

Compendium

Fertility assumptions



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Table of contents

1. [Introduction](#)
2. [Principal assumptions](#)
3. [Assumptions for fertility variants](#)
4. [Background notes](#)
5. [Appendix A: England charts](#)
6. [Appendix B: Wales charts](#)
7. [Appendix C: Scotland charts](#)
8. [Appendix D: Northern Ireland charts](#)

1 . Introduction

This report provides detailed information on the principal and variant fertility assumptions used in the 2014-based national population projections. For England and for Wales, the long-term average completed family size is assumed to be 1.90 children per woman. A higher level of 2.00 is assumed for Northern Ireland and a lower level of 1.70 is assumed for Scotland. The long-term completed family size assumptions for England, Wales and Northern Ireland have seen no change from those used in the 2012-based projections, however the assumption for Scotland has been reduced from 1.75 to 1.70.

Completed Family Size is the average number of live-born children per woman which a group of women born in the same year have had by the end of their childbearing years. In general, measurement and analysis of fertility in terms of women born in a particular year is referred to as cohort fertility.

The age-specific fertility rate (ASFR) is the average number of children per woman, born to a group of women of a particular age in a particular year, normally expressed per thousand women.

The total period fertility rate (TPFR) is the average number of children per woman that would be born to a group of women if they experienced the current year's age-specific fertility rates for each year of their childbearing years. This measure is referred to as the total fertility rate, or TFR, in this Report.

2 . Principal assumptions

The numbers of births for the projections are obtained by applying the appropriate fertility rate to the number of women at each age during each year of the projection period. Because cohort fertility rates are more stable than those for calendar years (period rates), the fertility rates used in the projections are derived from assumptions relating to the year in which women were born.

The assumptions about completed family size are based on family-building patterns to date and other relevant evidence. Discussion papers showing the background information used in setting the fertility assumptions are available.

Tables 3.1 to 3.3 show average completed family size, births per 1,000 women, achieved family size, and average age at motherhood, by year of birth of woman.

Table 3.1: Completed family size for the constituent countries of the UK

	Year of birth of woman													
	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015 & later
England	2.06	2.02	1.98	1.91	1.91	1.92	2.00	2.01	2.00	1.92	1.90	1.90	1.90	1.90
Wales	2.10	2.05	1.99	1.96	1.94	1.93	1.96	1.99	1.99	1.91	1.90	1.90	1.90	1.90
Scotland	2.08	1.95	1.87	1.80	1.74	1.72	1.74	1.75	1.71	1.66	1.68	1.70	1.70	1.70
Northern Ireland	2.87	2.65	2.42	2.22	2.11	2.00	2.11	2.07	2.04	2.00	2.00	2.00	2.00	2.00
United Kingdom	2.09	2.03	1.98	1.91	1.91	1.91	1.98	1.99	1.98	1.90	1.89	1.89	1.89	1.89

Source: Office for National Statistics Note: Figures from 1975 to 2015 and later are partly or wholly projected

Table 3.2: Births per 1,000 women by age, UK

Ages	Year of birth of woman													2015 and later
	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	
Under 20	231	221	156	133	152	147	154	135	127	88	73†	72†	71†	71†
20 - 24	699	561	527	457	418	361	346	357	338	284†	283†	281†	281†	281†
25 - 29	634	650	630	594	522	469	498	513	504†	507†	508†	509†	509†	509†
30 - 34	365	403	438	454	466	533	556	549†	564†	572†	574†	574†	575†	575†
35 - 39	132	163	190	216	276	316	338†	348†	354†	360†	361†	361†	361†	361†
40 and over	28	36	43	57	71†	80†	88†	90†	91†	91†	92†	92†	92†	92†
Total Fertility Rate	2.09	2.03	1.98	1.91	1.91	1.91	1.98	1.99	1.98	1.90	1.89	1.89	1.89	1.89†
					†	†	†	†	†	†	†	†	†	

Source: Office for National Statistics

Note :

.† figures are partly or wholly projected

Table 3.3: Achieved family size by exact age, and average age at motherhood, UK

Ages	Year of birth of woman													2015 & later	
	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010		
20		0.23	0.22	0.16	0.13	0.15	0.15	0.15	0.14	0.13	0.09	0.07	0.07	0.07	0.07†
												†	†	†	
25		0.93	0.78	0.68	0.59	0.57	0.51	0.50	0.49	0.47	0.37	0.36	0.35	0.35	0.35†
												†	†	†	
30		1.56	1.43	1.31	1.18	1.09	0.98	1.00	1.01	0.97	0.88	0.86	0.86	0.86	0.86†
												†	†	†	
35		1.93	1.84	1.75	1.64	1.56	1.51	1.55	1.55	1.53	1.45	1.44	1.44	1.44	1.44†
												†	†	†	
40		2.06	2.00	1.94	1.85	1.83	1.83	1.89	1.90	1.89	1.81	1.80	1.80	1.80	1.80†
												†	†	†	
45		2.09	2.03	1.98	1.91	1.90	1.90	1.97	1.99	1.97	1.90	1.88	1.88	1.88	1.88†
												†	†	†	
Total family size		2.09	2.03	1.98	1.91	1.91	1.91	1.98	1.99	1.98	1.90	1.89	1.89	1.89	1.89†
												†	†	†	
Mean age at motherhood (years)		26.4	27.1	27.8	28.4	28.9	29.5	29.7	29.7	29.9	30.4	30.5	30.6	30.6	30.6†
												†	†	†	

Source: Office for National Statistics Note: 1.† figures are partly or wholly projected.

