5	147.1	163.5	170.0	166.1	155.4	143.0	138.7
10 - 14 "	149.0	138.6	149.7	165.3	171.5	167.5	156.8	144.4
15 - 19 "	164.3	147.6	136.9	147.5	162.7	168.9	165.0	154.3
20 - 24 "	160.5	156.4	135.8	122.9	131.8	147.1	153.2	149.3
25 - 29 "	151.2	178.4	167.6	140.8	124.8	133.7	148.9	155.1
30 - 34 "	144.2	169.7	191.0	175.7	146.8	131.0	139.8	154.9
35 - 39 "	141.2	157.3	176.8	195.3	178.8	150.1	134.4	143.2
40 - 44 "	133.0	147.2	161.3	178.9	196.6	180.3	151.8	136.2
45 - 49 "	122.4	135.5	149.1	162.1	179.3	197.0	180.9	152.7
50 - 54 "	115.5	123.7	136.1	149.1	161.8	179.0	196.8	181.0
55 - 59 "	94.0	114.3	122.7	134.7	147.5	160.4	177.8	195.7
60 - 64 "	75.9	91.8	111.1	119.5	131.6	144.8	158.0	175.6
65 - 69 "	64.0	71.2	86.5	105.2	113.9	126.4	139.9	153.5
70 - 74 "	51.1	56.1	63.3	78.0	95.9	105.2	118.0	131.8
75 - 79 "	37.1	39.7	45.2	52.3	65.9	82.6	92.2	105.1
80 - 84 "	21.7	24.1	27.0	31.8	38.0	49.6	63.7	72.8
85 years and over	12.2	14.2	16.7	20.1	25.1	31.8	43.1	58.4
Total	1,913.1	2,071.3	2,206.8	2,312.2	2,390.7	2,450.8	2,499.0	2,542.2
Females								
0 - 4 years	132.8	149.6	156.7	153.6	143.5	131.8	127.7	131.1
5 - 9 "	128.2	140.4	154.7	160.3	156.5	146.4	134.7	130.7
10 - 14 "	141.6	132.1	143.6	156.9	162.0	158.2	148.2	136.5
15 - 19 "	156.2	140.5	130.7	141.6	154.5	159.6	155.9	145.8
20 - 24 "	157.1	158.1	135.7	121.7	130.0	142.9	148.0	144.2
25 - 29 "	149.6	178.7	172.4	142.9	125.6	133.9	146.7	151.8
30 - 34 "	144.4	168.9	190.8	180.5	149.2	131.9	140.2	153.1
35 - 39 "	143.9	155.6	174.9	194.6	183.3	152.2	134.9	143.2
40 - 44 "	134.6	147.9	158.3	176.4	195.6	184.4	153.4	136.2
45 - 49 "	121.5	135.9	149.2	159.0	176.8	196.0	184.9	154.1
50 - 54 "	112.7	122.9	136.4	149.2	158.8	176.5	195.7	184.8
55 - 59 "	91.8	112.4	122.4	135.6	148.3	158.0	175.7	194.9
60 - 64 "	75.8	91.1	111.0	120.9	134.0	146.8	156.7	174.5
65 - 69 "	66.8	73.3	88.5	107.8	117.7	131.0	144.0	154.2
70 - 74 "	60.8	62.2	68.5	83.3	102.2	112.3	125.8	138.9
75 - 79 "	52.1	52.5	54.7	61.1	75.3	93.3	103.6	117.1
80 - 84 "	35.9	39.7	41.0	43.8	49.9	62.8	79.0	89.2
85 years and over	28.2	32.7	38.4	43.4	49.3	58.3	74.6	98.0
Total	1,934.1	2,094.5	2,228.0	2,332.6	2,412.5	2,476.4	2,529.9	2,578.5

¹ Source: Population and Migration Estimates, 2001

Table 6 Actual and projected population classified by sex and age group, 2001 - 2036 (M2F3)

