COUNTRY REPORT
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NEW RESEARCH

This section lists the main research that took place in the past 12 months in the UK. It is not an exhaustive list and is partly based on the six-monthly updates published by Brian Ridsdale at the Institute and Faculty of Actuaries (IFoA) website. For more details, please follow the links below:

Six-monthly update on mortality and longevity in the UK – 14 April 2015
http://www.actuaries.org.uk/node/120302

UK Mortality and Longevity Update September 2015 – 12 October 2015

NEW MORTALITY TABLE – NATIONAL LIFE TABLES

Published in September 2015 by the Office for National Statistics (ONS). Its main points are the following:

- Period life expectancy at birth is 79.1 years for males and 82.8 for females in the UK while the life expectancy at age 65 is 18.4 years for males and 20.9 years for females.
- The most common age at death for men was 86 and for women was 89.

<table>
<thead>
<tr>
<th>Period Covered</th>
<th>2012-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables Produced</td>
<td>Population</td>
</tr>
<tr>
<td>Factors</td>
<td>Gender, UK and each of the constituent countries</td>
</tr>
<tr>
<td>Duration</td>
<td>Only ultimate rates</td>
</tr>
</tbody>
</table>

NEW MORTALITY TABLE ‘ELT17’

Published in September 2015 by the Office for National Statistics (ONS). Its main points are the following:

- Over the last 100 years life expectancy at birth has increased by nearly 3 years per decade.
- For males, life expectancy at birth increased from 51 years in 1910-1912 to 79 years in 2010-12, while for females it increased from 55 to 83 years.
- Much of this increase is due to improvements in infant and child mortality in the first half of the 20th century, while gains in life expectancy at older ages have mainly occurred in the last 50 years.

<table>
<thead>
<tr>
<th>Period Covered</th>
<th>2010-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables Produced</td>
<td>Population</td>
</tr>
<tr>
<td>Factors</td>
<td>Gender</td>
</tr>
<tr>
<td>Duration</td>
<td>Only ultimate rates</td>
</tr>
</tbody>
</table>

1 If the hyperlink does not work, try to copy the address in your browser
In October 2015 the ONS published its latest Statistical Bulletin on national population projections. The main points are the following:

- The UK population is projected to increase by 9.7 million over the next 25 years from an estimated 64.6 million in mid-2014 to 74.3 million in mid-2039.
- Assumed net migration accounts for 51% of the projected increase over the next 25 years, with natural increase (more births than deaths) accounting for the remaining 49% of growth.
- The population is projected to continue ageing, with the average (median) age rising from 40.0 years in 2014 to 40.9 years in mid-2024 and 42.9 by mid-2039.
- By mid-2039, more than 1 in 12 of the population is projected to be aged 80 or over.


**NEW MORTALITY TABLE ‘08’ SERIES**

Published on June 2015 by the CMI Annuities Committee. Working Paper (WP) 78 proposed the tables which were finalised in WP 81 (with no change). Note the papers and the tables are only available for [Authorised Users](http://www.actuaries.org.uk/learn-and-develop/continuous-mortality-investigation/cmi-working-papers/annuities/cmi-wp-78).

WP 78 contains a consultation on the proposed ‘08’ Series tables based on the 2007-2010 datasets for Pension annuities in payment, Pension annuities in deferment and Life annuities. The paper provides an overview of the datasets, describes the methodology used to produce the tables, sets out the key statistics for each of the graduations and describes the extensions of the tables to younger and older ages.

<table>
<thead>
<tr>
<th>Period Covered</th>
<th>Tables Produced</th>
<th>Factors</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-2010</td>
<td>Annuitants</td>
<td>Gender, Annuity Type</td>
<td>Only ultimate rates</td>
</tr>
</tbody>
</table>


**CMI_2015 MORTALITY PROJECTIONS MODEL UPDATE**

The CMI_2015 Mortality Projections Model was published in September 2015, accompanied by CMI Working paper 84, which describes changes to the calibration of initial rates and illustrates the impact of incorporating the latest England and Wales population mortality dataset into the Model.

