

# Marital status population projections QMI

Contact:  
projections@ons.gsi.gov.uk


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# 1 . Methodology background

<b>National Statistic</b>	
<b>Frequency</b>	Ad-hoc
<b>How compiled</b>	Based on third party data
<b>Geographic coverage</b>	England and Wales
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## 2 . Executive summary

This report is part of a rolling programme of quality and methodology information reports being introduced by the Office for National Statistics (ONS). Quality and Methodology Information reports are overview notes, which pull together important qualitative information on the various dimensions of quality as well as providing a summary of methods used to compile the output.

[Marital status population projections](#) covering both legal marital status and cohabitation, are [National Statistics](#). They provide projections of the resident population who are single, married, widowed, divorced and those cohabiting. They are published by sex and 5-year age groups for England and Wales combined.

These projections do not cover civil partnerships or same sex cohabitation and only relate to opposite sex partnerships, as data on same sex relationships are currently not sufficient to be used in the current methodology. The marital status projections are produced on an ad hoc basis and prior to 2006 were produced by the Government Actuary's Department. Currently ONS has no plans to update the 2008-based marital status projections.

The population projections are not forecasts and do not attempt to predict the impact that future government policies, changing economic circumstances or other factors (whether in the UK or overseas) might have on demographic behaviour. They simply provide a breakdown of the projected population by marital status by age that would result if the underlying assumptions about future marriage, divorce and cohabitation were to be realised.

One of the main uses of these projections is as an input to the projections of the [number and type of households in England](#) produced by [Department for Communities and Local Government](#). Marital status projections are also used by the Department for Work and Pensions to cost various aspects of the future social security programme. They are also of interest to other government departments, local government, commercial companies, special interest groups, academia and the general public.

This report provides users with information on the usability and fitness for purpose of these statistics. This report contains the following sections:

- Output quality
- About the output
- How the output is created
- Validation and quality assurance
- Concepts and definitions
- Other information, relating to quality trade-offs and user needs
- Sources for further information or advice

## 3 . Output quality

(This report provides a range of information that describes the quality of the data and details any points that should be noted when using the output.)

We have developed [Guidelines for Measuring Statistical Quality](#); these are based upon the five European Statistical System (ESS) Quality Dimensions. This report addresses the quality dimensions and important quality characteristics, which are:

- relevance
- timeliness and punctuality
- comparability and coherence
- accuracy
- output quality trade-offs
- assessment of user needs and perceptions
- accessibility and clarity

More information is provided about these quality dimensions in the following sections.

## 4 . About the output

### Relevance

(The degree to which statistical outputs meet users' needs.)

This product is the official set of [Marital status population projections for England and Wales](#). It provides projections of the future population by legal marital status and (opposite sex) cohabitation for a period of 25 years into the future by 5-year age groups and sex for England and Wales.

In terms of legal status, separated persons are considered to be married and cohabiting persons retain their legal marital status whether that is single, married, widowed or divorced.

The projections refer to the mid-year (30 June) usually resident population; the [Quality and Methodology Information for population estimates by marital status](#) provides further information on the definition of the usually resident population.

Due to the inherent uncertainty of demographic behaviour, any set of projections is likely to differ, to a greater or lesser extent, from estimates produced in the future when final data become available. To give users of the projections an indication of this uncertainty, a number of [variant population projections](#) are produced, based on alternative assumptions of marriage, divorce and cohabitation. These variants are all constrained to the principal [national population projection](#) and therefore do not take account of any demographic interactions that could occur. For example, if marriage rates were higher this might lead to an increase in fertility rates. However, these projections do not attempt to factor this in.

Since the 2006-based set, population projections by marital status have included an adjustment to account for both legal marriages of residents of England and Wales that take place abroad and marriages to overseas residents that take place in England and Wales. The 2003-based projections provided a marriages-abroad variant.

One of the main uses of these projections is as an input to the [projections of the number and type of households in England](#) produced by Department for Communities and Local Government. Marital status projections are also used by the Department for Work and Pensions to cost various aspects of the future social security programme. They are also of interest to other government departments, local government, commercial companies, special interest groups, academia and the general public.