Sex and age group	Persons in April of each year							
	2001 ¹	2006	2011	2016	2021	2026	2031	2036
Thousands								
Persons								
0 - 4 years	273.2	306.0	306.8	291.4	272.3	249.8	240.8	244.3
5 - 9 "	263.7	287.5	316.2	314.0	297.3	278.1	255.7	246.7
10 - 14 "	290.6	270.7	293.3	320.2	317.2	300.4	281.3	258.9
15 - 19 "	320.4	288.2	267.6	289.1	315.3	312.3	295.6	276.5
20 - 24 "	317.6	314.5	271.5	244.7	261.8	288.0	285.0	268.4
25 - 29 "	300.8	357.1	340.0	283.7	250.4	267.6	293.7	290.8
30 - 34 "	288.6	338.6	381.9	356.1	296.0	262.9	280.0	306.1
35 - 39 "	285.1	312.9	351.6	389.9	362.1	302.3	269.3	286.4
40 - 44 "	267.6	295.1	319.6	355.4	392.2	364.6	305.2	272.4
45 - 49 "	243.9	271.5	298.4	321.2	356.1	393.0	365.7	306.8
50 - 54 "	228.2	246.6	272.6	298.3	320.6	355.6	392.5	365.8
55 - 59 "	185.8	226.6	245.1	270.3	295.8	318.4	353.5	390.6
60 - 64 "	151.7	182.9	222.1	240.4	265.6	291.6	314.7	350.1
65 - 69 "	130.8	144.4	175.0	213.0	231.7	257.4	283.9	307.7
70 - 74 "	111.8	118.3	131.8	161.3	198.1	217.6	243.8	270.7
75 - 79 "	89.2	92.2	100.0	113.4	141.2	175.9	195.8	222.2
80 - 84 "	57.6	63.7	68.0	75.6	87.9	112.4	142.7	162.0
85 years and over	40.4	46.9	55.1	63.5	74.3	90.1	117.7	156.4
Total	3,847.2	4,163.9	4,416.5	4,601.3	4,736.0	4,838.0	4,917.0	4,982.8
Males								
0 - 4 years	140.4	157.4	158.1	150.1	140.2	128.7	124.1	125.8
5 - 9 "	135.5	147.1	162.5	161.6	153.0	143.2	131.7	127.0
10 - 14 "	149.0	138.6	149.7	164.3	163.1	154.5	144.6	133.1
15 - 19 "	164.3	147.6	136.9	147.5	161.7	160.5	152.0	142.1
20 - 24 "	160.5	156.4	135.8	122.9	131.8	146.0	144.9	136.4
25 - 29 "	151.2	178.4	167.6	140.8	124.8	133.7	147.9	146.8
30 - 34 "	144.2	169.7	191.0	175.7	146.8	131.0	139.8	153.9
35 - 39 "	141.2	157.3	176.8	195.3	178.8	150.1	134.4	143.2
40 - 44 "	133.0	147.2	161.3	178.9	196.6	180.3	151.8	136.2
45 - 49 "	122.4	135.5	149.1	162.1	179.3	197.0	180.9	152.7
50 - 54 "	115.5	123.7	136.1	149.1	161.8	179.0	196.8	181.0
55 - 59 "	94.0	114.3	122.7	134.7	147.5	160.4	177.8	195.7
60 - 64 "	75.9	91.8	111.1	119.5	131.6	144.8	158.0	175.6
65 - 69 "	64.0	71.2	86.5	105.2	113.9	126.4	139.9	153.5
70 - 74 "	51.1	56.1	63.3	78.0	95.9	105.2	118.0	131.8
75 - 79 "	37.1	39.7	45.2	52.3	65.9	82.6	92.2	105.1
80 - 84 "	21.7	24.1	27.0	31.8	38.0	49.6	63.7	72.8
85 years and over	12.2	14.2	16.7	20.1	25.1	31.8	43.1	58.4
Total	1,913.1	2,070.3	2,197.4	2,289.8	2,356.1	2,404.8	2,441.4	2,471.2
Females								
0 - 4 years	132.8	148.6	148.8	141.3	132.0	121.1	116.7	118.4
5 - 9 "	128.2	140.4	153.7	152.4	144.2	134.9	124.1	119.7
10 - 14 "	141.6	132.1	143.6	155.9	154.1	146.0	136.7	125.8
15 - 19 "	156.2	140.5	130.7	141.6	153.6	151.7	143.6	134.3
20 - 24 "	157.1	158.1	135.7	121.7	130.0	142.0	140.1	132.0
25 - 29 "	149.6	178.7	172.4	142.9	125.6	133.9	145.8	144.0
30 - 34 "	144.4	168.9	190.8	180.5	149.2	131.9	140.2	152.1
35 - 39 "	143.9	155.6	174.9	194.6	183.3	152.2	134.9	143.2
40 - 44 "	134.6	147.9	158.3	176.4	195.6	184.4	153.4	136.2
45 - 49 "	121.5	135.9	149.2	159.0	176.8	196.0	184.9	154.1
50 - 54 "	112.7	122.9	136.4	149.2	158.8	176.5	195.7	184.8
55 - 59 "	91.8	112.4	122.4	135.6	148.3	158.0	175.7	194.9
60 - 64 "	75.8	91.1	111.0	120.9	134.0	146.8	156.7	174.5
65 - 69 "	66.8	73.3	88.5	107.8	117.7	131.0	144.0	154.2
70 - 74 "	60.8	62.2	68.5	83.3	102.2	112.3	125.8	138.9
75 - 79 "	52.1	52.5	54.7	61.1	75.3	93.3	103.6	117.1
80 - 84 "	35.9	39.7	41.0	43.8	49.9	62.8	79.0	89.2
85 years and over	28.2	32.7	38.4	43.4	49.3	58.3	74.6	98.0
Total	1,934.1	2,093.6	2,219.1	2,311.5	2,379.9	2,433.1	2,475.6	2,511.5