The equivalent tables for the constituent countries of the UK, England and Wales, and Great Britain can be found in the data download links.

For the UK as a whole, completed family size showed a sharp decline from an average of around 2.45 children for women born in the mid-1930s to just over 2.0 for women born in the 1950s. Since then, the completed family size has declined gradually, with women born in 1968, effectively the most recent cohort to have completed their fertility, achieving an average of 1.9 children per woman.

The family sizes to be achieved by women currently in their twenties or younger are highly conjectural, but there is some evidence that suggests falls in cohort fertility could be slowing down. In particular, women born in 1980 have had more children on average by age 30 than those born in 1975 and because fertility rates at older ages are projected to remain high, the 1980 cohort is projected to have 1.98 children on average, a higher completed family size than women born in the 1970s. For women born after 1980, it has been assumed that average completed family size for the UK as a whole will fluctuate before falling and stabilising at 1.89 children for women born after 2015.

For England and for Wales, the long-term average completed family size is assumed to be 1.90 children per woman. A higher level of 2.00 is assumed for Northern Ireland and a lower level of 1.70 is assumed for Scotland. These assumptions see no change compared with the 2012-based projections for Northern Ireland, England and Wales, however, the assumption for Scotland has been reduced by 0.05.

Between 2002 and 2008, total fertility rates increased in all constituent countries of the UK, followed by a dip in 2009 (see Figure 3.1). Whilst Scotland showed a steady decline between 2009 and 2012, England, Wales and Northern Ireland showed small fluctuations in total fertility rate year on year. Between 2012 and 2013, the total fertility rate for all countries showed a large drop followed by smaller changes in 2014. For the UK, the fall was 1.92 to 1.83 between 2012 and 2013, with a rate of 1.82 in 2014. For the latest projections, it is assumed there will be a gradual upward trend in the UK fertility rate before levelling out at 1.89 in the long-term.

Over the past 10 years, fertility rates have generally been rising faster among women in their thirties and forties than for women in their twenties, so mean age at childbirth has continued to rise. The average age at motherhood for the UK as a whole is projected to increase from 28.4 years for women born in 1965 to its long-term level of 30.6 years for those born from 2015 onwards.

Figure 3.1 shows the total fertility rate (TFR) and average completed family size (CFS) for the UK between 1973 and 2039.

Figure 3.1: Total fertility rate and average completed family size, UK, 1973 to 2039