Projections for other geographic areas are not produced, due to the data required either not being available for these geographies or not of a sufficient quality.

There is user demand for estimates and projections of cohabitation of same sex couples and civil partnerships. At present, population estimates (and projections) by partnership status (legal or cohabiting) do not separately identify people in same sex cohabiting couples or civil partners. These population sub-groups are currently included in the population "not cohabiting", but not separately identified. The main reason for this is that these populations are difficult to estimate accurately, particularly by single year of age and sex as required by the current methodology.

Any estimate will also be affected by response errors; for example, surveys such as the Labour Force Survey and Annual Population Survey only collect information spontaneously volunteered by same sex couples. It is therefore the case that same sex cohabiting couples and civil partners (although not separately identified) will be included in one of the following population categories: single and not cohabiting, separated and not cohabiting, divorced and not cohabiting, or widowed and not cohabiting. The category will depend upon their previous legal marital status.

## **Timeliness and punctuality**

(Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.)

Marital status population projections are not published to a fixed timetable, but are published as required by user need. Sets of projections have been published based on the mid-1992, mid-1996, mid-2003, mid-2006 and the mid-2008 marital status population estimates. Currently the Office for National Statistics has no plans to update the 2008-based marital status projections so the published data are becoming less timely. When a release is planned the release date would be announced on the [GOV.UK release calendar](#), as soon as possible.

For more details on related releases, the GOV.UK release calendar provides 12 months' advanced notice of release dates. If there are any changes to the pre-announced release schedule, public attention will be drawn to the change and the reasons for the change will be explained fully at the same time, as set out in the [Code of Practice for Official Statistics](#).

## 5 . How the output is created

### Legal marital status projections

Marital status population projections use the latest available official population estimates by legal marital status (including marriages abroad) as their base; information about these estimates can be found in the [Quality and Methodology Information for population estimates by marital status report](#).

Legal marital status projections are produced using a component methodology that is based on assumptions of underlying marriage, remarriage and divorce rates. They have been produced using the multi-dimensional dynamic projection model [LIPRO](#) developed by the [Netherlands Interdisciplinary Demographic Institute \(NIDI\)](#).

The model requires assumptions to be made for all of the possible transitions between marital statuses and the marital status distributions for both deaths and net migration. The model further satisfies a number of consistency constraints. These include internal "two-sex" constraints (for example, that the number of men divorcing each year must equal the number of women divorcing) and the external constraint that the results of the legal marital status projection are fully consistent with the results of the latest national (age and sex) principal projection for England and Wales, so constraints are included for migration and deaths.

The assumptions used as inputs into the LIPRO model are constructed using an exponentially smoothed model of the recent trends in marriage and divorce rates calculated using registrations data; more details about the assumptions can be found in the documentation published with the marital status population projections.

### Cohabitation projections

Details about methods used to produce the cohabitation estimates used as a basis for these projections can be found in [Estimating the cohabiting population by Ben Wilson](#).

Ideally, projections of existing in fact marital status (cohabitation) would also be produced using a component methodology that includes transitions into and out of cohabitation within such a model. However, whereas detailed historical data on transitions between legal marital status categories are readily available from registration data, data on cohabitation formation and dissolution are very limited.

Theoretically, estimates could be made from sample surveys; however, in practice, the data are not of sufficient quality for this purpose. In particular, sample sizes are far too small to produce reliable data for individual ages. As the model used for the legal marital status projections is a dynamic model, assumptions made about cohabitation transitions would affect the results for legal marital status. It would therefore be likely that the inclusion of necessarily speculative data on cohabitation would actually reduce the quality of the legal marital status projections.

Instead, assumptions have been made about the proportions cohabiting in each age, sex or legal marital status group and these have been applied to the results of the legal marital status projections. These proportions change over the projection period; more details about this can be found in documentation published with the marital status population projections.

## Variant projections

Variant projections are produced using the same method to that previously described but the assumptions made about future marriage and divorce rates, or cohabitation proportions, gradually diverge from those assumed for the principal projection. The level of divergence from the principal assumptions can vary for different components reflecting where there is greater uncertainty in the trend or if it is suspected a turning point has been reached. The level of divergence applied for each variant is discussed with external experts and reviewed by the statistician responsible for the projections.