¹ Source: Population and Migration Estimates, 2001

Table 7 Average annual births, deaths, natural increase and estimated net migration for each intercensal period, 1926 - 2036

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
Projected					
M1F1					
2002 - 2006	62	30	33	63	30
2006 - 2011	68	30	37	67	30
2011 - 2016	71	31	40	70	30
2016 - 2021	70	32	37	57	20
2021 - 2026	66	35	32	52	20
2026 - 2031	66	38	28	43	15
2031 - 2036	68	41	26	41	15
M1F2					
2002 - 2006	62	30	32	62	30
2006 - 2011	64	30	34	64	30
2011 - 2016	65	31	35	65	30
2016 - 2021	64	32	32	52	20
2021 - 2026	61	35	27	47	20
2026 - 2031	60	38	23	38	15
2031 - 2036	62	41	20	35	15
M1F3					
2002 - 2006	61	30	32	62	30
2006 - 2011	61	30	31	61	30
2011 - 2016	60	31	29	59	30
2016 - 2021	59	32	27	47	20
2021 - 2026	56	35	22	42	20
2026 - 2031	55	38	17	32	15
2031 - 2036	56	41	14	29	15
M2F1					
2002 - 2006	62	30	33	63	30
2006 - 2011	67	30	37	57	20
2011 - 2016	68	31	37	47	10
2016 - 2021	64	32	31	36	5
2021 - 2026	58	34	24	29	5
2026 - 2031	57	37	20	25	5
2031 - 2036	59	40	19	24	5
M2F2					
2002 - 2006	62	30	32	62	30
2006 - 2011	64	30	34	54	20
2011 - 2016	63	31	32	42	10
2016 - 2021	59	32	27	32	5
2021 - 2026	54	34	20	25	5
2026 - 2031	52	37	15	20	5
2031 - 2036	54	40	13	18	5
M2F3					
2002 - 2006	61	30	32	62	30
2006 - 2011	61	30	31	51	20
2011 - 2016	58	31	27	37	10
2016 - 2021	54	32	22	27	5
2021 - 2026	49	34	15	20	5
2026 - 2031	48	37	11	16	5
2031 - 2036	48	40	8	13	5

