Government Actuary's Department

Periodic review of rules about State Pension age

Report by the Government Actuary

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Presented to Parliament pursuant to section 27 of the Pensions Act 2014

March 2023

This publication is available at www.gov.uk/official-documents.

Any enquiries regarding this publication should be sent to us at enquiries@gad.gov.uk.

ISBN 978-1-5286-3731-2

E02808983 03/23

Printed on paper containing 40% recycled fibre content minimum

Printed in the UK by HH Associates Ltd. on behalf of the Controller of His Majesty's Stationery Office

To: The Right Hon. Chloe Smith MP, Secretary of State for Work and Pensions

I am pleased to present a report about the State Pension age, analysing whether the rules about pensionable age mean that, on average, a person who reaches pensionable age within a specified period can be expected to spend a specified proportion of his or her adult life in retirement, and, if not, ways in which the rules might be changed with a view to achieving that result.

This report is made in accordance with section 27(4) of the Pensions Act 2014 and in line with the Terms of Reference for this review (set out in Appendix A to this Report). I understand that this report will be laid before Parliament under section 27(6) of the Pensions Act 2014.

Martin Clarke
Government Actuary

October 2022

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1. Executive summary

This section summarises the key results and commentary from my analysis of the State Pension age timetable based on the latest UK mortality projections.

1.1 I have prepared this report for the Secretary of State for Work and Pensions under the requirements of section 27(4) of the Pensions Act 2014 to consider "*whether the rules about pensionable age mean that, on average, a person who reaches pensionable age within a specified period can be expected to spend a specified proportion of his or her adult life in retirement, and, if not, ways in which the rules might be changed with a view to achieving that result*". For this purpose, "pensionable age" has the same meaning as "State Pension age" (SPa), which is the term used throughout this report.

1.2 The key assumptions and parameters that I have been instructed to use in my report are that the assumed mortality rates (the probability of dying at any given age) will be in line with the 2020-based interim UK principal population projections produced by the Office for National Statistics (ONS) and that adult life is assumed to begin at age 20.

1.3 I have been asked to assess the changes to the SPa set out under the current legislative timetable for the rise to 67 in 2026-28 and 68 in 2044-46. I have also been asked to assess the proposed 2017 review change to bring forward the rise to 68 to 2037-39, subject to consideration of the latest life expectancy projections in this review. For the specified proportion of adult life in retirement – that is, the percentage of adult life that someone who reaches SPa will be in receipt of their State Pension – I have been requested to consider three scenarios: 32%, 31% and 30%.

Key results

1.4 Table 1.1 shows the years in which SPa is due to change under current legislation, current policy, and the changes to the SPa timetable that would be required to meet the requirements under each of the scenarios described above based on the specified assumptions and parameters over the period up to 2070. SPa changes are assumed to take place over two-year periods commencing on 6 April.

Table 1.1 – Calculated SPa timetables under specified parameters and assumptions

			Proportion of adult life in retirement		
SPa increase	**Current legislation**	**Current policy**	**32%**	**31%**	**30%**
66 to 67	2026-28	2026-28	2037-39	2026-28	2023-25**
67 to 68	2044-46	2037-39	2053-55	2041-43	2030-32
68 to 69	**-**	-	n/a*	2058-60	2046-48
69 to 70	**-**	-	n/a*	n/a*	2062-64

** These increases would take place after the end of the specified projection period in 2070.*

*** This increase is calculated to be required immediately, because the proportion is already over 30%. For the purposes of this report it is assumed that the earliest it could take place in theory is from April 2023.*

1.5 The calculated SPa timetables under the prescribed methodology are highly sensitive to both the proportion of adult life in retirement selected (as illustrated in Table 1.1) and to the life expectancy assumptions adopted. The analysis in reports such as this one is useful in providing an important context to the policy decisions concerning future SPa timetables, but a purely formulaic approach would be compromised by these limitations in the underlying statistics.

Sensitivity

1.6 Changes in the population projections produced by the Office for National Statistics (ONS), which are updated every few years, can lead to considerable shifts in the proportion of adult life in retirement calculated under the prescribed methodology. Mortality improvements in recent years have been slower than had been previously expected. Whilst life expectancy has still been improving year-on-year, projected future life expectancy at retirement, based on the ONS population projections, has reduced by over 2 years compared to the projections adopted for the previous review.