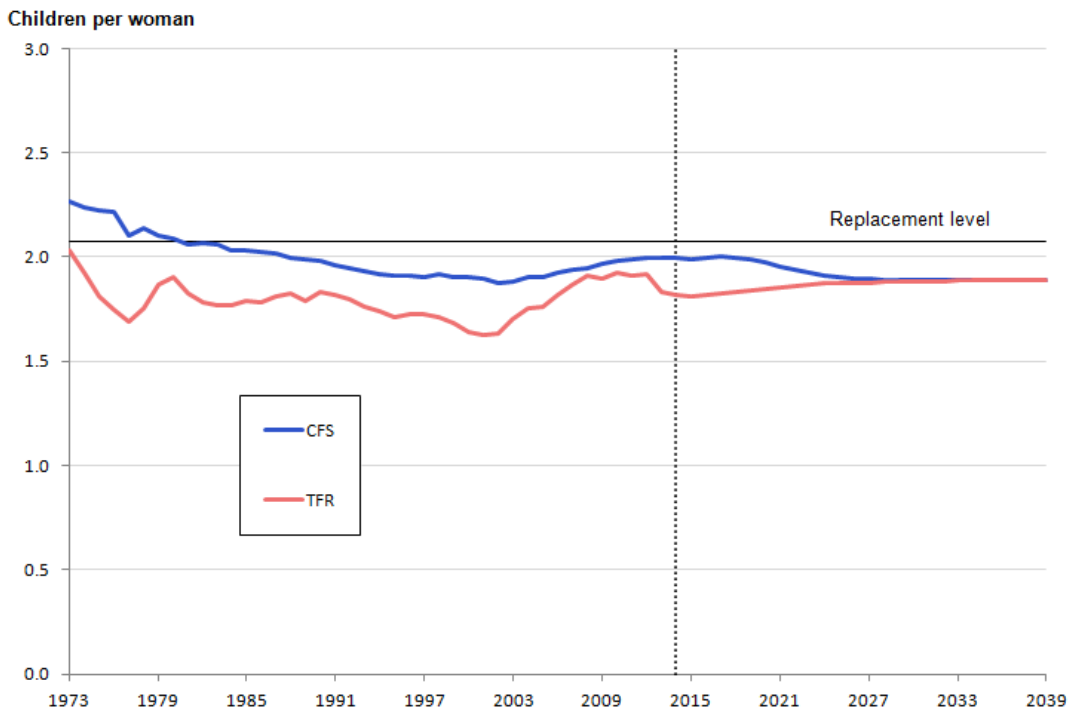
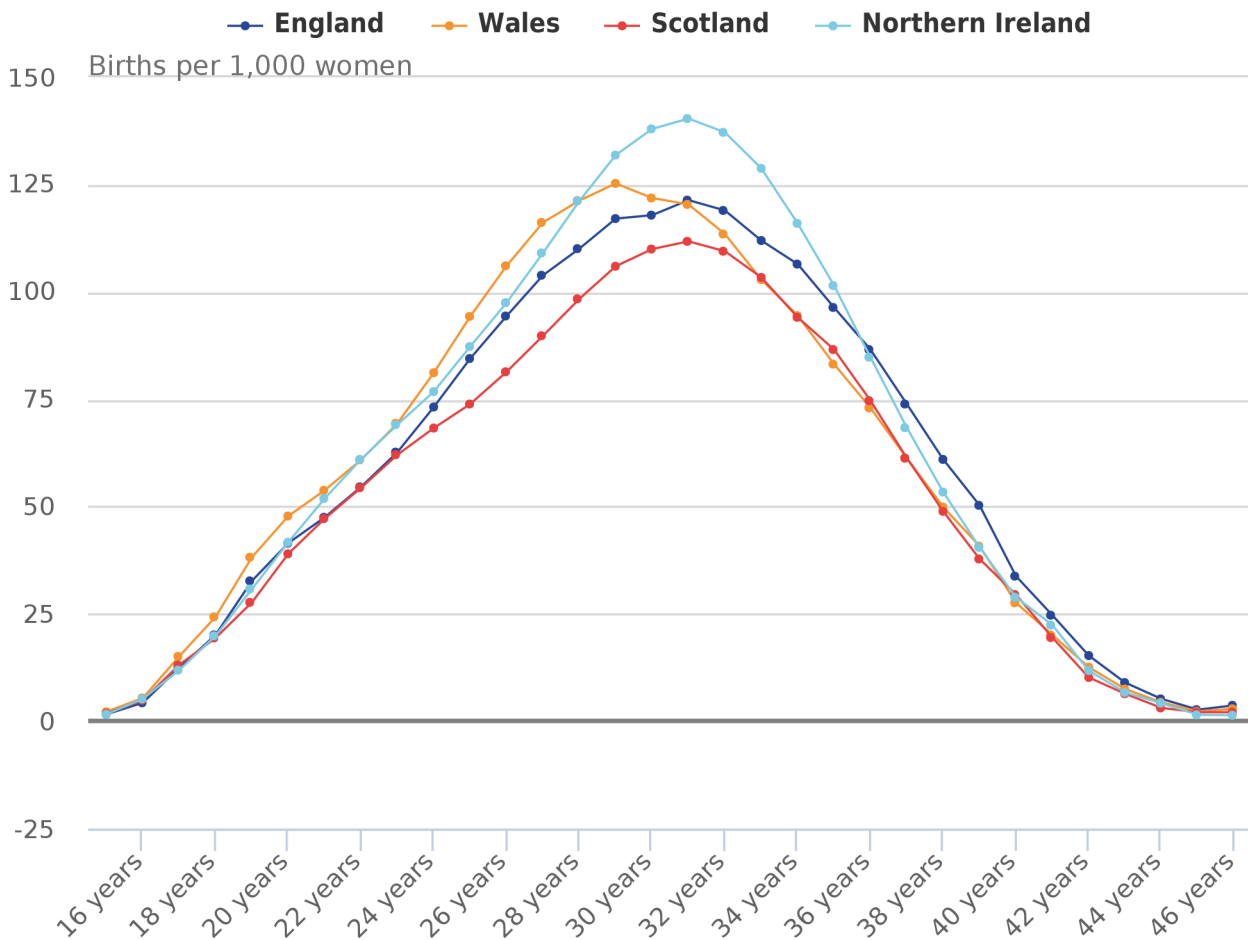


Figure 3.2 shows the assumed ultimate (long-term) age-specific fertility rates for the constituent countries of the UK.

