

National population projections, fertility assumptions: 2024-based

The data sources and methodology used to produce fertility assumptions in the 2024-based national population projections.

Contact:
Population and Household
Projections
pop.info@ons.gov.uk
+44 1329 444661

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Table of contents

1. [Overview](#)
2. [Recent trends in fertility](#)
3. [Principal fertility assumptions](#)
4. [Variant fertility assumptions](#)
5. [Methodological approach](#)
6. [Expert views on future fertility](#)
7. [Definitions](#)
8. [Related links](#)
9. [Cite this methodology](#)

1 . Overview

This article provides supporting methodology information for the fertility assumptions used in the 2024-based national population projections, including the principal and variant assumptions.

The short-term assumption for the UK total fertility rate (TFR) is 1.38 children per woman by 2029, rising in the long term to 1.42 children per woman by 2049. This compares with an observed TFR of 1.40 children per woman in 2024. Both the short- and long-term fertility assumptions are lower than those used in the 2022-based projections.

In the long-term, age-specific fertility rates (ASFRs) are projected to decrease for women aged under 30 years and to increase for women aged 30 years and over. This is consistent with recent trends and the assumptions applied in the 2022-based projections.

Low- and high-fertility variant assumptions are set relative to the principal assumption. In the short term, the low-fertility variant is calculated as the principal minus 0.1 and the high-fertility variant as the principal plus 0.1. In the longer term, the low-fertility variant falls to the principal minus 0.2, while the high-fertility variant rises to the principal plus 0.2. This results in a long-term UK total fertility rate (TFR) of 1.22 children per woman for the low-fertility variant and 1.62 children per woman for the high-fertility variant. Both are lower than the equivalent assumptions used in the 2022-based national population projections.

The methodology used to set the 2024-based fertility assumptions is broadly consistent with that used in previous rounds of national population projections. Expert views on future fertility trends were used to inform how we set the assumptions.

We set the fertility assumptions and have presented fertility rates on a calendar-year basis, unless otherwise stated. National population projections are produced on a mid-year basis, so there may be small differences between the figures presented in this methodology and those in our published [National population projections table of contents dataset](#).

2 . Recent trends in fertility

Total fertility rate

The UK total fertility rate (TFR) has generally been decreasing since 2012, from 1.91 children per woman to 1.40 children in 2024. There was a small increase in 2021 when the TFR rose to 1.54 children, before falling again to 1.48 children in 2022.

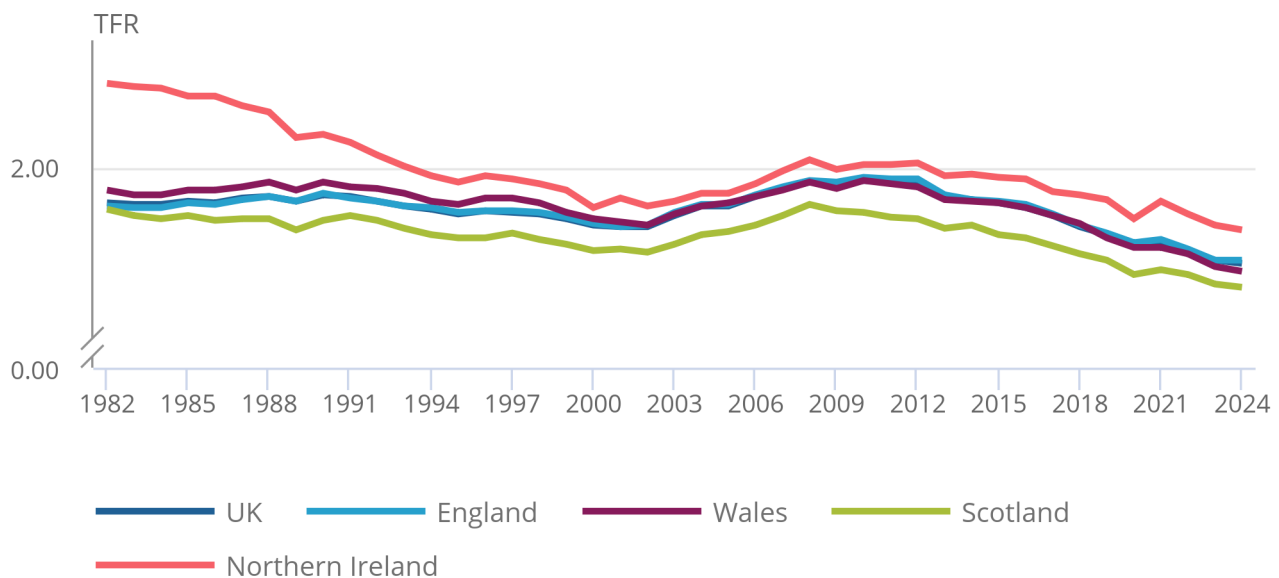
Figure 1 shows the TFR for the UK and for its constituent countries. Northern Ireland has consistently experienced the highest TFR and Scotland has the lowest levels of the constituent countries.