1.7 This has materially affected the projected SPa timetables outlined above, which are very different from those calculated in the previous review. Specifically, moving from the ONS 2014-based principal projections (used in the previous SPa review) to the 2020-based projections used this time results in very different calculated SPa timetables. The SPa increase from 67 to 68 on a proportion of 32% takes place 27 years later under the latest projections compared to those used last time.

1.8 This illustrates the difficulty of setting timetables for SPa increases a long way into the future if based solely on calculations which can fluctuate so much over a relatively short period.

Long-term position

1.9 This review is taking place against the backdrop of COVID-19, which could have a major bearing on future life expectancy and more generally the way we live, work and retire in the UK. It is clear that the pandemic has affected mortality and behaviours in the short-term. The implications for longer term mortality and population demographics trends are, as yet, less clear.

1.10 In the longer term, the pandemic could also affect areas such as disease treatment, medical development, lifestyle, work and retirement habits. Whilst it is difficult to predict how all of these elements will develop over time, they could have implications for the long-term economy and hence the funding and cost of the State Pension.

1.11 As well as life expectancy projections, there are many other considerations to allow for in making decision on the timetable for the State Pension age. There are much wider issues around the State Pension system – for example sustainability, long-term affordability and fairness – which are key components of the SPa reviews. The alternative SPa timetables illustrated in this report could help to control costs to some extent, but the long-term affordability of the State Pension is determined by other factors that must also be considered.

1.12 These other issues are outside of the scope of my report but will be considered in detail as part of the government review, which will draw on the analysis in this report and the

separate independent report[1] prepared by Baroness Neville-Rolfe. The final decision on any changes to SPa timetables may therefore justifiably be different from any of the scenarios outlined in this report and will allow for a much broader range of considerations.

1.13 However, allowing for changes to life expectancy projections over time is highlighted in the legislation as a key component of SPa reviews, and this report helps to illustrate the changing trends that have emerged over recent years and how this can affect the setting of SPa in future.

Professional compliance and limitations

1.14 This work has been carried out in accordance with the relevant Technical Actuarial Standard: TAS 100 issued by the Financial Reporting Council (FRC). The FRC sets standards for actuarial work in the UK.

1.15 This report has been prepared for the Secretary of State for Work and Pensions in accordance with the Pensions Act 2014. It is not appropriate for any other purpose. No other person or third party is entitled to place any reliance on the contents of this report and GAD has no liability to any other person or third party for any act or omission taken, either in whole or in part, on the basis of this report.

[1] https://www.gov.uk/government/publications/second-review-of-the-state-pension-age-independent-report-terms-of-reference

2. Background, purpose and scope

The analysis set out in this report is required under the legislation and forms part of the considerations for the government's review of the SPa.

2.1 State Pension age (SPa) is the earliest age at which individuals can receive their State Pension. Since October 2020, it has been set at 66 for both men and women who were born on or after 6 October 1954. Current legislation provides for further increases to SPa in the following timescales:

- increase in SPa from 66 to 67 – between April 2026 and April 2028; it begins to rise above 66 for those born on or after 6 April 1960;
- increase in SPa from 67 to 68 – between April 2044 and April 2046; it begins to rise above 67 for those born on or after 6 April 1977.

2.2 Section 27 of the Pensions Act 2014 introduced a regular and structured method for considering future changes in SPa. Under this framework the Secretary of State for Work and Pensions must review the rules about SPa and prepare and publish a report on the outcome of the review, "*having regard to life expectancy and other factors that the Secretary for State considers relevant*", which specifically includes considering, amongst other factors:

- a report by the Government Actuary on whether the rules about pensionable age mean that, on average, a person who reaches SPa within a specified period can be expected to spend a specified proportion of adult life in receipt of State Pension;
- a report on other factors specified by the Secretary of State that are relevant to the review.

Previous review

2.3 The first government review of SPa under this legislation was published in 2017[2]. As part of the process for that review, my Government Actuary's report was published in March 2017[3].

2.4 In the outcome of that review, the government announced an intention to increase SPa from 67 to 68 between 2037 and 2039, bringing it forward by seven years from its legislated date of 2044 to 2046, subject to the analysis of the latest life expectancy projections in the next review.

2.5 The government review also stated that *"in the long run, the Government is minded to commit to 'up to 32%' as the right proportion of adult life to spend in receipt of State Pension"*.

