

Mid-year Population Estimates by Marital Status

Methodology to adjust mid-year population estimates by marital status for marriages abroad

May 2009

Contents

1. Introduction	3
2. Background	3
3. Overview of methods used to adjust the population estimates by marital status.....	4
4. Estimating the total number of England & Wales residents who married abroad and overseas residents who married in England & Wales.....	5
5. Estimating gender distributions.....	7
6. Estimating age distributions.....	7
7. Estimating previous marital status.....	8
8. Method used to adjust the previously published population estimates by marital status 2002-2007	8
9. Dissemination of the estimates.....	9
10. Further developments	9
11. Contacts.....	10

Methodology for adjusting the published England & Wales population estimates by marital status for marriages abroad: 2002-2007

1. Introduction

- 1.1 This document describes the methods used to adjust the published population estimates by marital status to account for marriages to residents of England & Wales that take place abroad, and for marriages to overseas residents that take place in England & Wales. The adjusted mid-2002 to mid-2007 marital status population estimates for England & Wales were published on the National Statistics website on 30th April 2009.

2. Background

- 2.1 The Office for National Statistics (ONS) publishes annual mid-year population estimates by legal marital status. These estimates show the number of usually resident people in England & Wales who are single, married, divorced and widowed, and are provided by single year of age and sex. Census estimates of the resident population by marital status are rolled forward, to provide updated estimates in subsequent years, using ONS statistics on marriage, divorce, birth and death registrations collected through the General Register Office. They also take account of people who enter or leave the country with the intention of staying for a period of at least twelve months, using estimates obtained from the International Passenger Survey (IPS) and other data sources.
- 2.2 Current ONS statistics on marriage registrations in England & Wales cover only those marriages actually occurring in England & Wales. However, some people who are usually resident in England & Wales go abroad to marry, so are not included in the marriage registrations, and some people who are overseas residents marry in England & Wales (marriage tourists) and are included in marriage registrations. These people will be incorrectly counted in the marital status estimates which rely only on the marriage registrations in England & Wales. This is likely to lead to underestimation of the married population between Censuses and overestimation of other statuses.
- 2.4 ONS has recently conducted research¹ to estimate the number of marriages to UK residents taking place outside the UK and the number of marriages to overseas residents taking place within the UK. This work concluded that:
- Data from the IPS indicated that there were considerably more marriages to UK residents taking place abroad than marriages to overseas residents in the UK, each year between 2002 and 2007.
 - All sources indicate that the number of marriages taking place abroad is increasing over time.

¹ Office for National Statistics (2008) Population Trends 133, Report: Marriages abroad 2002-2007. Available at: http://www.statistics.gov.uk/downloads/theme_population/PT133_part2.pdf

- About 90 per cent of marriages abroad involving UK residents were to residents of England & Wales;
- The IPS estimates indicated that more male residents in the UK marry abroad than female residents; and
- Marriages abroad were concentrated in the 25-34 year old age-group.

2.5 These marriages abroad are likely to have resulted in an underestimate of the UK married population by approximately 0.3 per cent per annum between 2002 and 2007. As a consequence, work has been carried out to adjust the published marital status population estimates for 2002-2007 to allow for these additional marriages. Marriages of England & Wales residents abroad occurring prior to mid-2001 will already be included within the published marital status estimates as they will have been recorded in the 2001 Census.