## 6 . Validation and quality assurance

### Accuracy

(The degree of closeness between an estimate and the true value.)

Marital status population projections use the latest available official population estimates as their base year and are inevitably dependent on the accuracy of these estimates. The accuracy of the legal marital status estimates are discussed in the Quality and Methodology Information for population estimates by marital status. The base estimates for the cohabitation projections are based on survey estimates and are therefore subject to survey error.

It is highly unlikely that a set of projections would be entirely correct in the future, as all the assumptions made about future marriage, divorce and cohabitation rates to produce the projections would have to be realised. The assumptions made are based largely on extrapolation of past trends and are discussed with a small panel of experts to sense-check the assumptions before production.

Information about the assumptions is published with the Marital status population projections results. Changes in both the economy and individual, family and household behaviour can alter trends and therefore affect the accuracy of the projections. This uncertainty is indicated by producing a number of variant projections in addition to the principal projection. These variants give alternative scenarios according to high or low assumptions about the future trajectories of marriage, divorce and cohabitation. However, each of these variant projections is constrained to the principal national population projection and will therefore also be subject to the uncertainty associated with this projection. This is discussed in the [Quality and Methodology Information for national population projections](#).

Comparing the 2008-based projections for mid-2011 to 2011 Census results for 27 March 2011 published December 2012, shows that the 2008-based principal legal marital status projection has tended to over-project the proportion of single (never married) people. Three years into the projection period (mid-2011) the projected population aged 16 and over is only 0.5% different to 2011 Census results. Whereas, the projected figures for single, married, divorced or widowed people are around 3% different, see the table 2008-based legal marital status projections compared with 2011 Census results.

This equates to an error in the projection of around 800,000 fewer married people and 500,000 more single people than the 2011 Census results. These comparisons are approximate as census data include a category for civil partnerships that is not available in the projections and for the purpose of this comparison these people have been included as being single.

## 2008-based legal marital status projections compared with 2011 Census results

England and Wales					Millions
Population aged 16 and over	2011 Census 27 March 2011	2008-based marital status projections 30 June 2011	Difference	Percentage difference	
Total	45.5	45.3	-0.2	-0.5%	
Single	15.8	16.4	0.5	3.4%	
Married	22.4	21.6	-0.8	-3.5%	
Widowed	3.2	3.1	-0.1	-2.6%	
Divorced	4.1	4.2	0.1	2.6%	

### Notes:

1. The legal marital status projections do not include a category for people in civil partnerships and 2011 Census results do. For the purpose of this comparison persons shown in civil partnerships in census data (KS103EW) have been included as single.

## Comparability and coherence

(Comparability is the degree to which data can be compared over time and domain, for example, geographic level. Coherence is the degree to which data that are derived from different sources or methods, but refer to the same topic, are similar.)

Each set of Marital status population projections is unique, comprising assumptions made using the best information available at that point in time. Thus each new set of projections, using the most up-to-date background data available, supersedes the previous set. Although the results of subsequent projections can be compared, this will not be comparing like with like but instead observing what effect the most recent demographic trends, when built into projections for the future, will have on the expected marital status of the future population of the country.

Marital status population projections are used both within, and outside, government as the definitive set of marital status projection figures for England and Wales. The projections are considered the authoritative set of information on future possible population size described by marital status. We are not aware that population projections by marital status are produced by anyone else. The population projections by marital status are based on the latest set of [mid-year marital status population estimates](#) available and constrained to the [national population projections](#).

Mid-year marital status population estimates are occasionally revised to incorporate improved data sources. Such new data sources are incorporated into the next set of projections but the marital status projections are not revised. Therefore the latest available estimates published for the base year may differ from the figures used as the base of the marital status projections.

The legal marital status estimates used as the population base for the 2008-based projections are based on the marital status population estimates, published November 2009; these have been adjusted to be consistent by age and sex with the mid-2008 population base used in the national population projections, published October 2009. This projection base reflects indicative results of phase 1 of the Migration Statistics Improvement Programme. The mid-2008 population estimates were subsequently revised on 13 May 2010 with the final changes from phase 1 of the Migration Statistics Improvement Programme. These projections do not take account of these final phase 1 changes.