Figure 3.2: Assumed ultimate (long-term) age-specific fertility rates, UK constituent countries



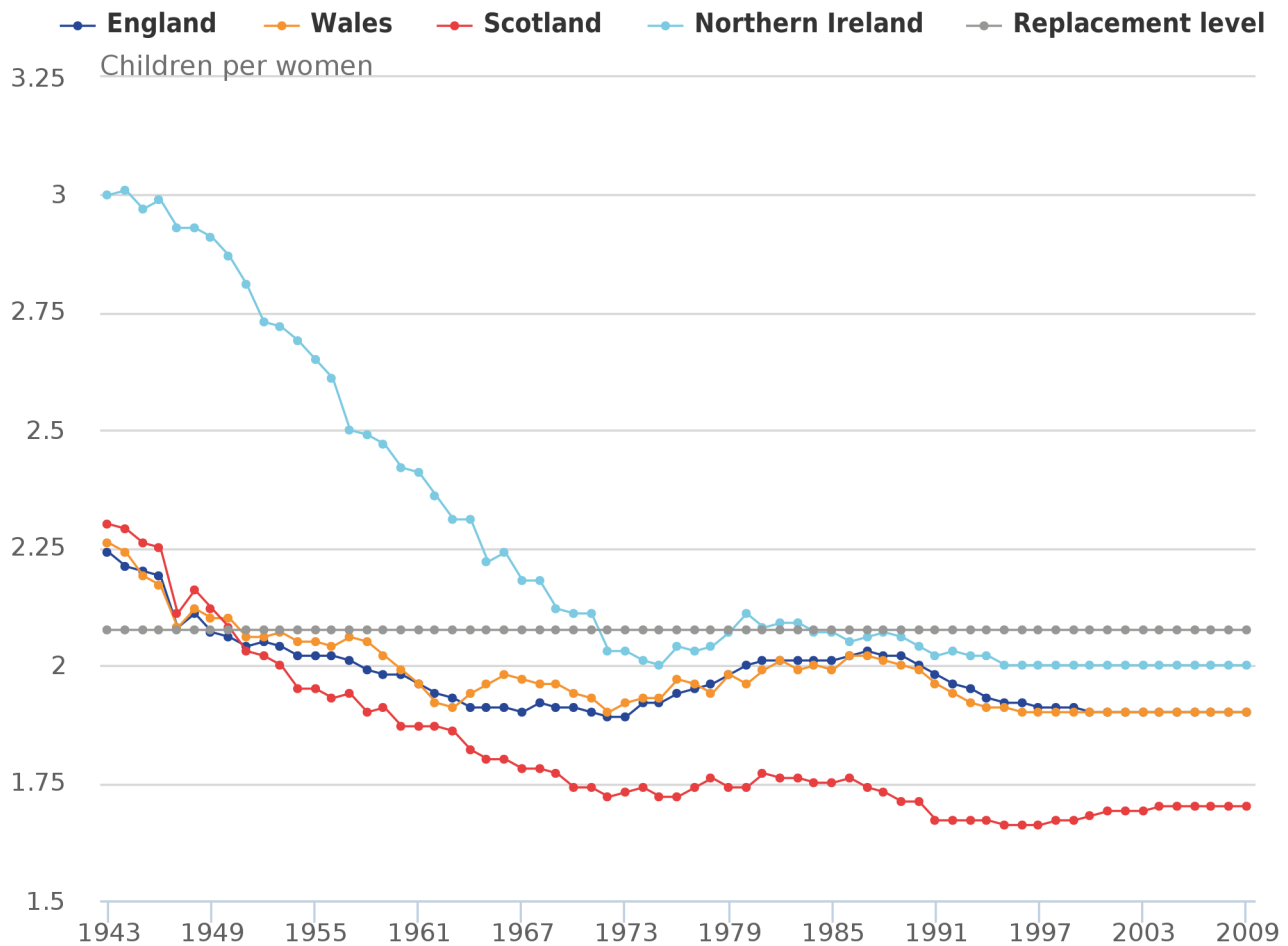
Source: Office for National Statistics

Notes:

1. All fertility data are displayed on a calendar year basis

Figure 3.3 shows the estimated and assumed average completed family size for women born between 1943 and 2009 for the constituent countries of the UK.

Figure 3.3: Estimated and assumed average completed family size, women born 1943 to 2009, UK constituent countries