Table 8 Actual and projected labour force classified by sex and age group, 2001 - 2016 (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 and over	Total
Thousands												
2001 ²												
Persons	89.9	228.5	260.3	238.1	227.9	210.6	182.4	153.7	104.4	57.2	34.0	1,787.0
Males	53.5	124.5	140.4	135.4	133.5	124.0	109.7	98.5	71.2	41.5	26.8	1,058.8
Females	36.4	104.0	120.0	102.7	94.4	86.6	72.7	55.2	33.2	15.7	7.2	728.2
Married	0.1	2.9	27.1	60.5	71.8	73.0	64.0	49.3	29.5	13.6	5.6	397.5
Other	36.2	101.2	92.8	42.2	22.7	13.7	8.8	5.9	3.7	2.0	1.5	330.7
2006												
Persons	65.2	220.6	308.5	283.8	254.6	240.6	214.7	183.2	137.5	75.5	43.6	2,027.9
Males	38.1	117.5	165.9	157.8	146.3	136.9	126.0	108.9	88.0	52.3	32.8	1,170.5
Females ³	27.1	103.1	142.6	126.0	108.4	103.6	88.7	74.4	49.5	23.1	10.8	857.4
Married	0.0	0.0	28.4	64.3	76.0	81.4	74.8	65.6	43.5	19.7	9.0	462.7
Other	27.1	103.1	114.2	61.7	32.4	22.2	13.9	8.8	6.1	3.5	1.8	394.7
2011												
Persons	57.3	194.5	307.4	331.6	295.3	266.7	244.3	209.1	158.3	98.3	56.9	2,219.7
Males	33.6	103.1	161.8	181.5	166.7	151.4	139.5	121.1	96.1	65.8	40.7	1,261.3
Females ³	23.7	91.3	145.6	150.1	128.6	115.3	104.8	88.0	62.2	32.5	16.2	958.5
Married	0.0	0.0	26.7	71.7	86.6	84.8	83.8	75.4	54.7	28.1	14.0	525.6
Other	23.7	91.3	118.9	78.3	42.0	30.6	21.1	12.7	7.6	4.5	2.3	432.9
2016												
Persons	59.1	180.3	279.6	332.3	345.0	307.3	270.0	235.5	180.1	111.8	72.6	2,373.6
Males	34.1	94.8	146.1	177.5	190.3	171.7	154.0	134.7	107.8	73.7	52.1	1,336.7
Females ³	25.1	85.5	133.4	154.8	154.7	135.6	116.0	100.8	72.3	38.1	20.5	1,036.8
Married	0.0	0.0	23.1	72.1	101.7	96.1	88.2	81.9	61.2	32.6	17.8	574.6
Other	25.1	85.5	110.4	82.8	53.0	39.4	27.8	18.9	11.1	5.5	2.7	462.2

² Source: Quarterly National Household Survey, Quarter 2, 2001

³ Females aged 15 – 24 are not distinguished by marital status for 2006 – 2011

Table 9 Actual and projected labour force classified by sex and age group, 2001 - 2016 (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 and over	Total
Thousands												
2001 ²												
Persons	89.9	228.5	260.3	238.1	227.9	210.6	182.4	153.7	104.4	57.2	34.0	1,787.0
Males	53.5	124.5	140.4	135.4	133.5	124.0	109.7	98.5	71.2	41.5	26.8	1,058.8
Females	36.4	104.0	120.0	102.7	94.4	86.6	72.7	55.2	33.2	15.7	7.2	728.2
Married	0.1	2.9	27.1	60.5	71.8	73.0	64.0	49.3	29.5	13.6	5.6	397.5
Other	36.2	101.2	92.8	42.2	22.7	13.7	8.8	5.9	3.7	2.0	1.5	330.7
2006												
Persons	65.2	220.6	308.5	283.8	254.6	240.6	214.7	183.2	137.5	75.5	43.6	2,027.9
Males	38.1	117.5	165.9	157.8	146.3	136.9	126.0	108.9	88.0	52.3	32.8	1,170.5
Females ³	27.1	103.1	142.6	126.0	108.4	103.6	88.7	74.4	49.5	23.1	10.8	857.4
Married	0.0	0.0	28.4	64.3	76.0	81.4	74.8	65.6	43.5	19.7	9.0	462.7
Other	27.1	103.1	114.2	61.7	32.4	22.2	13.9	8.8	6.1	3.5	1.8	394.7
2011												
Persons	57.0	188.2	296.0	325.0	291.6	264.6	243.1	208.2	157.7	98.0	56.8	2,186.2
Males	33.4	100.5	155.9	177.7	164.4	150.0	138.7	120.5	95.7	65.6	40.6	1,242.8
Females ³	23.6	87.7	140.1	147.4	127.2	114.6	104.4	87.7	62.0	32.4	16.2	943.4
Married	0.0	0.0	25.7	70.5	85.7	84.2	83.4	75.1	54.5	28.0	13.9	520.9
Other	23.6	87.7	114.4	76.9	41.6	30.4	21.0	12.6	7.5	4.4	2.3	422.5
2016												
Persons	58.3	168.8	248.4	306.8	330.6	299.0	265.2	232.3	178.0	110.6	72.1	2,270.3
Males	33.6	90.1	130.9	163.4	181.6	166.4	150.8	132.7	106.4	72.9	51.7	1,280.5
Females ³	24.7	78.7	117.5	143.5	149.0	132.6	114.4	99.7	71.7	37.7	20.4	989.8
Married	0.0	0.0	20.3	66.8	97.9	94.0	86.9	81.0	60.6	32.3	17.7	557.6
Other	24.7	78.7	97.2	76.7	51.1	38.6	27.4	18.7	11.0	5.5	2.6	432.2

