Life expectancy at birth by health and local authorities in the United Kingdom, 1991-1993 to 1999-2001 – revised figures using 2001 Census based population estimates

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Figures presented

Figures on life expectancy at birth for males and females in each local authority in England and Wales for the period 1991-1993 to 1999-2001 were published on the National Statistics website in February 2003. These results were supplemented with figures for health areas in England and Wales in May 2003. To these existing results have now been added figures for life expectancy at birth for local authorities and health areas in Scotland and Northern Ireland. These are presented in the accompanying Excel workbook.
The figures are for three year rolling averages from 1991-1993 to 1999-2001, produced by aggregating deaths and population data for each of these three year periods, so as to provide large enough numbers to ensure that the figures presented are sufficiently robust. Two local authorities, City of London and Isles of Scilly, are excluded from the tables because of small numbers of deaths and populations in these areas. The areas are presented in alphabetic order and are based on boundaries that existed at 1st April 2001.

Additional worksheets are included to show the relative position (rank order) within the United Kingdom of the life expectancy of each local authority in 1999-2001 for males and females separately.

Also included are 95 per cent confidence intervals for the life expectancy at birth results. These have not been presented in previous ONS life expectancy reports. The calculation of confidence intervals does not affect the life expectancy at birth results. Figures for areas within England and Wales are therefore identical to those published in February and May 2003. To facilitate consideration of trend data the Excel workbook contains presentations of results for local authorities both with and without confidence intervals.

Previous ONS life expectancy reports

All life expectancy results for local authorities from 1991-1993 to 1999-2001, published before February 2003, have been revised in this report. The mortality data used in the calculations have remained the same but the populations are now all three-year aggregates of mid-year estimates for 1991 to 2001 based on the 2001 Census.

Figures for life expectancy at birth for local and health authorities, using mid-year population estimates based on the 1991 Census, were previously published in Health Statistics Quarterly for the years 1995-1997, 1997-1999 and 1998-2000;[1,2,3] at :

http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6725

Life expectancy at birth results, by local authority in England & Wales from 1991-1993 to 1999-2001, were also published in November 2002 on the National Statistics website at:

http://www.statistics.gov.uk/downloads/theme_health/LE1991_2001_websitereport_a.pdf

Apart from 1999-2001, these were calculated with 1991 Census based mid-year population estimates. For 1999-2001 two sets of results were published, the first using 2001 mid-year population estimates based on the results of the 2001 Census, and the second using 2000 mid-year estimates based on the 1991 Census.

Interpretation of life expectancy at birth

Life expectancy at birth for an area in each time period is an estimate of the average number of years a new-born baby would survive if he or she experienced the particular area's age-specific mortality rates for that time period throughout his or her life. The figure reflects mortality among those living in the area in each time period. It is not the number of years a baby born in the area in each time period could actually expect to live, both because the death rates of the area are likely to change in the future and because many of those born in the area will live elsewhere for at least some part of their lives.

Life expectancy at birth is also not a guide to the remaining expectancy of life at any given age. For example, if female life expectancy was 80 years for a particular area, life expectancy of women aged 75 years in that area would exceed 5 years. This reflects the fact that survival from a particular age depends only on the mortality rates beyond that age, whereas survival from birth is based on mortality rates at every age.

Method of calculation

Abridged life tables were constructed using standard methods.[4,5] Separate tables were constructed for males and females. The tables were created using annual mid-year population estimates and deaths registered in each year. All figures presented here are for life expectancy at birth. A detailed description of the standard methods and notation associated with the calculation of life expectancy can be found on the Government Actuary's Department website - http://www.gad.gov.uk.

The calculation of the confidence intervals were made using the method developed by Chiang.[6] A report which details research undertaken by ONS to compare methodologies to allow the calculation of confidence intervals for life expectancy at birth has now been published as No 33 in the National Statistics Methodological Series.
This report, 'Life expectancy at birth: methodological options for small populations' also presents research carried out to establish if there is a minimum population size below which the calculation of life expectancy may not be considered feasible. It concludes with a summary of methodological conclusions and considers how these could be applied to the calculation of life expectancy at birth for wards in England and Wales. A copy of the report can be found on the NS website at:

http://www.statistics.gov.uk/methods_quality/publications.asp

Examples of life tables constructed for the comparison of methodologies are also available in an Excel workbook, 'Life Table Templates' which can be found on the NS website at:

http://www.statistics.gov.uk/statbase/Product.asp?vlnk=8841

This includes an example of a life table constructed using the same method used to calculate life expectancy at birth and confidence intervals in this report.