Figure 1: Total fertility rates have generally been decreasing since around 2012

Total fertility rates (TFRs), UK and constituent countries, 1982 to 2024

Figure 1: Total fertility rates have generally been decreasing since around 2012

Total fertility rates (TFRs), UK and constituent countries, 1982 to 2024



Source: National population projections, fertility assumptions from the Office for National Statistics

Completed family size

We formulate long-term fertility assumptions considering both the period-based measure of TFR and the cohort-based measure of completed family size (CFS). The TFR and CFS converge to the same value when projecting fertility in the long term.

Period rates like the TFR will rise or fall if births are brought forward or delayed for any reason. This contrasts with cohort measures of fertility, which are affected only by changes in the number of children women have and not by the timings of births within women's lives.

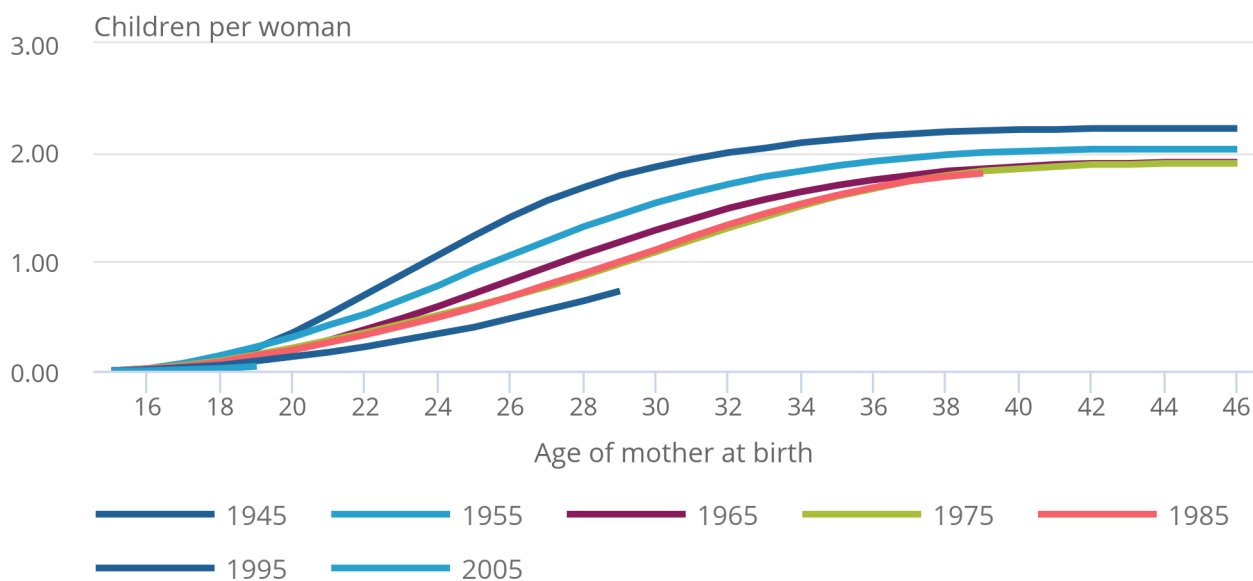
Figure 2 shows that CFS has decreased gradually over time. The average number of children per woman was 2.22 in the 1945 cohort, whereas the cohort of women born in 1975 had a CFS of 1.90 children. More recent cohorts, such as women born in 1995, have so far shown lower levels of fertility than previous cohorts at comparable ages. The impact this may have on future average completed family size is not yet known.