In contrast, cohabitation estimates are not published regularly and the base estimate used in the projections will not have been revised.

## 7 . Concepts and definitions

(Concepts and definitions describe the legislation governing the output and a description of the classifications used in the output.)

The population projections by marital status are consistent with the standard UN definition for population estimates, which is based upon the concept of usual residence and includes people who reside in the country for at least 12 months, whatever their nationality.

Visitors and short-term migrants (who enter or leave the country for less than 12 months) are not included. Members of Her Majesty's armed forces stationed in England and Wales are included at their place of residence but those stationed outside England and Wales are excluded. Members of the US armed forces stationed in England and Wales are included. Prisoners are regarded as usually resident at an institution if they have served 6 months or more of a custodial sentence.

The population projections by marital status refer to the mid-year (30 June) usually resident population, and are available for England and Wales by sex and 5-year age group.

The population projections by legal marital status categorise adults as being either single, married, divorced or widowed. Separated couples are considered to be married and cohabiting couples retain their individual legal marital status whether that is single, married, widowed or divorced. Population estimates and projections for the population by civil partnership status are not available; those in civil partnerships retain their previous marital status, whether it is single, divorced or widowed. Those aged under 16 years are assumed to be single.

The population projections by cohabitation status relate to opposite sex co-residential cohabiting adults aged 16 and over, these exclude same sex cohabiting couples.

At present, population estimates (and projections) by partnership status (legal or cohabiting) do not separately identify people in same sex cohabiting couples or civil partners. These population sub-groups are currently included in the population "not cohabiting", but are not separately identified.

## 8 . Other information

### Output quality trade-offs

(Trade-offs are the extent to which different dimensions of quality are balanced against each other.)

This is an occasional output and in the past it has been necessary to delay production of the projections until data become available. For example, the 2006-based marital status projections were not produced until marital status estimates were published that included an adjustment for marriages abroad. This was because it was felt that the numbers of marriages taking place abroad had increased to the level that if they were included this would adversely affect the accuracy of the projections.

### Assessment of user needs and perceptions

(The processes for finding out about users and uses and their views on the statistical products.)



Our research into improving population statistics outputs, including recent progress and plans for future research can be found in the [Population statistics research update](#). Formal consultations are carried out through our [Consultation Hub](#).

## 9 . Sources for further information or advice

### Accessibility and clarity

(Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the release details, illustrations and accompanying advice.)

The most recent [Population projections by marital status](#) are available online from the archived version of the Office for National Statistics (ONS) website. Future versions will be published to the [population projections pages of the main ONS website](#).

The projections can be downloaded in Microsoft Excel format and are available from the website page for marital status population projections. Also available are graphs and textual background information on both the [principal projection](#) and [variant projections](#).

Any additional enquiries regarding the population projections by marital status can be made via email to [Projections@ons.gsi.gov.uk](mailto:Projections@ons.gsi.gov.uk), or by telephone +44 (0)1329 444652. More detailed data, not published on the web, are available on request; for example, projections by single year of age. Metadata describing the limitations of these detailed data are provided with each individual request.

Our recommended format for accessible content is a combination of HTML webpages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. Our website also offers users the option to download the narrative in PDF format. In some instances other software may be used, or may be available on request. Available formats for content published on our website but not produced by us, or referenced on our website but stored elsewhere, may vary. For further information please refer to the contact details at the beginning of this report.

For information regarding conditions of access to data, please refer to the following links:

- [Terms and conditions](#) (for data on the website)
- [Copyright and reuse of published data](#)
- [Pre-release access \(ended from 1 July 2017\)](#)
- [Accessibility](#)
- Access to microdata via the [Virtual Microdata Laboratory](#)

### Useful links

The marital status population projections were assessed along with other population projections and estimates by the UK Statistics Authority for their compliance with the Code of Practice for Official Statistics. The findings were published in [Report number 103 on 20 April 2011](#).

- [All releases of marital status population projections for England and Wales](#)
- [All releases of population estimates by marital status](#)
- [All releases of cohabitation estimates England and Wales](#)
- [All population projections releases for England and Wales](#)