

Statistical bulletin

Past and projected period and cohort life tables: 2022-based, UK, 1981 to 2072

Life expectancy (e), probability of dying (q) and number of persons surviving (l) from the period and cohort life tables, using past and projected mortality data from the 2022-based national population projections (NPPs), for the UK and constituent countries.

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1 . Main points

- Boys born in the UK in 2023 can expect to live on average to age 86.7 years and girls to age 90.0 years based on projections of cohort life expectancy, which take into account future improvements in mortality.
- Cohort life expectancy at birth in the UK is projected to reach 89.3 years for boys and 92.2 years for girls born in 2047, an increase of 2.6 years and 2.2 years, respectively from 2023 levels.
- People aged 65 years in the UK in 2023 can expect to live on average a further 19.8 years for males and 22.5 years for females based on cohort life expectancy, projected to rise to 21.8 years for males and 24.4 years for females by 2047.
- A projected 17.3% of boys and 24.7% of girls born in 2047 in the UK will live to at least 100 years old, an increase from 11.5% of boys and 17.9% of girls born in 2023.
- Our latest projections of cohort life expectancy at birth are 1.0 year lower for males and 0.5 years lower for females born in 2047 than the 2020-based interim projections.

2 . How long can you expect to live for?

Use our interactive calculator to find out average life expectancy and the likelihood of living to aged 100 years for someone of your age and sex, given assumed future mortality improvements.

This is average cohort life expectancy, which does not consider other factors that may affect life expectancy such as lifestyle or health conditions.

Life expectancy calculator

Source: Office for National Statistics

State Pension ages are approximate. For your actual State Pension age, please refer to the [State Pension age timetable \(PDF, 48KB\)](#).

3 . How we project life expectancy

In this release, we publish projections of [period life expectancy](#) and [cohort life expectancy](#) for males and females in the UK, based on the mortality assumptions developed for the 2022-based national population projections (NPPs).

To produce projections of life expectancy we make assumptions about future changes in mortality rates by age and sex by looking at previous trends in mortality data (that is, annual death registrations) and talking to experts on mortality. We run past data on mortality through a model to produce the projection. We tell the model to converge to a specific rate of [annual mortality improvement](#) 25 years after the start of the projection. We produce a principal projection, as well as high and low life expectancy variants (see [Section 5: High and low life expectancy projections](#)).

The 2022-based principal assumption for the long-term mortality improvement rate for most ages is 1.1% and this applies from 2047 onwards. This is slightly lower than the long-term mortality improvement rate of 1.2% used in the 2020-based interim principal projection. This reflects that mortality improvements have been consistently slower for more than 10 years and follows advice from our mortality experts about future rates of improvement. However, there is considerable uncertainty about the prospects for mortality improvement rates in the long term and our expert panel noted that these may remain slow at certain ages, or improvements may increase again, through better access to medical advancements or changes to health and social care policy.

For more information on how we set the mortality assumptions underlying these life tables please see our methodology article [National population projections, mortality assumptions: 2022-based](#).

In this bulletin we report on figures for 2023 as this is the latest year that uses observed mortality data, that is, annual death registrations, in the calculation. Figures for 2024 onwards are based on projections of mortality. Comparisons are made with 2047 as this is the year from which long-term assumptions about mortality improvement are applied.

4 . Period and cohort life expectancy projections

Period life expectancy tells us how much longer (on average) a person of a given age is expected to live based on the mortality rates in a specific year (or group of years). It assumes that these age-specific mortality rates will apply throughout the remainder of a person's life and is produced separately for males and females.

Lower period life expectancy does not mean that a baby born in that year will go on to live a shorter life. Average lifespan is determined by changes in mortality rates across their lifetime; if mortality rates improve in future periods, life expectancy will go up. Projections of period life expectancy are available in the [datasets](#) of this release.

This bulletin focuses on cohort life expectancy, which is seen as a more realistic measure because it accounts for future projected improvements in mortality. Cohort life expectancy is the average number of additional years a person would live allowing for assumed future changes in mortality for their cohort over the remainder of their life. A cohort refers to people with the same year of birth.

Example

Tom is a male born in 1990 in the UK and is turning 33 years old in 2023.