Figure 2: More recent cohorts have lower achieved family size at comparable ages

Achieved family size by birth cohort of mother, UK, 1945 to 2005 birth cohorts

Figure 2: More recent cohorts have lower achieved family size at comparable ages

Achieved family size by birth cohort of mother, UK, 1945 to 2005 birth cohorts



Source: National population projections, fertility assumptions from the Office for National Statistics

3 . Principal fertility assumptions

We have set the UK principal total fertility rate (TFR) for the 2024-based round of projections as 1.38 children in the short term, at five years from the base year, in 2029. Rising from the short-term rate, we have set the principal TFR to 1.42 children in the long term, at 25 years from the base year, in 2049.

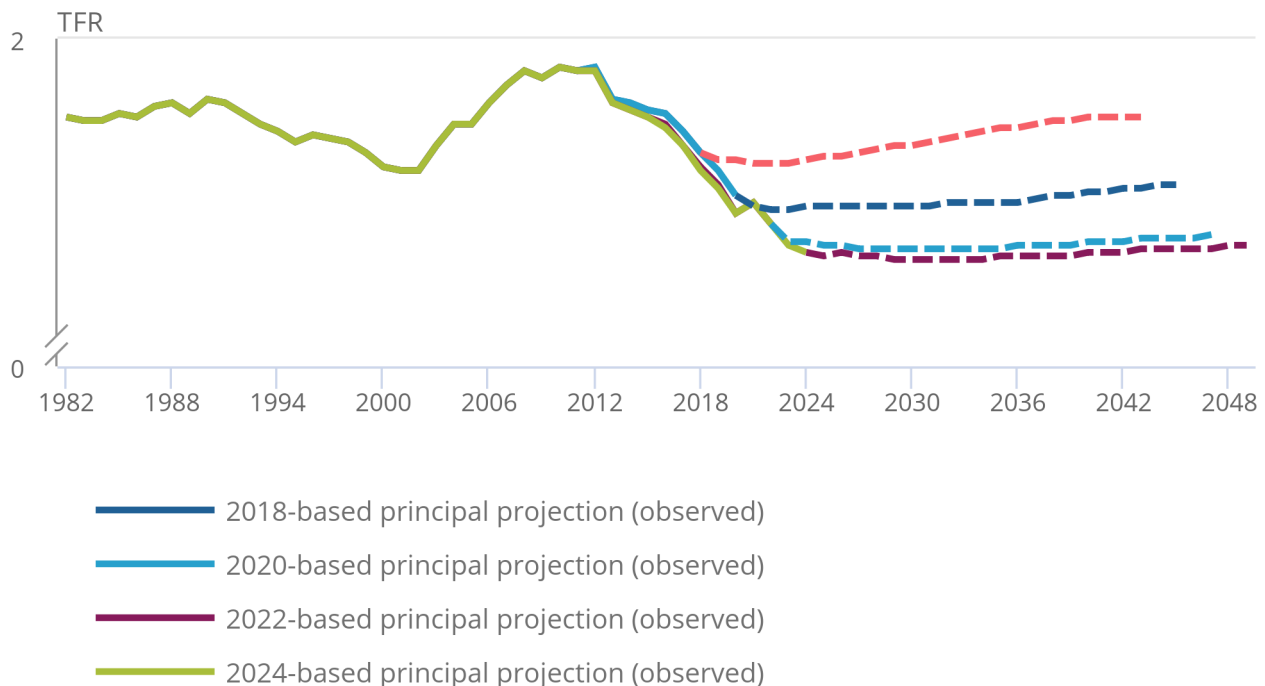
Both the short-term and long-term fertility assumptions for the UK are below the equivalent figures in the previous round of projections. Each set of fertility assumptions has been lower than the last, for recent projection rounds, as shown in Figure 3.

Figure 3: The 2024-based principal assumption projects a lower total fertility rate than in previous rounds of projections

Past and projected total fertility rate (TFR), UK, 2018-based to 2024-based principal projections, 1982 to 2049

Figure 3: The 2024-based principal assumption projects a lower total fertility rate than in previous rounds of projections

Past and projected total fertility rate (TFR), UK, 2018-based to 2024-based principal projections, 1982 to 2049



Source: National population projections, fertility assumptions from the Office for National Statistics

Notes:

1. Historical TFRs used in the 2022-based and 2024-based assumptions differ as they make use of the latest available revised population estimates during the assumption setting process.