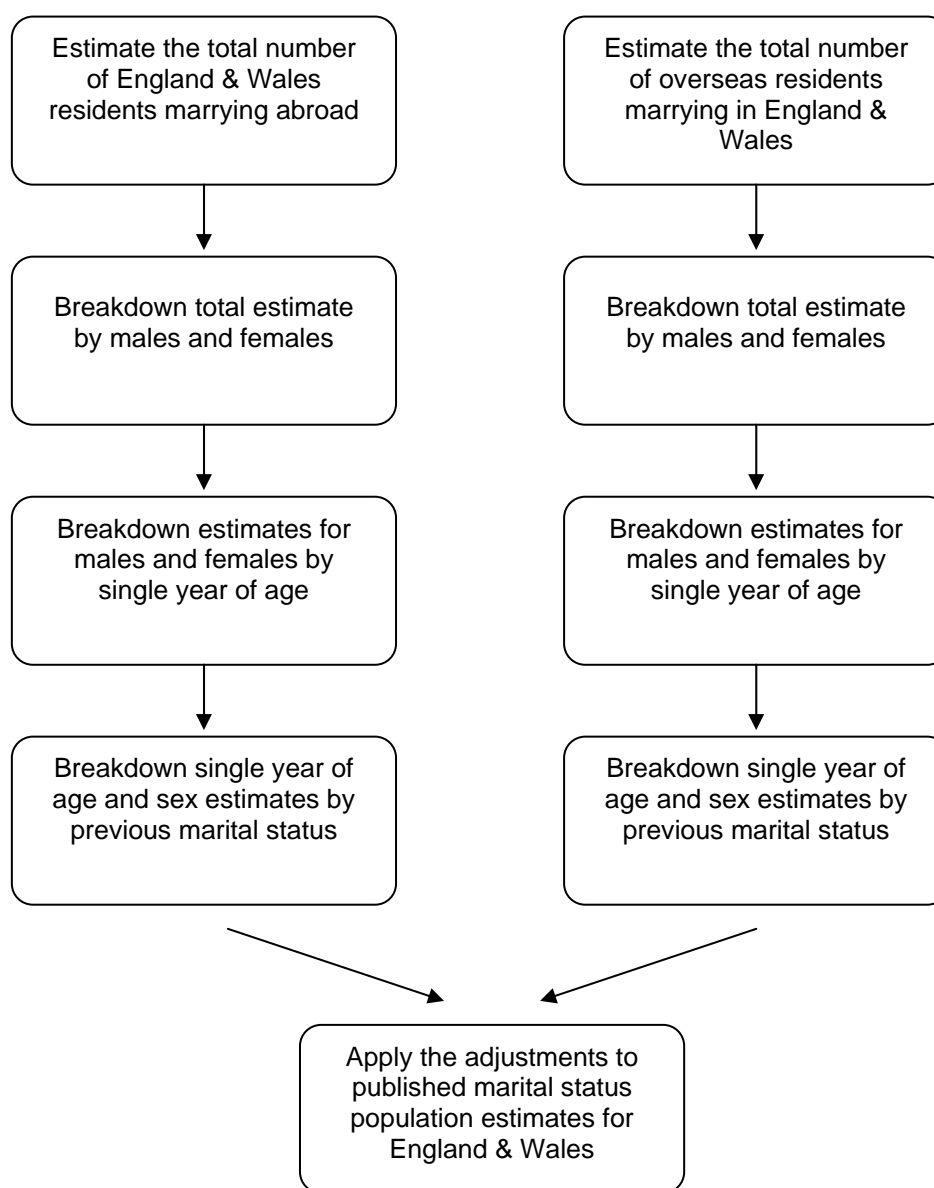
The adjustments are only made for England & Wales residents travelling outside of the UK to get married; the assumption is made that the number of England & Wales residents marrying in Scotland and Northern Ireland is equal to the number of Scotland and Northern Ireland residents marrying within England & Wales.

2.6 The marital status population estimates for Scotland and Northern Ireland, produced by the General Register Office for Scotland (GROS) and the Northern Ireland Statistics and Research Agency (NISRA) respectively, remain unaffected and have not been adjusted for marriages abroad.

3. Overview of methods used to adjust the population estimates by marital status

3.1 In order to make the adjustments, estimates of England & Wales residents who have married abroad and overseas residents who have married in England & Wales are required by age, sex and previous marital status. Figure 1 shows the main stages of the method. The starting point is to derive an estimate for the total number of residents of England & Wales who have married abroad and the total number of overseas residents who have married in England & Wales during the reference year period. These estimates are then broken down by sex, single year of age and previous marital status, and are added or subtracted to the existing population estimates by marital status for each age and sex subgroup.

Figure 1: Summary of method for adjusting population estimates by marital status



4 Estimating the total number of England & Wales residents who married abroad and the total number of overseas residents who married in England & Wales

4.1 The International Passenger Survey (IPS) is used to estimate the total number of England & Wales residents who travelled abroad to marry and also the total number of overseas residents who travelled to England & Wales to marry.

4.2 The IPS is a multi-purpose survey carried out at the major UK air and sea ports as well as the Channel Tunnel and is used widely by ONS to produce estimates of travel, tourism and migration. UK residents returning from abroad and overseas

residents coming to the UK are both asked the question ‘what was/is the main reason for your visit?’ Since 2002, ‘Getting married’ has been included as a response category to the question in addition to holiday or pleasure, visiting friends or relatives, business, work or study. Other demographic information such as age and sex is also collected during the interview.