The structure of CMI_2015 is identical to that of the previous versions; however, the default parameters contained in the Model have been updated to reflect England & Wales population mortality data for calendar year 2014, and for the first seven months of 2015.

Note the paper and the model are only available for [Authorised Users](http://www.actuaries.org.uk/learn-and-develop/continuous-mortality-investigation/cmi-working-papers/mortality-projections/cmi-wp-84).

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The working paper was published by the CMI Assurances Committee in December 2014. It provides a brief commentary on the all-offices assurances (Term, Endowment and Whole Life) data and experience for the period 2007-2010.

Key features for Term assurance mortality
- The 2007-2010 experience shows only modest improvements over 2003-2006, although both are significantly below the 1999-2002 experience, which underlies the “00” Series tables.
- Amounts experience is around 12% lighter than the corresponding lives experience.

Key features for Whole Life and Endowment assurances mortality
- For smoker-differentiated data, the 2007-2010 experience is very similar overall to the 2003-2006 experience and, indeed, the 1999-2002 experience, which underlies the “00” Series tables. However, there is a significant volume of undifferentiated data which causes the overall experience of the latest dataset to be heavier than that of 2003-2006.
- Amounts experience is around 20% lighter than the corresponding lives experience; this may indicate some heterogeneity in the dataset which the Committee intends to investigate further.

Note the paper and the model are only available for Authorised Users.

LONGEVITY BASIS RISK – A METHODOLOGY FOR ASSESSING BASIS RISK

Research investigation and report by Cass Business School and Hymans Robertson LLP for the Institute and Faculty of Actuaries and the Life and Longevity Markets Association: S Haberman, S Baxter et al.

Research produces new framework for insurers and pension schemes to assess longevity risk.

The paper can be downloaded at the following link: http://www.actuaries.org.uk/documents/longevity-basis-risk-methodology-assessing-basis-risk

Phase 2 of this research would be Project to develop a method of assessing basis risk for longevity transactions. See invitation for tender at the following link: https://www.actuaries.org.uk/learn-and-develop/research-and-knowledge/calls-research/open-calls/project-develop-method-assessing

NAPF LONGEVITY MODEL

The NAPF and Club Vita have published research which for the first time offers a comprehensive analysis of the difference in life expectancy trends between members of defined benefit pension schemes.

Some of the key findings:
- Typical assumptions, based on England and Wales experience, do not reflect the pace and diversity of longevity trends experienced by DB pensioners.
- The analysis reveals that longevity had changed in different ways for individual DB schemes and for different groups of DB pension scheme members.

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In their paper the Longevity Science Panel has made the case that information collected from the public in the course of its use of public sector services must be available, with the right safeguards, to all who need to plan and provide services to develop our society and economy.

The paper can be downloaded from the link below:
http://www.longevitypanel.co.uk/_files/LSP_DATA2015_FINAL.pdf

Forecasts mortality and life expectancy for England and Wales' districts. Combining the results, concludes that present forecasts underestimate the expected rise in life expectancy, especially for men, and calls for improved health and social policies to needed to avoid a so-called grand divergence in health and longevity by district and socio-economic status.

Professor Majid Ezzati said: “The bigger gains in life expectancy we predict will mean pensions will have larger payouts, and health and social services will have to serve an older population than currently planned. We also forecast rising inequalities, with bigger increases in lifespan for people in affluent areas than those in disadvantaged areas”. “Our methods better reflect how longevity is changing than those currently used, and our forecasts are more accurate”.