[2] https://www.gov.uk/government/publications/state-pension-age-review-final-report

[3] https://www.gov.uk/government/publications/state-pension-age-periodic-review-report-by-the-government-actuary

Scope of report

2.6 This is the second report by the Government Actuary required under the Pensions Act 2014, which must be laid before Parliament. I have been asked to include in this report:

- commentary on trends in life expectancy data
- assessment of the current legislative timings for the rise to 67 and 68 and the proposed 2017 review change to bring forward the rise to 68, subject to consideration of the latest life expectancy projections in this review
- appropriate sensitivity analysis

2.7 The methodology and assumptions that I have been asked to use for this report, and a number of variables and parameters that feed into this, have been specified by the Secretary of State and are set out in the Terms of Reference for this report, which is included in Appendix A to this report.

2.8 This report focuses specifically on the requirements of the Pensions Act 2014 reflected in the Terms of Reference. There are numerous wider issues which are also relevant to the review of SPa, some of which will be the subject of the separate independent report prepared by Baroness Neville-Rolfe and will be considered in the government review. In this report I have generally commented only on the mathematical and statistical aspects of the increase to SPa and the evidence for it.

3. Specified parameters

The analysis underlying the results presented in this report is affected by a number of key assumptions and scenarios that I have been asked to consider.

Pension Act requirements

3.1 Section 27(4) of the Pensions Act 2014 requires a number of parameters to be set by the Secretary of State for the purposes of the calculations included in this report. The Terms of Reference for this review specifies a number of other assumptions which must be used. Details of these parameters and assumptions are set out below.

Life expectancy assumptions

3.2 The Terms of Reference state that the cohort[4] projections of life expectancy in the 2020-based interim UK principal population projections, produced by the ONS, must be used for the purposes of this report. Further detail on life expectancy assumptions are set out in section 4 of this report.

Specified age

3.3 The "specified age" is the age at which a person's adult life is assumed to begin for the purpose of calculating the proportion of adult life spent in receipt of State Pension. I have been instructed to use age 20 as the specified age for the purposes of this report. This is based on the Organisation for Economic Co-operation and Development (OECD) convention and is commonly used as a comparator for matters relating to pensions.

Specified period

3.4 The "specified period" is the period covered in this report during which people will reach SPa. I have been instructed that the specified period for this report should go up to 2070 (which is as far as cohort-based life expectancy projections are currently available from the ONS).

3.5 The Terms of Reference state that this report must include an assessment of the existing timetables for the rise in SPa from 66 to 67 in 2026-28 and from 67 to 68 in 2044-46, as well as an assessment of bringing forward the rise to 68 in 2037-39 as proposed in the 2017 government review, subject to consideration of the latest life expectancy projections in this review. For the purposes of illustrating results in this report, I have assumed that the earliest the increase in SPa from 66 to 67 could occur in theory is the two-year period starting in April 2023 (although I note that such a timetable for any changes may not be realistic in practice). The government has previously stated an intention that it will give at least 10 years' notice of any SPa changes.

[4] Life expectancies produced on a *cohort* basis use age-specific mortality rates allowing for observed rates for past years together with projected rates for future years. This contrasts with life expectancies produced on a *period basis*, which look at mortality rates for a given past period and assume that those rates apply throughout the remainder of a person's life.

Specified proportion of adult life spent in retirement

3.6 I have been instructed that the "specified proportion of adult life in retirement" – that is, the proportion of adult life that someone who reaches SPa will be in receipt of the State Pension – is expressed as:

$$\frac{\text{Life expectancy at SPa}}{\text{Life expectancy at SPa} + \text{SPa} - \text{Specified age}}$$

3.7 It should be recognised that this proportion applies to those people who actually survive to reach SPa – it does not make any allowance for people who die before reaching SPa.

3.8 The Terms of Reference for this report state that I must consider the following scenarios for the specified proportion of adult life in retirement:

- *"32% – to reflect the recommended long-term aim of up to 32% contained in the previous Government review of State Pension age*
- *31% – to show the impacts of a lower proportion of adult life spent in retirement*
- *30% – to model a lower proportion of adult life spent in retirement"*

Methodology

3.9 The proposed methodology for future SPa increases provides that SPa should complete any increase in the year in which the specified proportion of adult life in retirement (to the nearest 0.1%) at the existing SPa is first reached.[5]

3.10 One aspect of this methodology is that the calculated proportion, based on the relevant assumptions, will never quite reach the defined specified proportion of adult life in retirement. This is because the SPa will be changed over the two-year period leading up to when the proportion of adult life in retirement would have reached the specified proportion had the SPa not been changed. Therefore, on average, people who reach SPa will be expected to spend a proportion of adult life in retirement which is below the specified proportion.