Results for the United Kingdom

Life expectancy at birth results for the United Kingdom, Scotland, Northern Ireland, England & Wales, and England and Wales separately are included in the Excel workbook. Life expectancies for the United Kingdom and its constituent countries are calculated annually by the Government Actuary's Department (GAD) using complete life tables.

Using 2001 mid-year populations estimates, and revised estimates for earlier years, GAD have now published on their website interim life tables from 1980-1982 to 1999-2001 for the United Kingdom and its constituent countries - http://www.gad.gov.uk

Because of the difference between complete (single year of age) and abridged (grouped years) life tables, the national figures presented here may differ slightly from those published by GAD. Results for England will also differ slightly because of a difference of definition of deaths in England. ONS includes the deaths of non-residents in its annual mortality figures for England & Wales but these are excluded from the data for England and Wales separately. GAD however include the deaths of non-residents in England & Wales in their mortality data for England. In addition annual mortality data used by ONS for the calculation of life expectancy are based on all deaths registered in a year. The mortality data for England and Wales used by GAD in their final interim life tables from 1993 onwards are based on all deaths which occurred in a year.

Differences in the annual numbers of occurrences and registrations may also lead to small variations in the national life expectancy figures calculated by ONS and GAD.

Boundary changes

Most differences in life expectancy results between those published in this report, and those released before 27th February 2003 will result from revisions made to the mid-year population estimates to take account of the 2001 Census. The revision process has however also taken into account boundary changes to some local authorities which took place between 1991 and 1997.

Previous life expectancy results were calculated using mid-year population estimates from 1991 onwards which had been adjusted to incorporate changes due to major local government reorganisation that took place between 1995 and 1998. Other boundary changes were not incorporated in the 1991 based estimates until the year in which they took effect. The largest change before 1997 affected Barking and Dagenham which had a population gain of 9,700 in 1993/1994 as a result of a boundary changes. This change was therefore only reflected in the mid-year estimates from 1994 onwards. The mortality data used in the figures released in November 2002 was however adjusted to take account of all boundary changes from 1991 onwards. Some local authorities were therefore subject to minor numerator/denominator discrepancies in these earlier calculations.

A list of areas affected can be found in Table 13 in the published Mid-2000 population estimates on the National Statistics website at:

http://www.statistics.gov.uk/downloads/theme_population/PENo3/PENo3_v3.pdf

The mid-year estimates revised on the basis of the 2001 Census take account of all boundary changes from 1991 and so reflect current local authority boundaries in all years.

In 2002 annual mortality data for district council areas in Northern Ireland were also revised back to 1992 to incorporate a new method of using postcodes to allocate deaths to areas. The results for Northern Ireland in this report are based on these revised data.

Results for local authorities

The 432 local authorities in the United Kingdom for which results have been produced in this report have been placed in rank order for the most recent time point, 1999-2001. For males the 52 local authorities with the highest life expectancy at birth were all in England, with highest areas all in the south of England. The highest non-English authority was Ceredigion in Wales. The only other authority in the highest 150 that was not in England was Magherafelt in Northern Ireland. Of the ten local authorities with the lowest male life expectancy at birth, seven were in Scotland. Glasgow City had the lowest life expectancy, 68.7 years, over a year less than the second lowest authority, Manchester, where life expectancy was 69.8 years. These were the only two local authorities where life expectancy at birth was less than 70 years in 1999-2001.
The difference between North Dorset, the local authority with the highest male life expectancy at birth at 79.3 years, and Glasgow City, was 10.6 years.

The geographical distribution of the local authorities with the highest and lowest life expectancy was similar for females. As for males the areas with the highest life expectancies were in the south of England. Glasgow City and Manchester also had the lowest life expectancies, 76.2 and 76.5 years respectively. The difference between Glasgow City and West Somerset, the area with the highest female life expectancy at 83.4 years, was 7.2 years.

The tables in the Excel workbook which present the rank order of local authorities in 1999-2001 also include the 95 per cent confidence intervals. These have been used to identify those areas where life expectancy at birth is significantly different from overall life expectancy in the United Kingdom. Areas which are significantly higher are those where their lower confidence limit is greater than the upper confidence interval for the United Kingdom. Authorities which are significantly lower are those where their upper confidence is lower than the lower confidence limit for the UK. Results for males in 1999-2001 show that 202 local authorities had life expectancies which were significantly higher than the United Kingdom. 110 authorities had life expectancies which were significantly lower and the remaining 120 had life expectancies which did not differ

significantly from the UK. The equivalent figures for females in 1999-2001 were 184 authorities were significantly higher than the UK, 107 were significantly lower and 141 were not significantly different.