The paper can be downloaded from the link below:

Key findings:

- Some factors are shown to be consistently important in explaining life expectancy differences between areas, in particular unemployment, deprivation among older people and gender. But there is support for a range of factors that impact on life expectancy including lifestyles.
- The authors identify areas that have persistently poor or good life expectancy over time. In particular, where there is higher deprivation among older people, unemployment, housing deprivation and binge drinking, these factors all increase the risks of those areas having persistently low life expectancy over time.

The paper can be downloaded from the link below:

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8 http://www.longevitypanel.co.uk/viewpoint/public-data-for-private-sectors/
The IFoA Longevity Bulletin is usually published twice a year on topics relating to mortality and longevity around a particular theme.

**Pandemic edition, August 2015**

The issue includes a selection of four articles written by experts in different disciplines to reflect current thinking on various aspects of the modelling, nature and mitigation of pandemic risk. For illustration, the issue has also included case studies on Spanish flu, HIV/AIDS, and Ebola virus to demonstrate the complexity of infectious diseases as they differ in origin, mode of transmission and impact on human population.


**Modelling edition, November 2015**

The issue includes a selection of seven articles written by experts to reflect the current thinking on crucial subjects of longevity trends and modelling. This issue explores some of the reasons why we are living longer, identifies causes of ageing, but also looks at the possibility of drugs being designed to treat ageing. In addition, two broad families of models (extrapolative and causal models) are discussed in this bulletin to help actuaries analysing future changes in mortality rates.


**Other**

**Recent mortality on England and Wales**


**Standard tool for heatmaps**

The CMI standard format for heatmaps of mortality improvements (Issue date 28/09/2015). The tool has an accompanying macro to enable others to use the same format. Publicly-available.

RESEARCH IN PROGRESS

THE FUTURE OF THE CMI PROJECTION MODEL

The recent mortality experience in the population of England & Wales (see document in Other Papers section above) highlighted some issues in the current CMI projection methodology. The CMI Mortality Projection Committee held presentations at consultation meetings in October 2015 where they highlighted the issues, introduced their ideas of development and initiated further discussion on the future of the mortality projection model.

See slides and contact details at the following location:

HIGH AGE MORTALITY

The CMI High Age Mortality Working party is currently investigating high age mortality in the UK with the following aims regarding high age mortality:

• Provide a broad indication of the potential financial impact of misestimating,
• Summarise published research,
• Identify potential issues in published datasets and methodologies of estimation,
• Outline specific analysis to assess the impact of identified issues and propose potential ways to address them.

In October 2015 the working party has published an initial working paper on their work:


**COUNTRY BACKGROUND**

**POPULATION**

**DEMOGRAPHICS**

<table>
<thead>
<tr>
<th>Basic Information</th>
<th>Current population</th>
<th>64,596,800 (estimate as at 30 June 2014)(^9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current period life expectancy</td>
<td>- At birth</td>
<td>79.1 for males, 82.8 for females (based on the period 2012-2014)(^10)</td>
</tr>
<tr>
<td></td>
<td>- At 65</td>
<td>18.4 for males, 20.9 for females (based on the period 2012-2014)(^11)</td>
</tr>
</tbody>
</table>

**Population Pyramid**

Source:\(^{12}\)


\(^12\) [http://www.ons.gov.uk/ons/dcp171778_406922.pdf](http://www.ons.gov.uk/ons/dcp171778_406922.pdf)
POPULATION MORTALITY TABLES

National Life Tables

ONS produces national life tables (formerly known as interim life tables) for the United Kingdom (UK) and each of the constituent countries. These tables cover a 3 year rolling period.

The latest tables were published in September 2015 and cover the period 2012-2014.


Decennial Life Tables – English Life Tables

Fully graduated (smoothed) life tables are prepared by the Office for National Statistics (ONS) every 10 years, based on the 3 years of data around a census year. They provide graduated mortality rates and statistics on period life expectancy by age and sex and have been constructed based on the mortality experience of the population of England and Wales.

The latest tables, the English Life Tables No.17, were published in September 2015 for 2010-2012 centered on the census year, 2011.