3.11 For the purposes of the calculations set out in this report, I have been instructed that I should assume the government would continue to adopt the phasing-in process for the legislated increase in SPa, which smooths the transition over two-year periods commencing on 6 April for each rise in SPa. For example, I have assumed that the transition of SPa from 66 to 67 would begin two years before the year in which the proportion of adult life spent drawing a State Pension at 66 first reaches the specified proportion of adult life in retirement.

[5] The rounding to the nearest 0.1% only applies to the specified proportion of adult life in retirement, and not to the calculated proportion in each individual year. For example, under the 32% scenario, if the calculated proportion in a particular year was 31.99%, this is deemed to be below the specified proportion of 32% and would not be rounded up. This is consistent with the approach adopted in the 2017 SPa review (see Government Actuary 2017 report, p9).

3.12 I have been instructed that life expectancies are based on the age exact as at the middle of the calendar year that falls in the financial year in question. In practice, this means that the calculations for each tax year are carried out based on life expectancies, proportions of adult life in retirement, and the SPa in force, at 30 June in that year. At each point when the specified proportion of adult life in retirement is reached, for the existing SPa, the calculated SPa timetable is then amended so that it completes any increase at 5 April in that calendar year.[6]

3.13 I have been instructed that the analysis in this report should be for the UK as a whole.

[6] For example, if the specified proportion of adult life for the existing SPa was reached in the 2045-46 tax year, based on calculations carried out as at 30 June 2045, the calculated SPa timetable would be set so that the increase to the next SPa would take place between 6 April 2043 and 5 April 2045. This is consistent with the approach adopted in the 2017 SPa review (see Government Actuary 2017 report, p10).

4. Life expectancy assumptions

Life expectancy is a key indicator of the nation's health and trends over time are driven by a variety of complex factors. Projected life expectancy is usually quoted as an average across a particular population, but actual experience can vary hugely between both individuals with similar characteristics and between different sub-groups of the population.

4.1 I have been requested to include commentary on trends in life expectancy data in this report. This section sets out detail of the life expectancy assumptions I have been instructed to use for my calculations and background information on mortality projection methodologies.

4.2 I include commentary on past trends and potential drivers of future trends in life expectancy, along with discussion around variations in life expectancy for different groups of the population and commentary on healthy life expectancy. I also discuss how there are wider issues to consider alongside life expectancy when considering SPa.

Mortality rates and projections

4.3 *Life expectancy* is a statistical measure of the average time someone is expected to live, based on the year of their birth, current age and other demographic factors including their gender. To calculate life expectancy, a life table is used. This shows, for each age, a *mortality rate* which is the probability that a person will die before his or her next birthday.

4.4 Mortality rates vary by age (older people have a higher chance of dying, so their mortality rates are higher) and also over time – mortality rates are much lower now compared to a century ago as people are living longer, as we have seen *improvements in mortality*.

4.5 Life expectancies can be produced on a *period basis*, which looks at mortality rates for a given past period and assume that those rates apply throughout the remainder of a person's life. Alternatively, they can be produced on a *cohort basis*[7], which use age-specific mortality rates allowing for observed rates for past years together with projected rates for future years.

4.6 We don't know what future improvements in mortality will be in future years, so statistical models are often used in projecting cohort life expectancy. A common method of projecting future improvements in mortality is to extrapolate past trends in improvements for the short to medium term, with expert opinion used to inform the assumptions in the longer term.

[7] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/methodologies/periodandcohortlifeexpectancyexplained#what-are-period-life-expectancies

4.7 Given the context of this report, with projections of life expectancy required over a long future time period, I have been informed that the government considers it appropriate to allow for projected future improvements in mortality rates and has instructed that the cohort method should be used for the purposes of this report. This is consistent with a report by the Pensions Commission in 2005[8] which recommended that official publications use cohort life expectancy when describing current and future trends in longevity.