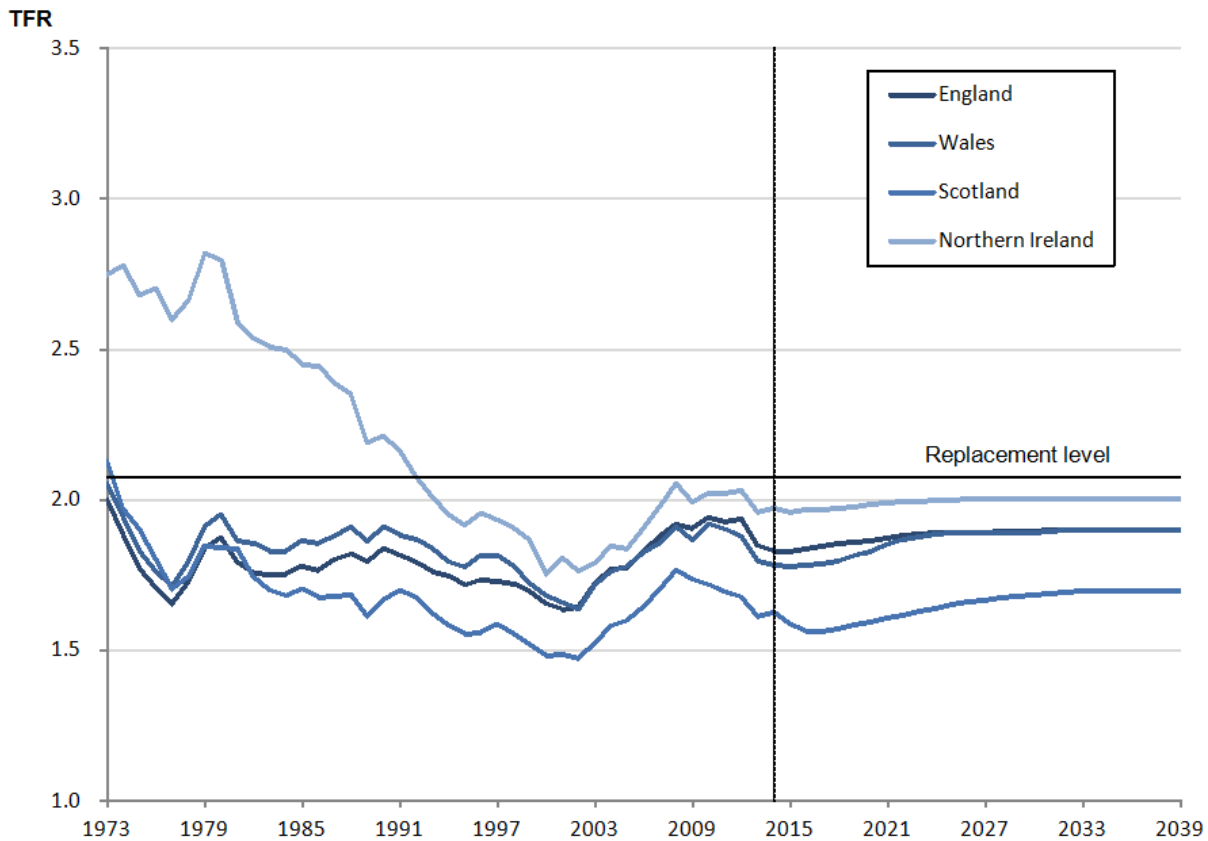
Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency

Notes:

1. All fertility data are displayed on a calendar year basis
2. Replacement fertility is the level of fertility required for the population to replace itself in size in the long term. In the UK, women would need to have, on average, 2.075 children to ensure long term 'natural' replacement of the population

Figure 3.4 shows the estimated and assumed total fertility rates for the constituent countries of the UK between 1973 and 2039.

Figure 3.4: Estimated and assumed total fertility rates, 1973 to 2039, UK constituent countries



3 . Assumptions for fertility variants

Table 3.4 shows the assumed long-term total fertility rates for the standard variants for the UK and its constituent countries.

Table 3.4: Assumed long-term total fertility rates for the standard variants

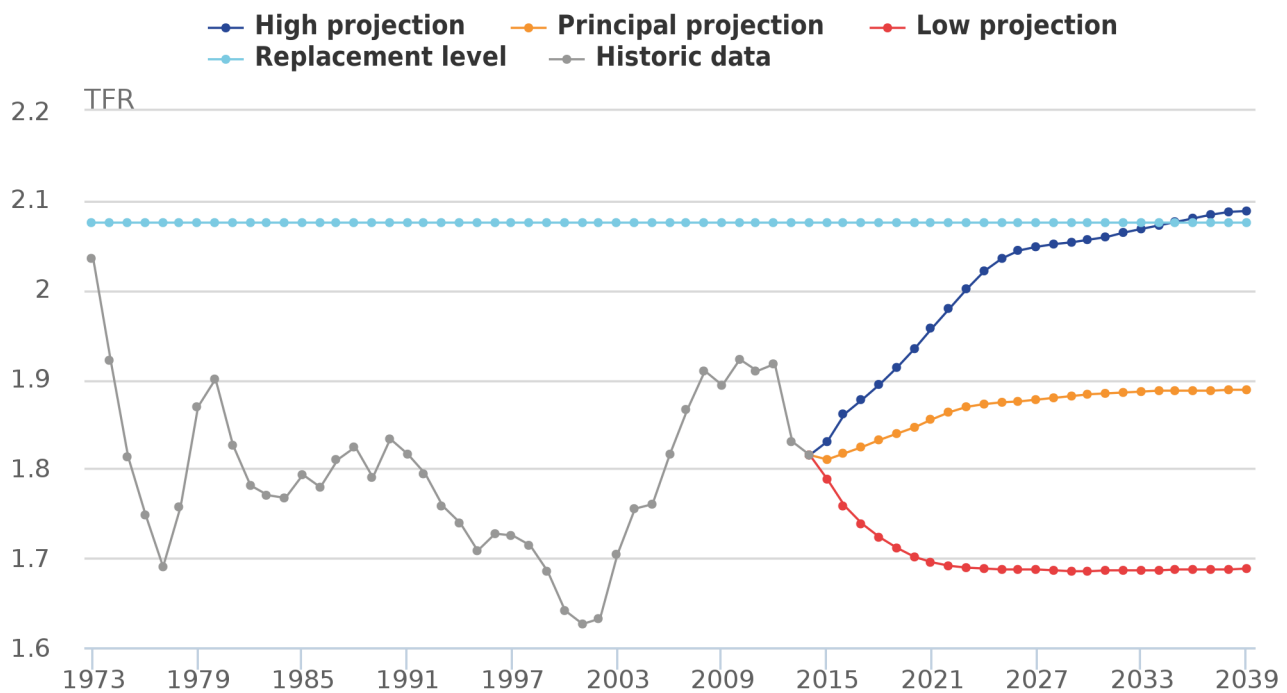
Country	Standard variants		
	High	Principal	Low
England	2.10	1.90	1.70
Wales	2.10	1.90	1.70
Scotland	1.90	1.70	1.50
Northern Ireland	2.20	2.00	1.80
United Kingdom	2.09	1.89	1.69