POPULATION MORTALITY IMPROVEMENTS

The Continuous Mortality Investigation’s (CMI) Mortality Projection Committee publishes the CMI Mortality Projections Model updated annually taking into account latest population mortality experience and model developments. It is a deterministic spreadsheet model driven by user inputs.

The latest version of the model is the CMI_2015 (the working paper and the model are only available to registered users of the CMI).

http://www.actuaries.org.uk/research-and-resources/pages/cmi-working-paper-84

PROTECTION INSURANCE

MARKET BACKGROUND

Protection Products sold in the UK with significant mortality risk:
- Term Insurance
  https://www.abi.org.uk/Insurance-and-savings/Products/Life-cover/Term-insurance
- Group Life Cover
  https://www.abi.org.uk/Insurance-and-savings/Products/Life-cover/Group-life-cover
- Whole of Life Cover
  https://www.abi.org.uk/Insurance-and-savings/Products/Life-cover/Whole-of-life-cover

Statistics on the UK insurance business for 2014 can be found at the following location:
https://www.abi.org.uk/~/media/Files/Documents/Publications/Public/2015/Statistics/Key%20Facts%202015.pdf
MORTALITY TABLES

The publicly available mortality tables used in the industry are derived and published by the Continuous Mortality Investigation (CMI). The tables and the corresponding working papers are only available for registered users of the CMI (Authorised Users).

“00” Series Assured Lives Mortality Tables

The most up to date tables based on assured lives data were published in July 2006 as part of the “00” Series Base Tables. The graduation was based on the CMI 1999-2002 mortality experience and separate tables were published for

- males and females,
- smokers and non-smokers and
- permanent and temporary assurances.


MORTALITY IMPROVEMENTS

There are no protection specific mortality improvements publicly available. The mortality projection model published by the CMI is based on population experience and due to selection effect is less relevant for the protection business.

RETAIL LONGEVITY PROTECTION

MARKET BACKGROUND

Pension types in the UK

State Pensions from the government

- Current State Pensions:
  - Basic State Pension ([https://www.gov.uk/state-pension](https://www.gov.uk/state-pension))
  - Additional State Pension ([https://www.gov.uk/additional-state-pension](https://www.gov.uk/additional-state-pension))
- New State Pension: for pensioners reaching the State Pension age on or after 6 April 2016 ([https://www.gov.uk/new-state-pension](https://www.gov.uk/new-state-pension))


- Defined Benefit (DB) Pension
- Defined Contribution (DC) Pension

Private Pensions ([https://www.gov.uk/personal-pensions-your-rights](https://www.gov.uk/personal-pensions-your-rights))

- Personal Pensions
- Stakeholder Pensions

Other private pensions

- Group Personal Pension: an insurer offering a facility for an employer to set up a personal pension for each of its employees.

[^13]: [https://www.gov.uk/plan-retirement-income/your-pension-options](https://www.gov.uk/plan-retirement-income/your-pension-options)
• Self-Invested Personal Pension: offers a policyholder the facility to become their own fund manager, selecting exactly what investments they want in their pension fund.

Retail Annuities

Buying an annuity from the DC Pension pot at retirement was compulsory until April 2015.

Freedom of choice in retail annuities\(^\text{14}\)

In March 2014 the government proposed to remove the then existing effective requirement to buy an annuity and provide people greater flexibility in accessing their pensions.

Starting from April 2015 people retiring have the possibility to choose how they access their defined contribution pension savings; for example, they could take all their pension savings as a lump sum, draw them down over time, or buy an annuity.

Second hand retail annuity market\(^\text{15}\)

In order to provide flexibility for pensioners already locked in the old system, in March 2015 the government proposed to remove currently existing tax barriers for annuity holders so they can assign their income stream to a third party in return for a lump sum. This lump sum could then be taken directly or used to buy an alternative retirement income.