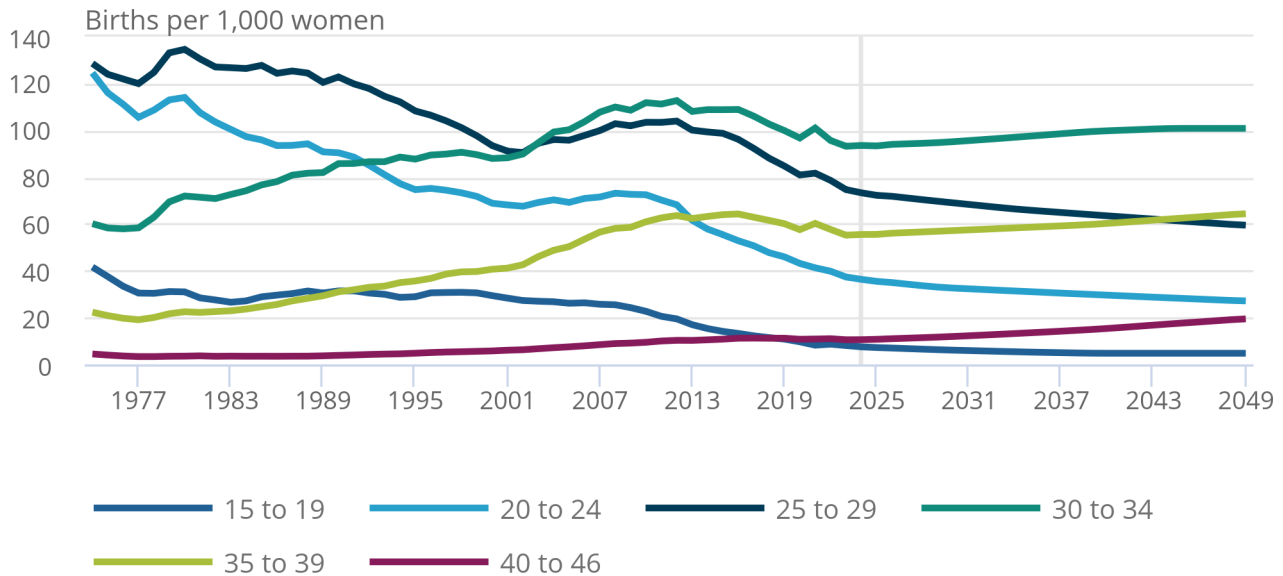
To produce the fertility projections by age, we applied a decrease to the age-specific fertility rates for age groups under 30 years and an increase for age groups of 30 years and over. This broadly reflects the advice on trends for each age group provided by the fertility expert advisory panel and is consistent with the trends applied for the 2022-based projections. More information on the fertility expert advisory panel is included in [Section 6: Expert views on future fertility](#).

Figure 4: Fertility rates for women in all age groups under 30 years are projected to decrease, while age groups 30 years and over are projected to increase

Past and projected age-specific fertility rates (ASFR), UK, 1974 to 2049

Figure 4: Fertility rates for women in all age groups under 30 years are projected to decrease, while age groups 30 years and over are projected to increase

Past and projected age-specific fertility rates (ASFR), UK, 1974 to 2049



Source: National population projections, fertility assumptions from the Office for National Statistics

Notes:

1. Figures up to 2024 are observed data; figures for 2025 onwards are projected.

Constituent countries of the UK

Each country's TFR has maintained a similar position in the projection as in the observed 2024 data, in comparison with the UK TFR. These are within the range of expected differences between the UK and constituent countries' TFRs, based on expert opinion. The TFR for Wales deviated from the UK when we applied the principal scenario. To reduce this deviation, we applied an adjustment to Wales. Northern Ireland is projected to continue to have the highest total fertility rate, while Scotland is projected to continue having the lowest.