Source: Office for National Statistics

For the standard variants, fertility rates are generally assumed to move gradually from current levels to those assumed for the long-term.

Figure 3.5 shows estimated and assumed total fertility rates for the UK between 1973 and 2039 for the principal projection and high and low variants.

Figure 3.5: Estimated and assumed total fertility rates, UK, 1973 to 2039



Source: Office for National Statistics

Notes:

1. Replacement fertility is the level of fertility required for the population to replace itself in size in the long term. In the UK, women would need to have, on average, 2.075 children to ensure long term 'natural' replacement of the population
2. All fertility data are displayed on a calendar year basis

The equivalent charts for the constituent countries of the UK can be found in the relevant appendices.

Different scenarios involving both replacement fertility and constant fertility are discussed in further detail in our second release, the 2014-based extra variants report which is being published on 26 November 2015.

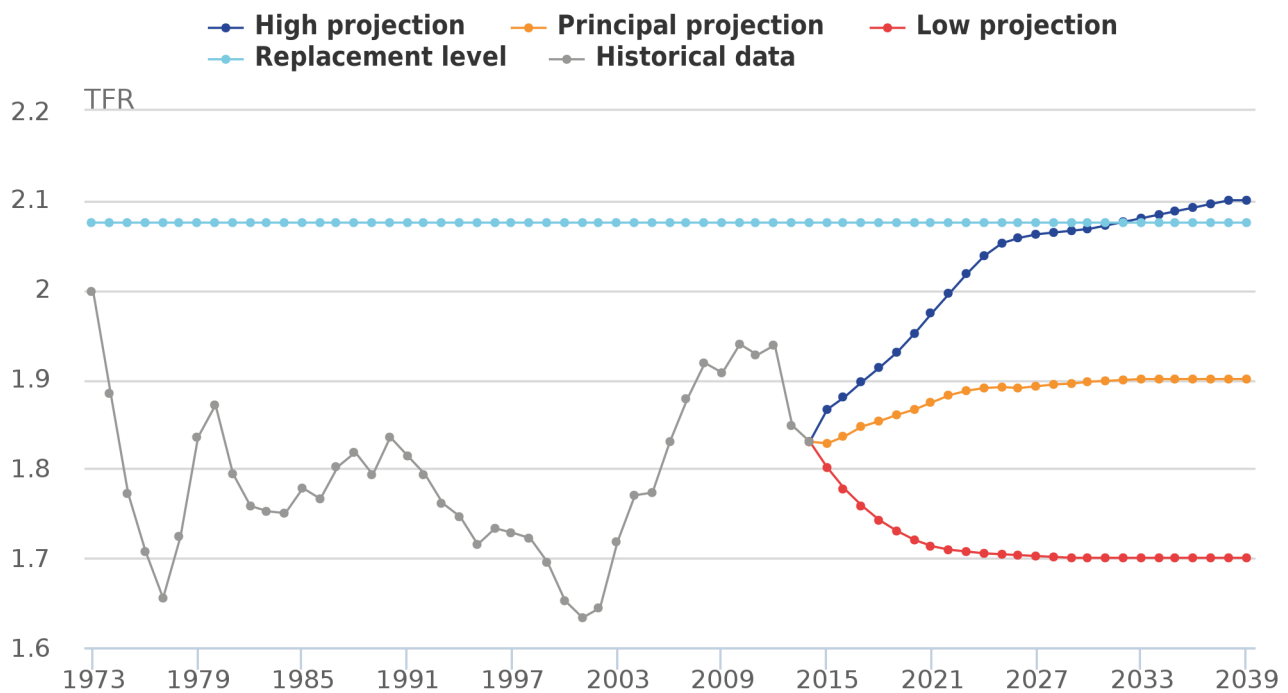
4. Background notes

1. Discussion papers showing the background information used in setting the fertility assumptions are available.
2. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

These National Statistics are produced to high professional standards and released according to the arrangements approved by the UK Statistics Authority.