These tables also include the width of the confidence interval between the upper and lower confidence limits. Some of the widest confidence intervals are found in Northern Ireland, which reflects the tendency of authorities there to have smaller populations than in many other areas of the UK. Of the 26 local authorities in Northern Ireland, only 7 had a life expectancy for males which was significantly different to the UK life expectancy in 1999-2001.

Summary tables

The summary tables below list the local authorities with the highest and lowest life expectancies in the United Kingdom in 1999-2001. Life expectancy at birth figures are presented with 95% confidence intervals.

Table 1 – Local authorities with the highest and lowest life male life expectancy at birth in the United Kingdom, 1999-2001.

Table 2 – Local authorities with the highest and lowest life female life expectancy at birth in the United Kingdom, 1999-2001.

Further information

If you require additional information on the data presented here please contact:

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References

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2 Office for National Statistics (2001) Life expectancy at birth by health and local authorities in the United Kingdom, 1997-99. *Health Statistics Quarterly* **11**, pp 78-85.
3 Office for National Statistics (2002) Life expectancy at birth by health and local authorities in the United Kingdom, 1998 to 2000. *Health Statistics Quarterly* **13**, pp 83-90.
4 Newell C (1994) Methods and Models in Demography. John Wiley & Sons: Chichester.
5 Shyrock HS and Siegel JS (1976) The Methods and Materials of Demography (abridged edition). Academic Press: New York.
6 Chiang CL, The life table and its construction. From: Introduction to stochastic processes in Biostatistics. New York: John Wiley & Sons 1968, Chapter 9, 189-214.

Table 1 - Local authorities with the highest and lowest male life expectancy at birth in the United Kingdom, 1999-2001, with 95% confidence intervals.

Males

Years

Local authority	Life expectancy at birth	Lower confidence interval	Upper confidence interval
Highest	**1999-2001**	**1999-2001**	**1999-2001**
North Dorset	79.3	78.5	80.1
Christchurch	79.3	78.4	80.2
East Dorset	79.2	78.5	80.0
South Cambridgeshire	79.0	78.5	79.6
Hart	78.9	78.2	79.5
New Forest	78.8	78.3	79.3
Horsham	78.6	78.1	79.2
Rutland	78.6	77.4	79.7
Purbeck	78.5	77.5	79.6
South Norfolk	78.5	77.9	79.1
Lowest	**1999-2001**	**1999-2001**	**1999-2001**
Comhairle nan Eilean Siar	72.3	70.9	73.6
Liverpool	72.0	71.6	72.3
Blackpool	72.0	71.4	72.6
North Lanarkshire	71.8	71.4	72.2
Dundee City	71.8	71.1	72.4
Renfrewshire	71.7	71.1	72.2
West Dunbartonshire	70.8	70.1	71.6
Inverclyde	70.3	69.5	71.1
Manchester	69.8	69.5	70.2
Glasgow City	68.7	68.4	69.0

Table 2 - Local authorities with the highest and lowest female life expectancy at birth in the United Kingdom, 1999-2001, with 95% confidence intervals.

Females

Years

Local authority	Life expectancy at birth	Lower confidence interval	Upper confidence interval
Highest	**1999-2001**	**1999-2001**	**1999-2001**
West Somerset	83.4	82.5	84.2
Purbeck	83.3	82.4	84.2
Guildford	83.2	82.7	83.8
Epsom and Ewell	83.1	82.3	83.8
Kensington and Chelsea	83.0	82.5	83.6
South Norfolk	83.0	82.4	83.5
North Dorset	82.9	82.1	83.8
Christchurch	82.9	82.0	83.9
East Dorset	82.9	82.2	83.6
South Hams	82.7	82.1	83.4
Lowest	**1999-2001**	**1999-2001**	**1999-2001**
Renfrewshire	77.7	77.2	78.2
Merthyr Tydfil	77.6	76.8	78.5
Wansbeck	77.6	76.6	78.6
North Lanarkshire	77.5	77.2	77.9
Liverpool	77.3	76.9	77.6
Inverclyde	77.2	76.5	77.9
West Dunbartonshire	77.2	76.5	77.8
East Ayrshire	76.7	76.1	77.3
Manchester	76.5	76.1	76.8
Glasgow City	76.2	75.9	76.4