Table 1: Principal projected short-term and long-term total fertility rates
2024-based fertility assumptions, UK and constituent countries, 2024 (observed) and 2029 and 2049 (projected)

	2024 (observed)	2029 (projected)	2049 (projected)
England	1.42	1.39	1.43
Wales	1.35	1.32	1.35
Scotland	1.25	1.23	1.26
Northern Ireland	1.61	1.58	1.62
United Kingdom	1.40	1.38	1.42

Source: National population projections, fertility assumptions from the Office for National Statistics

Notes

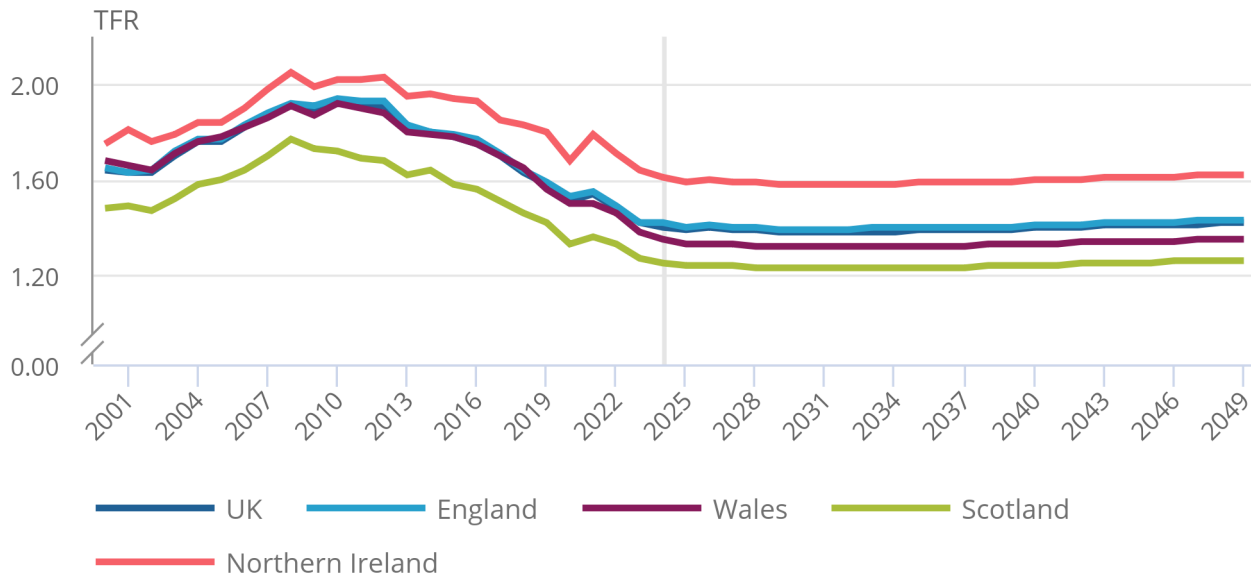
1. The figures for 2024 are based on the published fertility rates for each country.
2. Projected data for Wales are based on the adjusted fertility projection.

Figure 5: Northern Ireland is projected to continue to have the highest total fertility rate, while Scotland has the lowest

Past and projected total fertility rate (TFR), UK and constituent countries, 2000 to 2049

Figure 5: Northern Ireland is projected to continue to have the highest total fertility rate, while Scotland has the lowest

Past and projected total fertility rate (TFR), UK and constituent countries, 2000 to 2049



Source: National population projections, fertility assumptions from the Office for National Statistics

Notes:

1. Figures up to 2024 are observed data; figures from 2025 onwards are projected.
2. Projected data for Wales are based on the adjusted fertility projection.

Age-specific fertility rates for Wales

The UK scenario increases fertility rates for the older age groups and decreases rates for younger women. Women in Wales tend to have children at younger ages, compared with the other countries of the UK. Applying the UK scenario to each constituent country resulted in the TFR for Wales diverging from the UK average in the long term, decreasing at a greater rate. This was contrary to the current expert opinion.

To address this, we reduced the rate of decrease in ASFRs for women aged 20 to 24 years and 25 to 29 years in our assumptions for Wales. This brought the TFR for Wales closer to the UK average in the long term. We applied a similar adjustment for Wales for our 2020-based and 2022-based national population projections.

We will continue to monitor the trends for Wales relative to the UK. If there is evidence of a genuine divergence in trends, we will reconsider whether making an adjustment for Wales is still appropriate for future rounds of projections.

4 . Variant fertility assumptions

We produce variant projections to show the impact of fertility rates above or below that of the principal projection. The variants are designed to provide plausible alternative future fertility scenarios, and we have developed high-, low-, and replacement-fertility variant assumptions for the 2024-based national population projections (NPPs).