His period life expectancy is 80 years. This is calculated using the male mortality rates for 2023 for age 33 years, age 34 years, age 35 years and so on.

His cohort life expectancy is 84.2 years. This is calculated using the male mortality rate at age 33 years in 2023, age 34 years in 2024, age 35 years in 2025 and so on.

As we project that mortality rates at each age will improve over time, cohort life expectancy is longer than period life expectancy.

A more detailed explanation of the difference between period and cohort life expectancies can be found in our methodology article [Period and cohort life expectancy explained](#).

Figure 1 – Cohort life expectancy is projected to be lower in the 2022-based projection than in the 2020-based projection for males and females

Cohort life expectancy at birth, males and females, selected projection periods, UK, 1981 to 2072, Principal projections

Notes:

1. Unlike period life expectancy, projections of cohort life expectancy will vary for past time periods, because members of these cohorts are still living and assumptions about their future improvements in mortality have changed. Therefore, cohort figures for past years will differ from those in all earlier projections.

[Download the data](#)

Figure 1 shows that boys born in the UK in 2023 can expect to live on average to age 86.7 years, and girls to live to 90.0 years, taking into account projected changes in mortality patterns over their lifetime. This cohort life expectancy at birth is projected to reach 89.3 years for males and 92.2 years for females born in 2047, an increase of 2.6 years and 2.2 years, respectively.

The gap between male and female cohort life expectancy at birth has fallen from 4.4 years in 1981 to 3.4 years in 2023. This reflects improvements in lifestyle, for example, reduction in smoking rates and the working conditions of men over several decades, in addition to health care improvements, such as the prevention and treatment of heart disease. The gap is projected to be 2.5 years by 2072.

Our latest projections of cohort life expectancy at birth are lower than the 2018-based and 2020-based interim projections. The main reason for this is the lower assumed annual improvement rate for mortality in the long-term at most ages.

For more information on how our mortality projections have changed over time, please see Section 5 of our methodology article [National population projections, mortality assumptions: 2022-based](#).

5 . High and low life expectancy projections

Variant projections show how life expectancy might change under different future demographic scenarios. For the principal projection, the long-term annual mortality improvement rate is assumed to be 1.1% for males and females aged 0 to 90 years.

The low life expectancy variant assumes a lower long-term annual mortality improvement of 0.5% for males and females aged 0 to 90 years and results in lower projected life expectancies compared with the principal projection.

The high life expectancy variant assumes a higher long-term annual mortality improvement of 1.5% for males and females aged 0 to 90 years and results in higher projected life expectancies compared with the principal projection.

More information on the variant projections, and how these have changed from the 2018-based projections, is available in Section 6 of our methodology article [National population projections, mortality assumptions: 2022-based](#).

Figure 2 – Cohort life expectancy is projected to increase for the principal projection and both variants, for males and females

Cohort life expectancy at birth: principal projection, high life expectancy variant and low life expectancy variant, males and females, UK, 1981 to 2072

[Download the data](#)

Figure 2 shows that for the high life expectancy variant, cohort life expectancy at birth is 89.0 years for males born in 2023 and 92.1 years for females born in 2023. This is projected to reach 92.2 years for males and 94.7 years for females born in 2047, an increase of 3.2 years and 2.6 years, respectively.

For the low life expectancy variant, cohort life expectancy at birth is 83.2 years for males born in 2023 and 86.8 years for females born in 2023. This is projected to increase by 1.4 years to 84.6 years for males and by 1.2 years to 88.0 years for females born in 2047.