5. Appendix A: England charts

Figure 3.5a: Estimated and assumed total fertility rates, 1973 to 2039, England



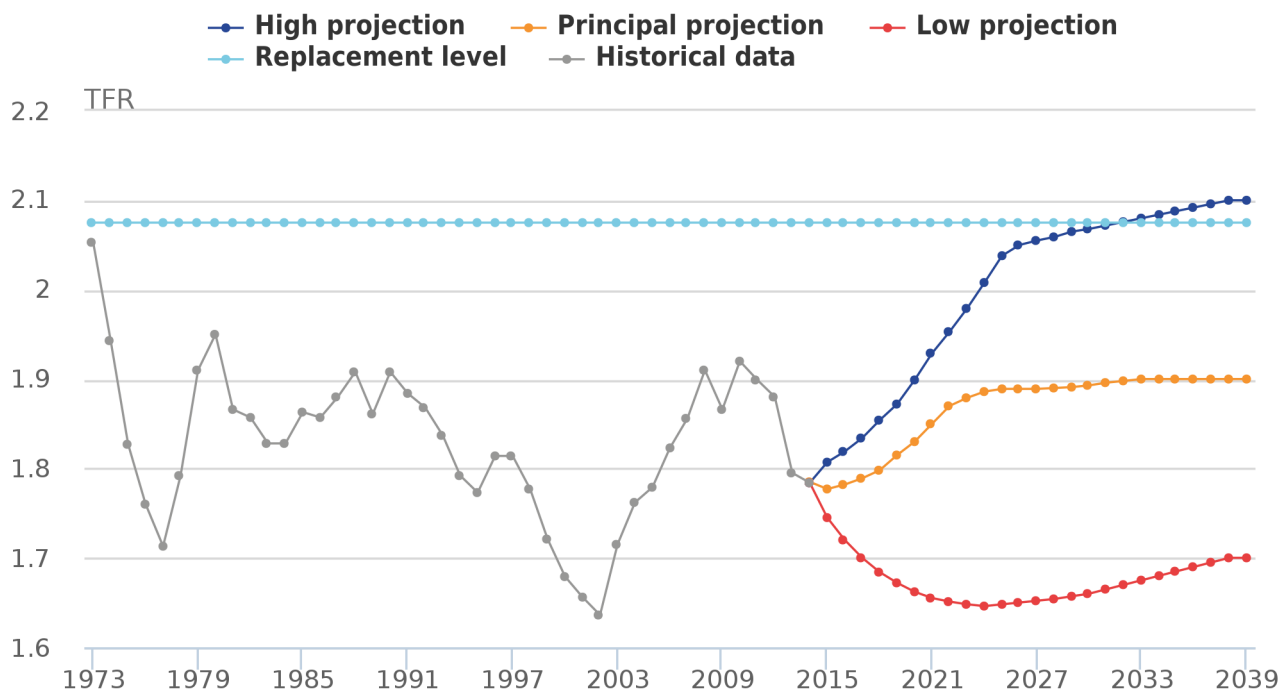
Source: Office for National Statistics

Notes:

1. All fertility data are displayed on a calendar year basis
2. Replacement fertility is the level of fertility required for the population to replace itself in size in the long term. In the UK, women would need to have, on average, 2.075 children to ensure long term 'natural' replacement of the population