Table 4.1 – Illustration of terminology relating to life expectancy

	Definition	Example change	Meaning
Life expectancy	Average time someone is expected to live	e.g. ↑ 75.2 to 76.2 years	✓ Person expected to live longer
Mortality rate	Number of people who die in a given year per thousand population	e.g. ↑ 98 people to 100 people per thousand. Often expressed as 0.098 to 0.1	✗ More people dying per thousand
Improvement in mortality	Decrease in the mortality rate from one year to the next	e.g. a fall in the mortality rate from 0.1 to 0.098 would be an improvement in mortality of 2%. A further fall in the mortality rate by a greater amount e.g. 0.098 to 0.095 would mean an ↑ in improvements in mortality.	✓ Fewer people dying per thousand than last year

Specified assumptions

4.8 The Terms of Reference for this report (see Appendix A) state that that the government believes that the principal projections of ONS's 2020-based (UK) cohort life expectancy statistics (released in January 2022)[9], are the appropriate assumptions for the purposes of this review.

4.9 I have been instructed that figures for "life expectancy at SPa" shown in this report should be calculated using probabilities of death at each age and in each year, weighted for the different numbers of men and women in the population at the relevant age and year.

[8] http://webarchive.nationalarchives.gov.uk/+/http:/www.dwp.gov.uk/publications/dwp/2005/pensionscommreport/main-report.pdf

[9] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/pastandprojecteddatafromtheperiodandcohortlifetables/2020baseduk1981to2070/relateddata

4.10 I have been asked to conduct sensitivity analysis to consider how upward or downward revision of life expectancy forecasts, to reflect recent fluctuations in ONS life expectancy projections, can affect calculated SPa timetables. This analysis is set out in section 6.

ONS 2020-based mortality projection methodology

4.11 The ONS usually produce National Population Projections every two years. These project life expectancy (as well as fertility and migration) to estimate how the size and structure of the UK population will change in the future.

4.12 The 2020-based projections are described by the ONS as 'interim'. This is because the next projections are due to be published much sooner than the normal two-year interval (currently expected sometime in 2023) and will be based on updated population data from the 2021 Census. It also recognises that 2020 was a period of high uncertainty in terms of setting long-term mortality assumptions due to the emerging effects of COVID-19.

4.13 The ONS life expectancy projections are produced by considering a combination of three components:

- mortality rates experienced in the base year (2020 in this case)
- an extrapolation of past trends in improvements in mortality (calculated from data between 1961 and 2019) into the near future
- an assumption about the long-term rate of improvement in mortality (from 2045 onwards in this case)

4.14 Expert advice was sought by the ONS on the following areas:

- short-term adjustments (from 2019 to 2024) to allow for the impact of COVID-19 to the annual improvements in mortality
- the method and speed of convergence from the base year improvement rates to the long-term rate of improvement in mortality
- the long-term rate of improvement in mortality

Adjustments for COVID-19

4.15 Recent mortality experience and short-term projections are highly influential in the ultimate projections. If the large number of additional deaths from COVID-19 was ignored, improvements in mortality may be overstated. Conversely, if full allowance was made for deaths in the data in 2020, the model is likely to project too many deaths in the next few years and thus understate future life expectancy.

4.16 The experts consulted by the ONS came to no consensus as to the size of the overall improvement in mortality expected between 2019 and 2024. After 2022, the projections assume that future improvements will be in line with those projected assuming COVID-19 had not occurred.

4.17 However, various detailed adjustments[10] were made to allow for estimated deaths in 2021 and an averaging of the experts' views on the estimated improvements by age group over the period from 2019 to 2024. The projections assume that there will not be a step-change in future mortality improvement rates as a result of COVID-19.

Long-term assumptions

4.18 In determining the long-term mortality improvement rates, a variety of information is considered by ONS. This includes the levels and patterns of historical changes in mortality rates in the UK and the views of an advisory panel of experts on the likelihood of past trends being followed in the future and the projections being used in each of the four nations of the UK and in other countries. This will have included consideration of whether the recent trend (prior to COVID-19) of lowering annual improvements in mortality would continue in both the medium term and longer term.

4.19 The long-term rate of improvement used in the ONS 2020-based projections is that rates of improvement in mortality for most ages will converge to 1.2% pa by 2045 (the 25th year of the 2020-based projections) and remain constant at 1.2% pa thereafter. This target long-term rate was based on the analysis of past trends and expert advice and is broadly consistent with the average annual rate of improvement experienced over the last century.