6 . Projected life expectancy at older ages

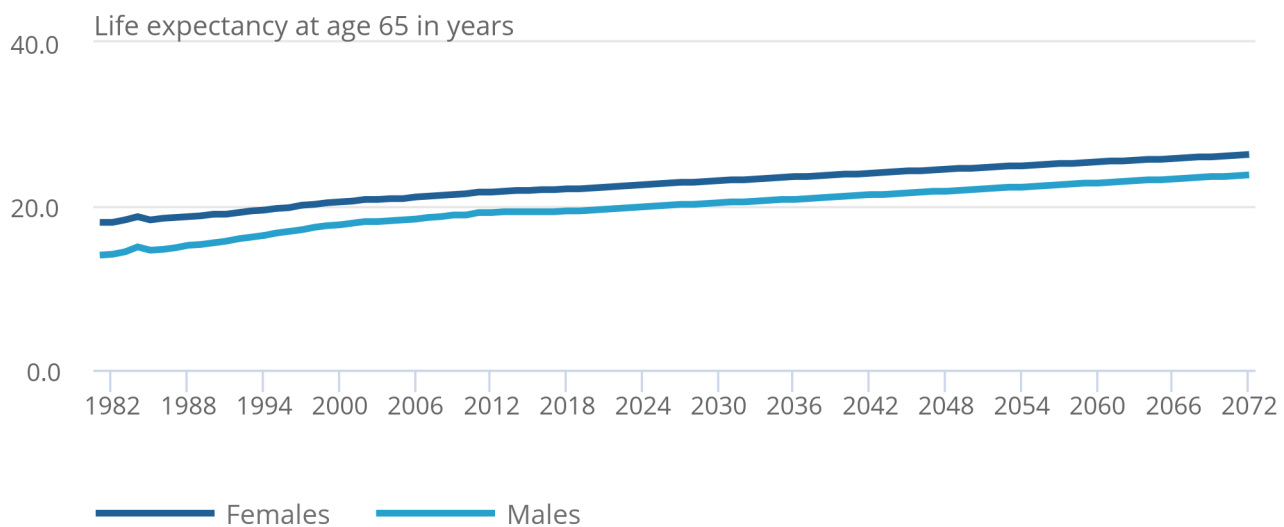
This section looks at the effect of projected mortality rates on cohort life expectancy at older ages and on chances of survival to age 100 years. These allow us to understand the size of the projected population at older ages, which is important for policy making and service planning.

Figure 3: Cohort life expectancy at age 65 years is projected to increase for males and females

Cohort life expectancy at age 65 years, males and females, principal projection, UK, 1981 to 2072

Figure 3: Cohort life expectancy at age 65 years is projected to increase for males and females

Cohort life expectancy at age 65 years, males and females, principal projection, UK, 1981 to 2072



Source: Past and projected period and cohort life tables: 2022-based, UK, 1981 to 2072 from the Office for National Statistics

Notes:

1. There is a small spike in cohort life expectancy at age 65 in 1984. This is related to the uneven distribution of births in the years following the end of the First World War.

Figure 3 shows that people aged 65 years in the UK in 2023 can expect to live on average a further 19.8 years for males and 22.5 years for females. By 2047, males aged 65 years are expected to live for a further 21.8 years and females aged 65 years for 24.4 years. These are projections of cohort life expectancy, which take account of assumed improvements in mortality rates at older ages into the future.

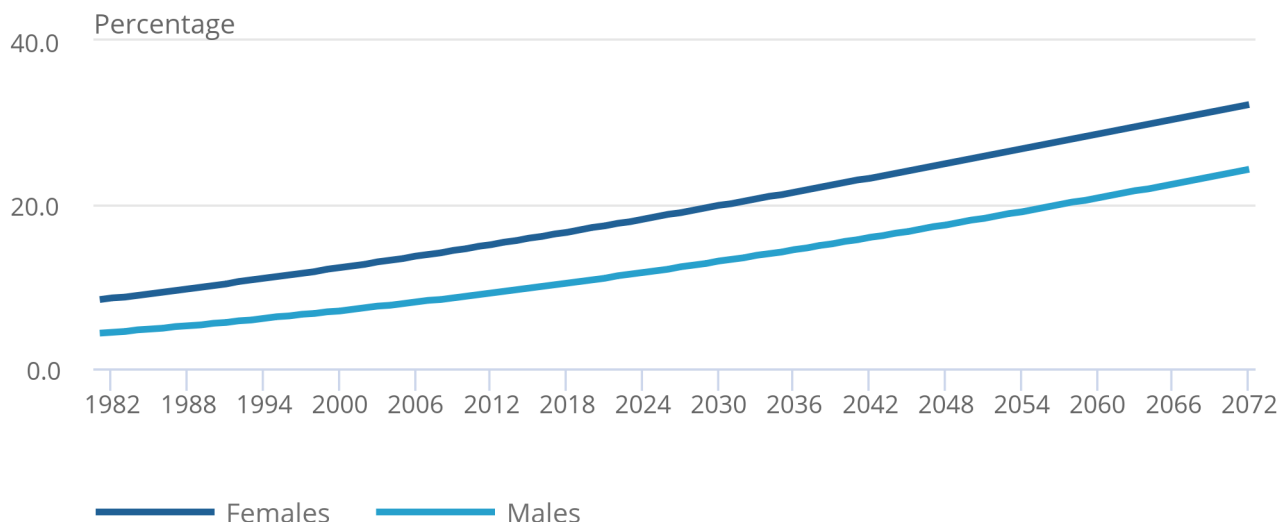
Mortality projections also allow us to analyse the probability of individuals from each cohort surviving to reach a particular age. To do this we use the l_x (number of people surviving to an exact age x) datasets, which are published as part of this release.