Following consultation, the government decided to delay the launch until 2017 to ensure policyholders are given enough support in making their decision. It will now publish its plans for a secondary annuity market in the autumn as part of the Finance Bill 2016.\(^\text{16}\)

Further details on the changes:
www.parliament.uk/briefing-papers/sn06552.pdf

Annuities sold in the UK

- Immediate Annuities
- Deferred Annuities
- Enhanced Annuities
- Variable Annuities
- Guaranteed Minimum Benefit

Income drawdown: an alternative to annuities. Income Drawdown can be used to take an adjustable income from a pension while the rest remains invested. (See more details: https://en.wikipedia.org/wiki/Income_drawdown)

Statistics on the UK insurance business for 2014 can be found at the following location:
https://www.abi.org.uk/~/media/Files/Documents/Publications/Public/2015/Statistics/Key%20Facts%202015.pdf

Bulk Annuities

The traditional policy offered by large UK insurers. Pension schemes pay a premium and in exchange the insurer writes an annuity that pays the retirement income of a large chunk of a scheme’s pensioners who have already retired.17

More information: [http://www.mercer.com/content/dam/mercer/attachments/global/investments/db-risk/Bulk_Annuities_Key_product_features.pdf](http://www.mercer.com/content/dam/mercer/attachments/global/investments/db-risk/Bulk_Annuities_Key_product_features.pdf)


MORTALITY TABLES

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“08” Series Annuities Mortality Tables

The latest annuitant mortality tables are the “08” Series tables. The tables are based on the 2007-2010 datasets for Pension annuities in payment, Pension annuities in deferment and Life annuities.


“00” Series Annuitant and Pensioner Mortality Tables

As the “08” Series Mortality Tables were published in 2015, some insurance/reinsurance companies still use the “00” Series tables that were graduated in July 2006 based on the CMI 1999-2002 Mortality Experience. Tables were available at a more granular level (e.g. separate tables for early retirement and widows):


“S2” Series Mortality Tables

The CMI also investigates the mortality experience of self-administered pension schemes (SAPS). The latest mortality tables were published in February 2014 under the name “S2” Series tables, which are based on the mortality experience during the period 2004-2011.


“S1” Series Mortality Tables

Some pension schemes and insurance/reinsurance companies still use the “S1” Series tables that were graduated in October 2008 for the SAPS 2000-2006 experience.


MORTALITY IMPROVEMENTS

There are no annuity specific mortality improvements publicly available. The mortality projection model published by the CMI (see section Population Mortality Improvements) is widely used in the industry with user settings corresponding the specific needs.

RELEVANT ORGANISATIONS

DETAILS ON GOVERNMENT STATISTICS DEPARTMENT

Office for National Statistics (ONS) – http://www.ons.gov.uk/
National Records of Scotland – http://nationalrecordsofscotland.gov.uk
Northern Ireland Statistics and Research Agency (NISRA) – http://www.nisra.gov.uk

ACTUARIAL SOCIETY OF THE COUNTRY

Institute and Faculty of Actuaries (IFoA) – http://www.actuaries.org.uk/

Other actuarial societies in the UK:
  • Staple Inn Actuarial Society (SIAS) – http://sias.org.uk/
  • Association of Consulting Actuaries (ACA) – http://www.aca.org.uk/
  • The Insurance and Actuarial Society of Glasgow – http://www.localinstitutes.cii.co.uk/glasgow/home/
  • Association of British Insurers (ABI) – http://www.abi.org.uk

INSURANCE REGULATOR

Since 1 April 2013, insurance companies are dual regulated by the following regulators:

Prudential Regulation Authority (PRA) is responsible for the prudential regulation, subsidiary of the Bank of England. – http://www.bankofengland.co.uk/pra/Pages/default.aspx

Financial Conduct Authority (FCA) is responsible for regulation of conduct in financial markets by ensuring integrity of the UK financial industry. – http://www.fca.org.uk/