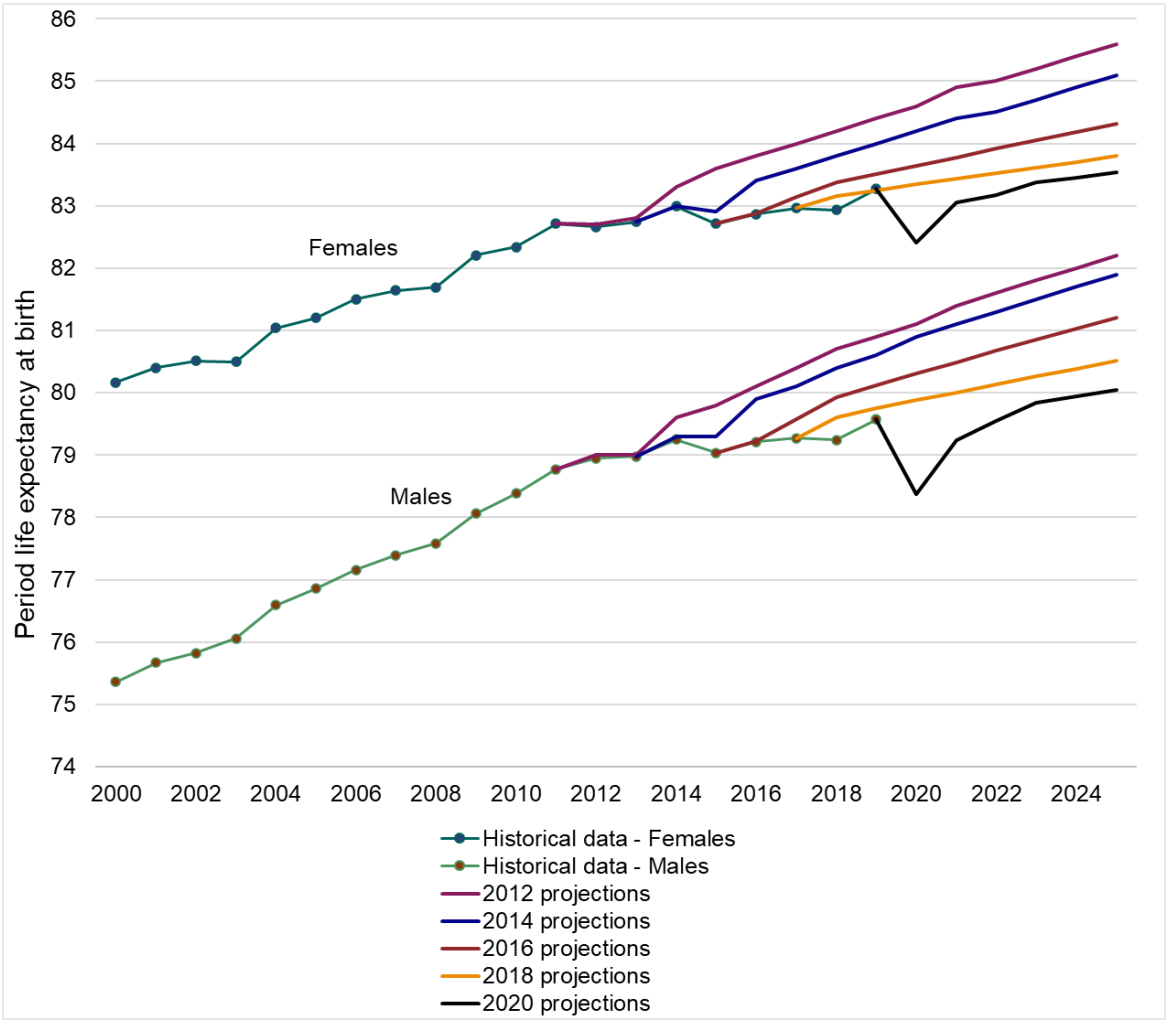
4.20 This long-term rate of improvement of 1.2% per annum has remained unchanged at most ages since the 2010-based ONS projections.

Comparison with other projections

4.21 Chart 4.1 shows that the projections of period life expectancy at birth have decreased with each subsequent set of biennial ONS projections since 2012. This reflects an increasing allowance for more recent data which shows that improvements in mortality have materially slowed down in the UK in the last decade. The 2020-based projections show a short-term dip in period life expectancy (reflecting the adjustments to the projections described above) before a return to improvements of a similar trend to before.