Figure 4: The proportion of newborns expected to live to age 100 years is projected to increase over time

Percentage of newborns expected to survive to age 100 years, by year of birth, males and females, principal projection, UK, 1981 to 2072

Figure 4: The proportion of newborns expected to live to age 100 years is projected to increase over time

Percentage of newborns expected to survive to age 100 years, by year of birth, males and females, principal projection, UK, 1981 to 2072



Source: Past and projected period and cohort life tables: 2022-based, UK, 1981 to 2072 from the Office for National Statistics

Figure 4 shows that 11.5% of boys and 17.9% of girls born in 2023 are expected to live to at least 100 years. This is projected to increase to 17.3% of boys and 24.7% of girls born in 2047 living to celebrate their centenary. The proportion of babies projected to reach this milestone has increased significantly over time, although our 2022-based projections are slightly lower than our 2020-based interim projections, where boys and girls born in 2047 were projected to have a 21.5% and 27.7% chance, respectively of surviving to age 100 years.

7. Projected life expectancy across the UK countries

Life expectancy has historically differed across and within the four nations of the UK. England has had the highest life expectancy at birth and Scotland the lowest. Life expectancy at birth has been similar in Wales and Northern Ireland.

Projections are produced separately for England, Wales, Scotland and Northern Ireland.

Figure 5 - Differences in life expectancy at birth within the UK are projected to narrow

Cohort life expectancy at birth for UK constituent countries, males and females, Principal projection, 1981 to 2072

[Download the data](#)

Figure 5 shows that cohort life expectancy at birth for boys in 2023 across the UK nations is projected to be:

- 86.9 years in England
- 86.6 years in Northern Ireland
- 86.3 years in Wales
- 84.9 years in Scotland

Cohort life expectancy at birth for girls in 2023 across the UK nations is projected to be:

- 90.3 years in England
- 89.9 years in Northern Ireland
- 89.5 years in Wales
- 88.5 years in Scotland

The gap in cohort life expectancy between the nations is projected to narrow over time as we assume the same long-term annual mortality improvement rate for each of the four nations.

As well as variation between the UK countries, life expectancy at birth varies [subnationally](#) and is affected by other factors including [levels of deprivation](#).

8 . Data on past and projected period and cohort life tables

[Expectation of life \(ex\), principal projection, UK](#)

Dataset | Released 14 February 2025

Period and cohort expectation of life in the UK using the principal projection by single year of age 0 to 100.

[Expectation of life \(ex\), high life expectancy variant, UK](#)

Dataset | Released 14 February 2025

Period and cohort expectation of life in the UK using the high life expectancy variant, by single year of age 0 to 100.

[Expectation of life \(ex\), low life expectancy variant, UK](#)

Dataset | Released 14 February 2025

Period and cohort expectation of life in the UK using the low life expectancy variant, by single year of age 0 to 100.

[Life tables, principal projection, UK](#)

Dataset | Released 14 February 2025

Life tables for the UK, period and cohort, from the principal projection, single year of age 0 to 100. Historical data before 1961 are not accredited official statistics.

[Mortality rates \(qx\), principal projection, UK](#)

Dataset | Released 14 February 2025

Period and cohort mortality rates (qx) for the UK using the principal projection, by single year of age 0 to 100.