6. Appendix B: Wales charts

Figure 3.5b: Estimated and assumed total fertility rates, 1973 to 2039, Wales



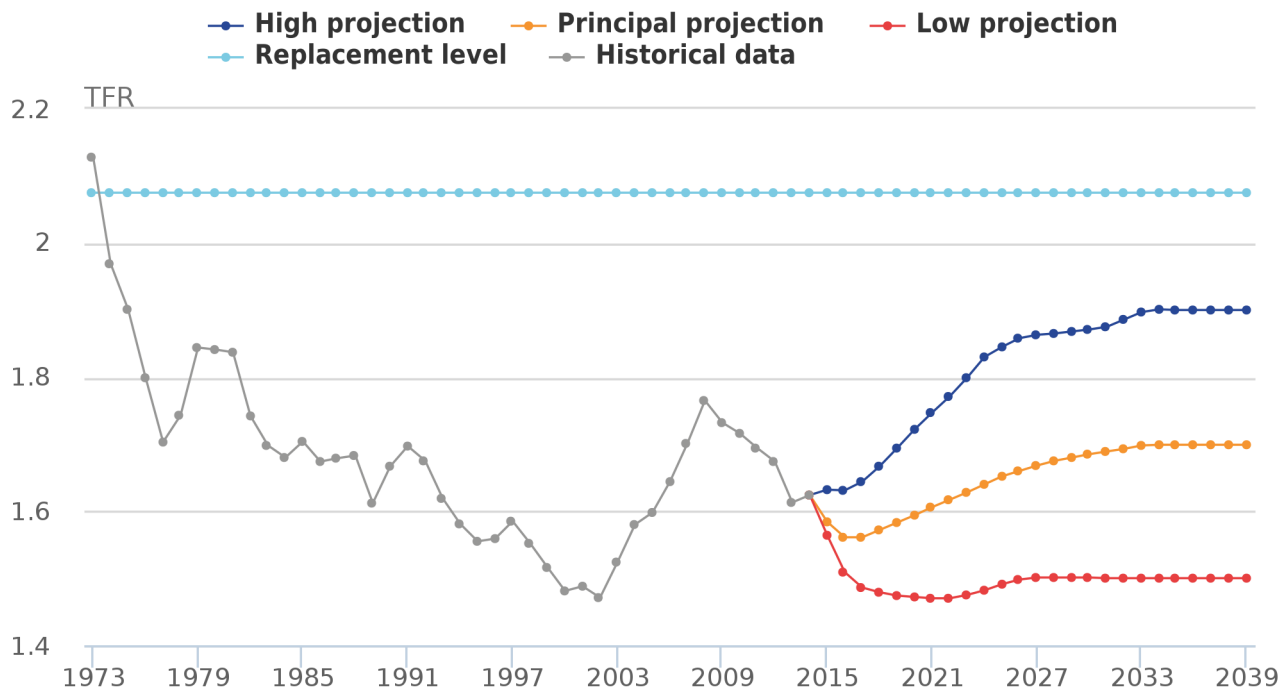
Source: Office for National Statistics

Notes:

1. All fertility data are displayed on a calendar year basis
2. Replacement fertility is the level of fertility required for the population to replace itself in size in the long term. In the UK, women would need to have, on average, 2.075 children to ensure long term 'natural' replacement of the population

7. Appendix C: Scotland charts

Figure 3.5c: Estimated and assumed total fertility rates, 1973 to 2039, Scotland



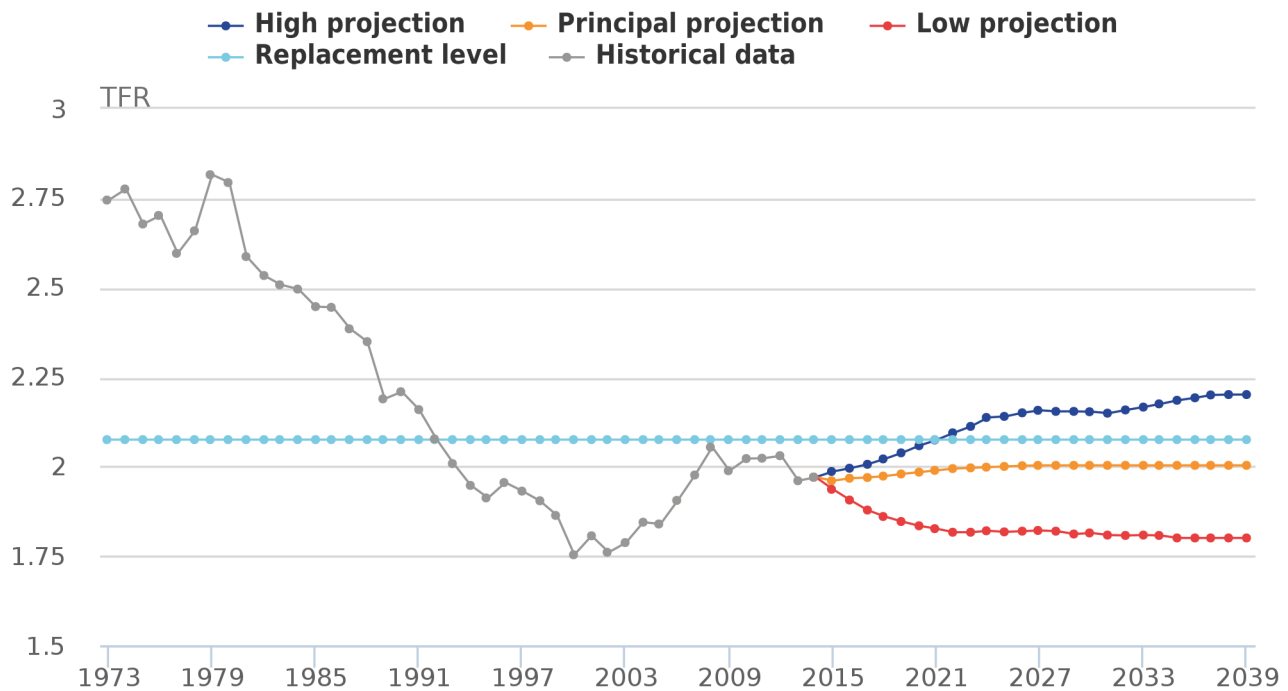
Source: Office for National Statistics, National Records of Scotland

Notes:

1. All fertility data are displayed on a calendar year basis
2. Replacement fertility is the level of fertility required for the population to replace itself in size in the long term. In the UK, women would need to have, on average, 2.075 children to ensure long term 'natural' replacement of the population

8. Appendix D: Northern Ireland charts

Figure 3.5d: Estimated and assumed total fertility rates, 1973 to 2039, Northern Ireland



Source: Office for National Statistics, Northern Ireland Statistics and Research Agency

Notes:

1. All fertility data are displayed on a calendar year basis
2. Replacement fertility is the level of fertility required for the population to replace itself in size in the long term. In the UK, women would need to have, on average, 2.075 children to ensure long term 'natural' replacement of the population