² Source: Quarterly National Household Survey, Quarter 2, 2001

³ Females aged 15 – 24 are not distinguished by marital status for 2006 – 2011

APPENDICES

Appendix 1

Membership of Expert Group

Gerry O'Hanlon Chairperson	Central Statistics Office
Aidan Punch	Central Statistics Office
Padraig Dalton	Central Statistics Office
Mary Heanue	Central Statistics Office
Francis McCann	Central Statistics Office
Helen Cahill Secretary	Central Statistics Office
Mary Dunne	Department of Education and Science
Tom Healy	Department of Education and Science
Marie Dempsey	Department of Enterprise, Trade and Employment
Owen O'Sullivan	Department of Environment and Local Government
Conn Creedon	Department of Finance
Marie Mackle	Department of Finance
Hugh Magee	Department of Health and Children
Ciara O'Shea	Department of Health and Children
Siobhan Lawlor	Department of Social, Community and Family Affairs
Paul Morrin	Department of Social, Community and Family Affairs
Gerry Cribben	Department of the Taoiseach
Damien Courtney	Cork Institute of Technology
Edgar Morgenroth	Economic and Social Research Institute
Brendan Walsh	University College Dublin

Appendix 2

Description of population and labour force projection model 2002 - 2036

Projections of the population have been compiled on an annual basis up to 2036. The model used is the demographic component method which projects the base 2002 population forward under the chosen assumptions governing births, deaths and net migration. This is illustrated graphically in Figure A.