[Numbers surviving at exact age \(lx\), principal projection, UK](#)

Dataset | Released 14 February 2025

Period and cohort numbers surviving at exact age (lx) in the UK using the principal projection, by single year of age 0 to 100.

9 . Glossary

Period life expectancy

The average number of additional years a person would live if he or she experienced the age-specific mortality rates of a given area and time period for the rest of their life.

Cohort life expectancy

The average number of additional years a person would live considering assumed future changes in mortality for their cohort over the remainder of their life. A cohort is a group of people with the same year of birth.

Mortality improvement rate

The percentage change in the age-specific mortality rate from one year to the next.

Number of persons surviving (lx)

The number of survivors to exact age x of 100,000 live births of the same sex who are assumed to be subject throughout their lives to the mortality rates experienced in the year or years to which the life table relates.

Probability of death (qx)

The probability that a person aged x exactly will die before reaching age (x + 1), that is the mortality rate between age x and (x+1).

10 . Data sources and quality

Period and cohort life tables show historical and projected statistics by single year of age and sex, from 1981 to 2072. They are usually produced biennially for the UK, based on assumptions for future mortality from the national population projections (NPP). This release relates to the [2022-based national population projections](#) published on 28 January 2025. It provides life tables for the principal population projection and two variant mortality assumptions. This release contains tables of life expectancy (ex), probability of death (qx) and numbers of persons surviving (lx)

Further explanation and guidance on how to use the data published in the past and projected period and cohort life tables is available in our [Guide to interpreting past and projected period and cohort life tables](#).

A more detailed explanation of the difference between period and cohort life expectancies can be found in our [Period and cohort life expectancy explained](#).

Mortality projections are based largely on extrapolation of past trends in rates of mortality improvement. For the 2022-based projections, we have used a new method for the mortality assumption setting, using an Age-Period-Cohort model. The model uses observed calendar year data from 1973 to 2022 to project future mortality rates by age and sex. The model is constrained to converge to a long-term rate of annual mortality improvement in the 25th year of the projection. This long-term rate is informed by expert advice. The long-term rate is assumed to be the same for males and females in all four UK countries. All future years' mortality improvements by age beyond the 25th year are assumed to be at the level of the long-term rate for that age.

In producing the past and projected period and cohort life tables we have used observed population and deaths data for all years up to 2023, and projected population and deaths data for 2024 onwards.

Information on the assumption setting process is available in [National population projections, mortality assumptions: 2022-based](#) and our methodology article [Prospective new method for setting mortality assumptions for national population projections, UK: January 2023](#).

For more information on the 2022-based national population projections and assumption setting, please see our methodology article on [Background, methodology and assumption setting](#).

Our [National life tables Quality and Methodology Information](#) report and our [National population projections Quality and Methodology Information report](#) contain important information on:

- the strengths and limitations of the data and how it compares with related data
- uses and users
- how the output was created
- the quality of the output including the accuracy of the data

Accredited official statistics

These [accredited official statistics](#) were independently reviewed by the [Office for Statistics Regulation](#) in April 2011. They comply with the standards of trustworthiness, quality and value in the [Code of Practice for Statistics](#) and should be labelled “accredited official statistics”.

11 . Related links

More information on population projections and life expectancies can be found in the following publications.

[National life tables, life expectancy in England and Wales: 2021 to 2023](#)

Bulletin | Released 23 October 2024

Trends in period life expectancy, a measure of the average number of years people will live beyond their current age, analysed by age and sex

[National population projections: 2022-based](#)

Bulletin | Released 28 January 2025

The potential future population size of the UK and its constituent countries. These statistics are widely used in planning, for example, fiscal projections, health, education and pensions.

[Mortality in England and Wales: past and projected trends in average lifespan](#)

Article | Released 5 July 2022

We look at three measures of average lifespan: life expectancy at birth, median age at death and modal age at death to understand patterns of mortality from 1841 to 2020 in England and Wales. We also consider future prospects for mortality using projections of life expectancy for 2021 to 2070 based on 2020-based interim projections.

12 . Cite this statistical bulletin

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