High- and low-fertility variants have been developed based on discussions with the fertility expert advisory panel and with National Records of Scotland (NRS), Northern Ireland Statistics and Research Agency (NISRA), and the Welsh Government. More information on the fertility expert advisory panel is included in [Section 6: Expert views on future fertility](#).

The low-variant fertility rate for the 2024-based NPPs has been set as the principal minus 0.1 in the short term, falling to the principal minus 0.2 in the longer term. The high-variant fertility rate has been set as the principal plus 0.1 in the short term, rising to the principal plus 0.2 in the longer term. The fertility variants have a short-term transition from the current rate to reach these levels, and the trend has been smoothed.

This differs slightly from the 2022-based round of the NPPs, where we set the low-fertility variants as 0.2 below the principal TFR in the short and long term. The high-fertility variant was set to the principal plus 0.1 in the short-term, rising to the principal plus 0.2 in the longer term.

The variant widths for the 2024-based assumptions were applied to the UK and constituent countries, as shown in Table 2.

Table 2: High and low variants were set as 0.2 above and below the principal projection in the long term
Principal and variant long-term (2049) total fertility rates, UK and constituent countries

	Principal	Low variant	High variant
England	1.43	1.23	1.63
Wales	1.35	1.15	1.55
Scotland	1.26	1.06	1.46
Northern Ireland	1.62	1.42	1.82
United Kingdom	1.42	1.22	1.62

Source: National population projections, fertility assumptions from the Office for National Statistics

Notes

1. Projected data for Wales is based on the adjusted fertility projection.

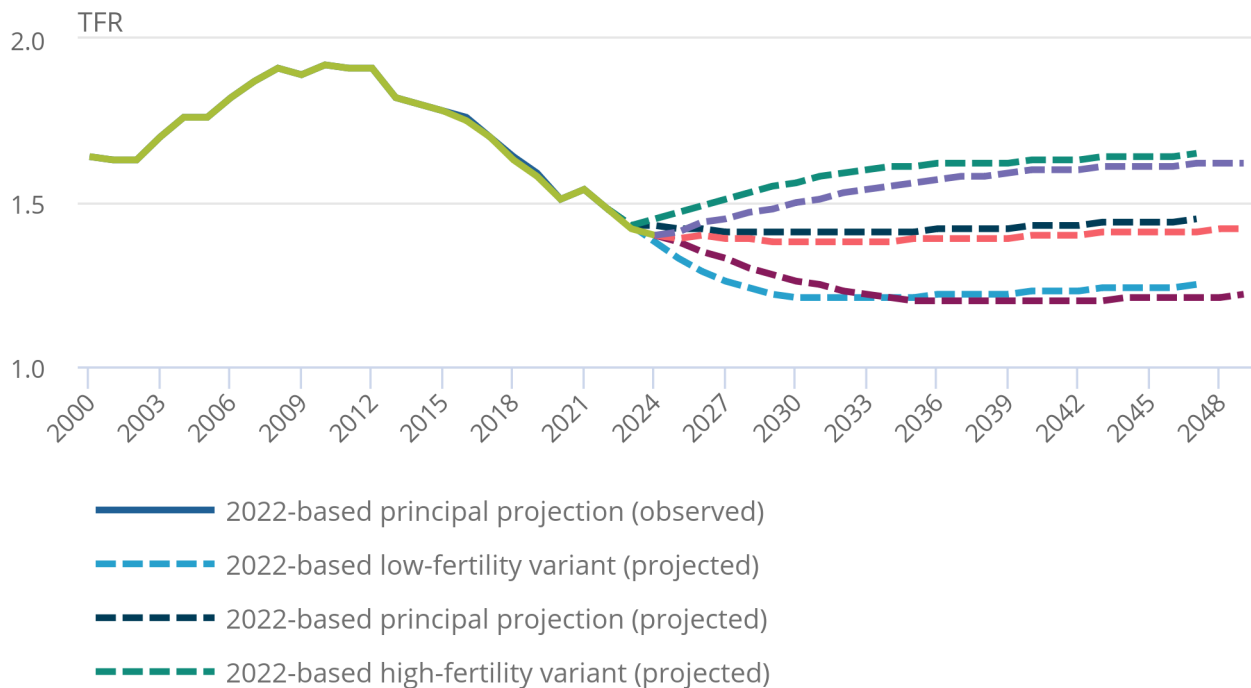
For the 2024-based NPPs, the principal, low- and high-fertility variants project a lower long-term total fertility rate than the corresponding projections from the previous 2022-based round of projections.