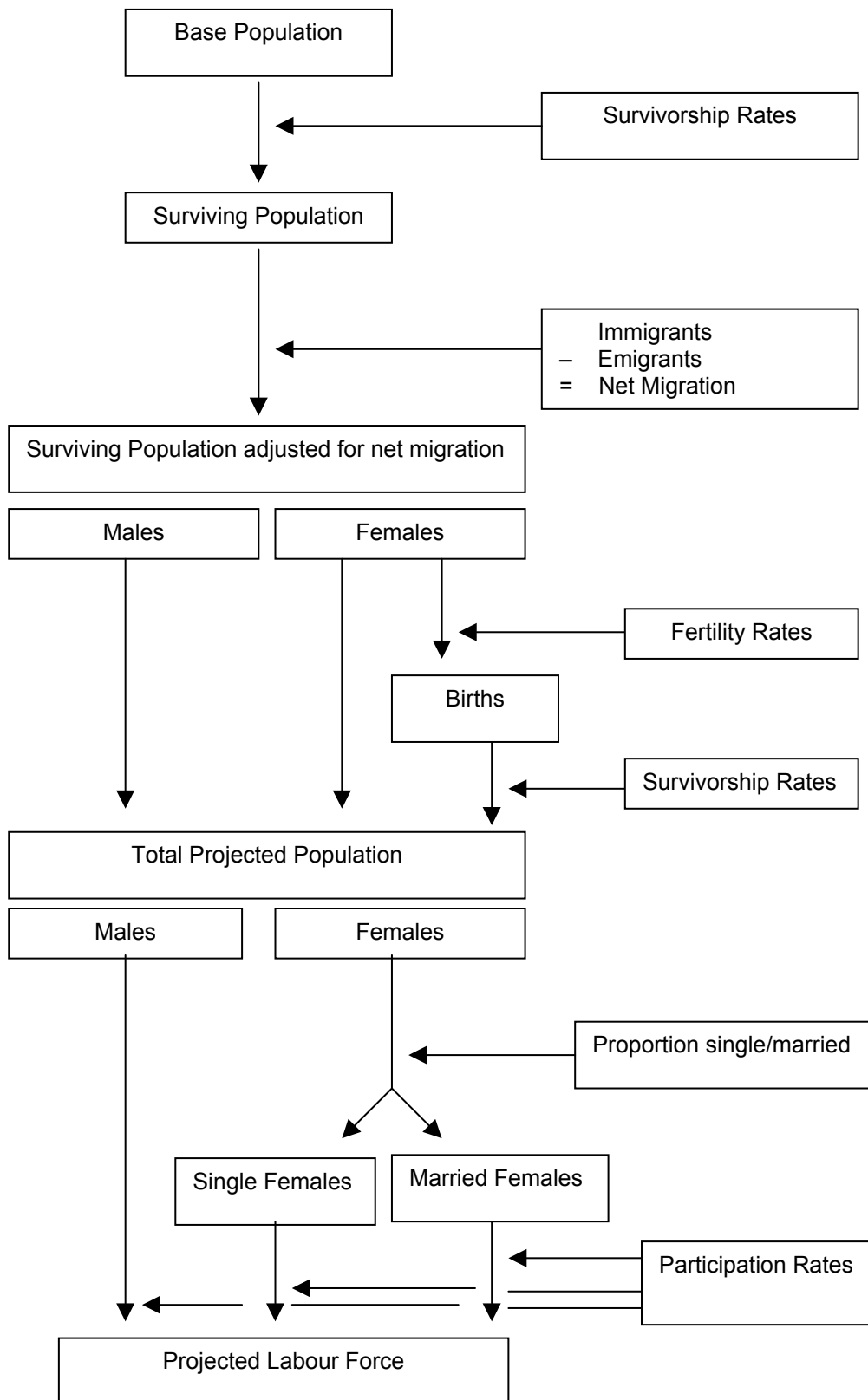
The 2002 Census of Population data are first disaggregated by age and sex. The death and gross migration rates which these groups are assumed to experience in the following year are then applied. The assumed fertility rates are applied to the female population aged 15-49. The population projected in 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 intercensal period 1996–2002. 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 Census area of the CSO website (see www.cso.ie/census.html). The detailed data files contain projections of the population for each year from 2002 to 2036 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, M1F3, M2F1, M2F2 and M2F3).

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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

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

Table A3 Life expectancy at various ages, 1925 - 2003

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
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

Table A4 Projected life expectancy at various ages, 2005 - 2037

Period	Age in years									
	0	5	10	30	40	50	60	70	80	90
Males										
15 2005-2007	76.1	71.6	66.6	47.4	37.9	28.6	20.0	12.5	6.7	3.4
16 2010-2012	77.2	72.7	67.8	48.6	39.1	29.7	20.9	13.1	7.1	3.6
17 2015-2017	78.4	73.8	68.9	49.6	40.1	30.8	21.8	13.8	7.5	3.8
18 2020-2022	79.5	74.9	69.9	50.6	41.1	31.7	22.7	14.5	7.9	4.0
19 2025-2027	80.5	75.9	70.9	51.6	42.1	32.7	23.5	15.1	8.3	4.1
20 2030-2032	81.5	76.9	71.9	52.6	43.1	33.6	24.3	15.7	8.7	4.3
21 2035-2037	82.5	77.8	72.8	53.5	44.0	34.5	25.1	16.4	9.0	4.5
Females										
15 2005-2007	81.1	76.6	71.6	51.9	42.2	32.7	23.6	15.3	8.5	4.3
16 2010-2012	82.1	77.5	72.6	52.9	43.1	33.6	24.5	16.0	9.0	4.6
17 2015-2017	83.1	78.5	73.5	53.8	44.1	34.5	25.3	16.7	9.5	4.9
18 2020-2022	84.1	79.4	74.5	54.7	45.0	35.4	26.1	17.4	9.9	5.2
19 2025-2027	85.1	80.3	75.4	55.7	45.9	36.3	26.9	18.1	10.4	5.5
20 2030-2032	86.0	81.2	76.2	56.5	46.8	37.1	27.7	18.7	10.9	5.8
21 2035-2037	86.9	82.1	77.1	57.4	47.6	38.0	28.5	19.4	11.4	6.2