- 4.3 Estimates derived from the IPS are subject to sampling error. This is the difference between the estimate derived from a sample and the true population value and arises because not every person entering or leaving the UK is interviewed in the survey. The standard error is a measure of how much a sample estimate is likely to differ from the true value.

More information about the IPS can be found at:

http://www.statistics.gov.uk/ssd/surveys/international_passenger_survey.asp

- 4.4 Estimates of the number of people who have travelled abroad to marry are made directly using IPS data for each year. The ONS population estimates by marital status are produced as at 30th June each year. Therefore, to adjust the estimates to include marriages abroad, estimates of the number of people who have married abroad between the previous mid-year point to the current mid-year point is used.
- 4.5 The IPS dataset is edited prior to estimation to remove records of those respondents whose usual residence is Scotland and Northern Ireland (estimates are required only for England & Wales residents marrying abroad).
- 4.6 The method used to calculate the reciprocal flow is very similar. IPS data are used to estimate the number of overseas residents coming to the UK who state ‘marriage’ as their main reason for travel. The ‘reason for visit’ question is asked of overseas residents when they arrive in the UK, and therefore the responses relate to an intention to get married, which may or may not be realised. However, the assumption is made that all intentions are realised. Those travelling to Scotland and Northern Ireland for marriage are excluded from the dataset.
- 4.7 It is estimated there are between approximately 40,000 to 80,000 England & Wales residents going abroad to get married each year and between 6,000 to 10,000 overseas residents getting married in England & Wales. Table 1 shows the estimated totals for each year 2002-2007.

Table 1: Estimated number of England & Wales residents marrying abroad and overseas residents marrying in England & Wales, mid-2002 to mid-2007

<i>Thousands</i>		
Mid-year	EW residents marrying abroad	Overseas residents marrying in EW
2002	61	8
2003	55	10
2004	44	8
2005	54	6
2006	65	10
2007	82	6

5. Estimating gender distributions

- 5.1 IPS estimates are available for males and females separately for both England & Wales residents marrying abroad and overseas residents marrying in England & Wales. However, sample counts for each year are correspondingly smaller than for the total estimates and associated standard errors are higher. This is particularly the case for females who make up a smaller proportion of those going abroad to get married. To reduce the size of the standard errors, a three year non-weighted average of the IPS estimates by sex is taken for each year (the reference year and previous two years) and the proportion of males and females from this average is calculated.
- 5.2 The total estimate of England & Wales residents who married abroad, for the reference year, is split using the gender proportions calculated from the three year average of England & Wales residents who married abroad. Similarly, the total estimate of overseas residents who married in England & Wales is split by gender using the gender proportions calculated from the three year average of the number of overseas residents who married in England & Wales.

6. Estimating age distributions

- 6.1 The IPS data provide some age information on those marrying abroad (in the form of seven broad age groups). However, ONS population estimates by marital status are published by single year of age (to age 89, 90+) and sex, and consequently, the estimates of marriages abroad are also required by single year of age and sex. An alternative 'proxy' age distribution is therefore required.
- 6.2 Comparisons have been made between the distribution of marriage registrations data for England & Wales by single year of age and the IPS estimates by broad age-group for both England & Wales residents who married abroad and also for overseas residents who married in England and Wales. The age distributions were found to be very similar.

- 6.3 The proxy age-distributions are therefore calculated from marriage registrations data for England & Wales; these marriage registrations data by single year of age, sex, and previous marital status are used in compiling the standard marital status population estimates (see section 2.1).
- 6.4 Single year of age distributions are calculated for each year 2002-2007, for males and females separately, and are applied to both the IPS estimates of England & Wales residents who married abroad and overseas residents who married in England & Wales. It is assumed that the age-profile of England & Wales residents who married in England & Wales is the same as the age-profile of England & Wales residents who married abroad and overseas residents who married in England & Wales.