Figure 6: High and low variants were set as 0.2 above and below the principal projection in the long term for the 2024-based fertility assumptions

Past and projected total fertility rates (TFR), 2022-based and 2024-based principal, low- and high-fertility variant assumptions, UK, 2000 to 2049

Figure 6: High and low variants were set as 0.2 above and below the principal projection in the long term for the 2024-based fertility assumptions

Past and projected total fertility rates (TFR), 2022-based and 2024-based principal, low- and high-fertility variant assumptions, UK, 2000 to 2049



Source: National population projections, fertility assumptions from the Office for National Statistics

Notes:

1. Historical TFRs used in the 2022-based and 2024-based assumptions differ as they make use of the latest available revised population estimates during the assumption setting process.

We also produce a replacement fertility rate variant with a long-term total fertility rate (TFR) of 2.075. Replacement fertility is the level of fertility required for the population to replace itself in size in the long term, in the absence of migration.

5 . Methodological approach

Principal fertility assumptions

The principal fertility assumptions are set for the short term (five years from the base year) and the long term (25 years from the base year).

We started the fertility assumption process by updating our historical period and cohort fertility rates with data up to the base year of the projection. For the 2024-based national population projections, we used births up to 2024 (on a calendar-year basis), and the latest available mid-year population estimates up to mid-2024.

Unlike previous rounds of the national population projections, the final assumptions from the 2022-based round were applied to the updated data to produce a set of provisional 2024-based assumptions. These provided a starting point for the next stage of the assumption-setting process.

Views on future fertility trends were gathered from members of the fertility expert advisory panel via a questionnaire. Responses informed a set of rates and trends used to assess the provisional assumptions and identify where changes could be made to better reflect expert advice and evidence. Further detail on the expert advisory panel and the rates and trends is provided in [Section 6: Expert views on future fertility](#).

An expert advisory panel meeting was held to present the provisional scenario and summarise questionnaire findings. The meeting provided additional context on fertility trends and allowed experts to give direct feedback on the provisional assumptions.

Our primary focus was on setting the principal short- and long-term total fertility rate (TFR) assumptions at the UK level. Drawing on feedback from the expert advisory panel, we aimed to develop target future TFR values that reflected expert advice, while maintaining important elements of the provisional assumption supported by the advisory panel. As the TFR is derived from age-specific fertility rates (ASFRs), we developed ASFR assumptions using five-year age bands that reflected expert advice and current trends, and that were consistent with the assumed target future TFR.

This scenario for the UK was applied to each country's data to determine the long-term assumptions for England, Wales, Scotland, and Northern Ireland. The TFR for Wales diverged from the UK average in the long term, decreasing at a greater rate. With the agreement of the Welsh Government, we decreased the rate of decline in fertility for the 20-to-24- and 25-to-29-year age groups. This increased the TFR for Wales and better aligned it with the UK average.

Assumptions were converted from a calendar-year basis to a mid-year basis for use in the national population projections system. We then constrained the fertility rates in the first year of the projection (year to mid-2025). This ensured that the total number of births for each country broadly matched observed births data provided by the Office for National Statistics (ONS) and the devolved governments.

Fertility variant assumptions

We developed potential variant options based on feedback from the fertility expert advisory panel, selected our proposed variants and presented to the National Population Projection (NPP) Committee.

Our variants are derived from the principal assumption. At the UK level, proportional adjustment factors were calculated from the principal TFR values and then applied to the projected ASFRs of the principal assumption. This inflated or deflated the rates by the same proportion for each age within a particular year, ensuring we could achieve each of the high- and low-fertility variant targets. We then applied these proportions to the UK constituent countries and scaled to meet the target TFRs shown in Table 2.

National Records of Scotland (NRS), Northern Ireland Statistics Research Agency (NISRA) and the Welsh Government reviewed and provided feedback on the principal and variant assumptions for their respective country via correspondence and committee meetings. The final principal and variant assumptions for the UK and each country were signed off by the NPP committee in March 2026.