Table A5 Labour force participation rates, 1991 - 2016 (%)

Age group	Actual*				Assumed		
	1991	1996	2002	2004	2006	2011	2016
Males							
25 - 29	93.1	92.1	91.5	91.9	93.0	93.0	93.0
30 - 34	94.7	94.8	93.8	93.1	93.0	93.0	93.0
35 - 39	93.6	93.9	93.8	93.2	93.0	93.0	93.0
40 - 44	92.2	92.8	92.1	93.0	93.0	93.0	93.0
45 - 49	90.3	89.7	89.8	91.8	93.0	93.0	93.0
50 - 54	86.0	84.3	85.4	86.2	88.0	88.5	89.0
55 - 59	74.9	72.6	75.2	75.5	77.0	78.0	79.0
60 - 64	55.6	51.8	55.7	54.9	57.0	59.0	61.0
65 and over	16.5	15.3	15.1	13.7	16.0	17.0	18.0
Married females							
25 - 29	55.1	66.8	65.7	68.3	69.0	71.0	71.0
30 - 34	47.2	59.8	65.7	64.4	68.0	71.0	74.0
35 - 39	40.2	55.4	61.3	62.6	66.0	69.0	74.0
40 - 44	35.3	49.9	64.0	64.5	68.0	70.0	73.0
45 - 49	31.5	41.8	61.6	62.3	64.0	69.0	71.0
50 - 54	26.6	35.2	50.5	56.0	60.0	64.0	67.0
55 - 59	20.0	26.5	37.2	41.2	43.0	50.0	52.0
60 - 64	11.7	14.8	21.5	23.7	24.0	28.0	30.0
65 and over	2.5	2.6	2.9	2.9	4.0	5.5	6.0
Other females							
25 - 29	86.7	85.3	86.6	83.1	83.0	84.0	85.0
30 - 34	82.8	83.7	84.8	82.5	83.0	84.0	85.0
35 - 39	78.8	80.8	80.8	78.0	80.0	82.0	82.0
40 - 44	73.2	79.7	79.6	76.0	79.0	80.0	81.0
45 - 49	73.2	78.0	73.4	71.9	73.0	74.0	75.0
50 - 54	65.5	69.3	66.3	64.3	65.0	66.0	66.0
55 - 59	55.3	55.3	47.1	53.6	54.0	56.0	58.0
60 - 64	34.8	35.4	37.7	37.3	38.0	40.0	41.0
65 and over	6.6	5.8	4.1	3.8	5.0	6.0	6.0

* Source: Labour Force Surveys 1991, 1996; Quarterly National Household Surveys 2002, 2004

Table A6 Actual and projected labour force, 1991 - 2016

Year	Males	Females			Persons
		Married	Other	Total	
Thousands					
Actual*					
1991	879.4	244.1	230.9	475.0	1354.4
1996	925.1	322.1	260.2	582.3	1507.4
2002	1076.6	414.5	349.8	764.3	1840.9
2004	1119.6	442.9	357.8	800.7	1920.3
M1					
2006	1170.5	462.7	394.7	857.4	2027.9
2011	1261.3	525.6	432.9	958.5	2219.7
2016	1336.7	574.6	462.2	1036.8	2373.6
M2					
2006	1170.5	462.7	394.7	857.4	2027.9
2011	1242.8	520.9	422.5	943.4	2186.2
2016	1280.5	557.6	432.2	989.8	2270.3

* Source: Labour Force Surveys 1991, 1996; Quarterly National Household Surveys 2002, 2004