7. Estimating previous marital status

- 7.1 The previous marital status of England & Wales residents who marry abroad and overseas residents who marry in England & Wales is required in order to adjust the non-married categories of the marital status population estimates. This information is not available with the IPS data so the distribution for previous marital status is calculated using England & Wales marriage registrations data for the relevant year (also used for calculating the age distributions). Distributions are calculated for males and females separately, and by single year of age. These distributions are applied to both the estimates for England & Wales residents who married abroad and overseas residents who married in England & Wales by age and sex.

8. Method used to adjust the previously published marital status population estimates 2002-2007

- 8.1 The calculation for applying the adjustments is applied as follows:
- for year 2002, the number of overseas residents who married in England & Wales is **subtracted** from the number of England & Wales residents who married abroad by age, sex and previous marital status. This gives the ‘net’ number of people by the required population subgroups with which the published marital status population estimates are adjusted. The calculation of the ‘net’ figure for years 2003-2007 is different (see section 8.2).
 - the ‘net’ number of people who married abroad is **added** to the **married** category of the existing 2002 marital status estimates
 - the ‘net’ number of people who married abroad whose previous marital status is single is **subtracted** from the **single** category of existing marital status estimates;
 - the ‘net’ number of people who married abroad whose previous marital status is divorced is **subtracted** from the **divorced** category of existing marital status estimates

- the ‘net’ number of people who married abroad whose previous marital status is widowed is **subtracted** from the **widowed** category of existing marital status estimates. This produces marital status population estimates adjusted for ‘marriages abroad’ for the year.
- the adjusted marital status estimates are **constrained** to the ONS mid-year population estimates for England & Wales by single year of age and sex.
- the above process is repeated for each year 2003-2007 in sequence.

8.2 For each of the years 2003 to 2007, the cumulative impact due to the number of people who married abroad in previous years has to be taken into account. Therefore the total ‘net’ adjustment for the number of people marrying abroad for these years is the sum of the ‘net’ number of people marrying in the reference year and in the previous years (going back to 2002). Data for previous years are aged-on to the reference year point before summation is carried out. For example, the existing marital status population for mid-2004 is adjusted for the ‘net’ number of people who married abroad in mid-2004, mid-2003 and mid-2002.

8.3 **Appendix 1** summarises the impact of the adjustments on the previously published marital status population estimates.

9. Dissemination of the estimates

9.1 The revised marital status population estimates mid-2002 to mid-2007 which incorporate the adjustment for marriages abroad were published on the National Statistics website on 30th April 2009 and can be found here:

<http://www.statistics.gov.uk/statbase/Product.asp?vlnk=15107>

9.2 It is ONS policy to publish population estimates rounded to the nearest thousand. Unit level estimates can be obtained by contacting the Population Estimates Unit (see details below). The previously published marital status population estimates 2002-2007 (unadjusted for marriages abroad) are also available via the link above.

9.3 Future releases of population estimates by marital status (mid-2009 onwards) will include marriages abroad to England & Wales residents and exclude marriages in England & Wales to overseas residents.

10. Further developments

10. As a new method for estimating marriages abroad, all aspects of the methodology will be subject to further investigation to see what improvements can be made for future releases of marital status population estimates. In particular we expect to investigate the following aspects:

- The use of interpolation techniques combined with the broad age-group information from the IPS to create the single year of age distribution for

marriages abroad. At present the distribution is taken from England & Wales marriage registrations data;

- Development of quality measures for the estimates of marriages abroad;
- Exploration of potential new data sources to estimate marriages abroad; and
- Exploration of potential new data sources to quality assure and / or benchmark estimates of marriages abroad.

11. Contacts

For further information or specific questions, please contact:

Population Estimates Unit – Room 2300
Office for National Statistics
Segensworth Road
Titchfield
Hampshire
PO15 5RR

01329 444661

pop.info@ons.gov.uk

Appendix 1

Impact of adjustments to published marital status population estimates for England & Wales, mid-2002 to mid-2007

	<i>thousands</i>				
Mid-year	Single	Married	Widowed	Divorced	Total
Males					
2002	-25	35	-1	-10	0
2003	-46	66	-2	-18	0
2004	-63	90	-2	-25	0
2005	-86	122	-3	-34	0
2006	-110	158	-4	-43	0
2007	-145	206	-5	-56	0
Females					
2002	-13	19	0	-5	0
2003	-23	33	-1	-9	0
2004	-32	45	-1	-12	0
2005	-43	61	-1	-16	0
2006	-57	80	-2	-22	0
2007	-77	108	-2	-29	0