6 . Expert views on future fertility

We convened a panel of UK fertility experts to provide their views on future fertility rates and trends via a questionnaire and at an expert advisory panel meeting.

The questionnaire asked for views on:

- projected short-term and long-term UK total fertility rates (TFR)
- expected fertility trends between the short-term and long-term TFR
- projected patterns in age-specific fertility rates (ASFRs) for the UK in the short term and long term
- low- and high-fertility variants
- differences in TFRs between the UK and each constituent country
- any factors that may affect fertility (for more information, see the subsection Underlying factors that may influence future fertility, within this section).

Expected future fertility

We developed our target rates and trends to use for assessing different projection scenarios based on the fertility experts' questionnaire responses and discussion from the expert advisory panel meeting. Minutes from the panel meeting can be requested by emailing pop.info@ons.gov.uk.

Following expert opinion based on data up to 2024, we agreed the following target rates and trends:

- 1.38 TFR in the short term (2029) and 1.40 in the long term (2049) at the UK level
- that fertility may decrease in the short term, as women delay having children, followed by a rise from the late 2020s and early 2030s, reflecting an expected recuperation in fertility as women have children at older ages
- that age-specific fertility rates (ASFRs) for women under 30 years would decrease in the short and long term
- that ASFRs for women aged 30 years and over would increase in both the short and long term
- that the differences in the TFR of each country, compared with the UK TFR for 2029 and 2049, should remain broadly similar to the differences experienced in 2024

After the expert advisory panel meeting, we drew on feedback when reviewing our provisional scenarios and finalising the fertility assumptions, ensuring the final scenario was the most plausible. In particular, we reduced the projected rate of increase in age-specific fertility rates for women aged 40 years and over and reduced the rate of decrease for women under 20 years.

Underlying factors that may influence future fertility

We also asked the fertility experts their views on the impact of several factors on future levels of fertility. They suggested that:

- the cost-of-living crisis will reduce period fertility in the short term
- climate change will either have a negligible impact on fertility or may reduce fertility, resulting in reduced completed family size (CFS) in the long term
- changes to childcare funding will have a limited impact in the short term
- conflicts put a downward pressure on fertility or have a negligible effect
- assisted reproductive technology may have a limited positive impact at the oldest ages, but overall impact may be negligible
- international migration patterns may influence future fertility levels

7 . Definitions

Age-specific fertility rate (ASFR)

The number of live births to mothers of a particular age per 1,000 women of that age in the population.

Total fertility rate (TFR)

The average number of live children a group of women would have if they experienced the age-specific fertility rates for the calendar year in question throughout their childbearing lifespan. TFR is a period fertility measure, providing a snapshot of fertility at a point in time.

Completed family size (CFS)

Completed family size is a cohort fertility measure. It is the average number of live-born children a group of women who share the same year of birth (cohort) are observed or projected to have, when assumed to have completed their childbearing.

Replacement level

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 . Related links

[Births in England and Wales: 2024 \(refreshed populations\)](#)

Bulletin | Released 27 August 2025

Annual live births, stillbirths, maternities, and fertility rates in England and Wales by factors including parent age, parent country of birth, ethnicity, deprivation, gestational age and birthweight.

[User guide to birth statistics](#)

Article | Last revised 27 August 2025

Supporting information for birth statistics, which present figures on births that occur and are then registered in England and Wales. Figures are based on information collected at birth registration.

[Births in Scotland](#)

Dataset | Released 26 August 2025

National Records of Scotland's births time series data.

[Births in Northern Ireland](#)

Web page | Updated as new data become available

Northern Ireland Statistics and Records Agency's birth statistics from 1887 onwards.

[Births QMI](#)

Methodology | Last revised 27 August 2025

Quality and Methodology Information (QMI) for live births occurring and registered in England and Wales, detailing the strengths and limitations of the data, methods used, and data uses and users.

[Childbearing for women born in different years](#)

Publication | Released 2 April 2025

The changing composition of families over time, comparing the fertility of women of the same age and the number of children they have had.

9 . Cite this methodology

Office for National Statistics (ONS), released 28 April 2026, ONS website, supporting methodology article, [National population projections, fertility assumptions: 2024-based](#)