[10] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/methodologies/nationalpopulationprojectionsmortalityassumptions2020basedinterim

Chart 4.1 – Period life expectancy at birth from successive ONS National Population Projections



Source: GAD calculations based on ONS data

4.22 Different models can be used to project future life expectancy. For example, pension funds and insurance companies in the private sector often use the CMI model[11] which is an extrapolative model like the ONS projections. However, this model is less appropriate for setting SPa assumptions because it is based on data from subsets of the population, as opposed to the ONS projections which use complete population data.

4.23 Other approaches include stochastic models or projecting mortality separately by cause of death for example. Each model has different merits, but all models rely in some way on assumptions about what may happen in the future.

4.24 Sensitivity and scenario analysis in modelling are useful tools to give an idea of how life expectancy may vary when assumptions are changed. Section 6 of this report sets out some sensitivity analysis around how changes to the assumed ONS 2020-based projections affect projected SPa timetables.

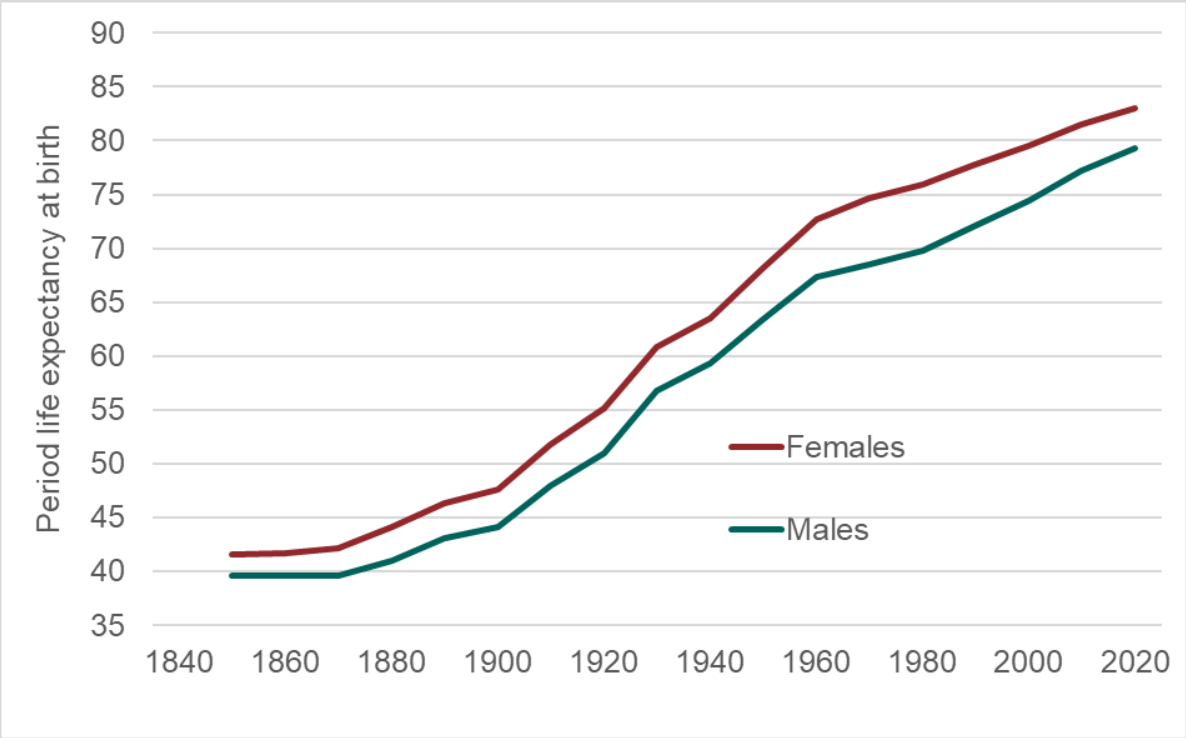
[11] https://www.actuaries.org.uk/learn-and-develop/continuous-mortality-investigation/cmi-investigations/mortality-projections

Historic trends in life expectancy

4.25 The ONS's population projections used in this review calculate future life expectancies by extrapolating past trends into the future. It is important to understand these trends and why they have changed in order to understand the implications for the future.

4.26 Life expectancy in the UK has been improving for a very long period as mortality rates have fallen. Chart 4.2 shows how period life expectancy at birth has improved since the mid-nineteenth century (for England and Wales only), with particularly steep increases visible between 1900 to 1960.

Chart 4.2 – Historic period life expectancy at birth in England and Wales (averaged over 10 years)



Source: GAD calculations based on ONS data

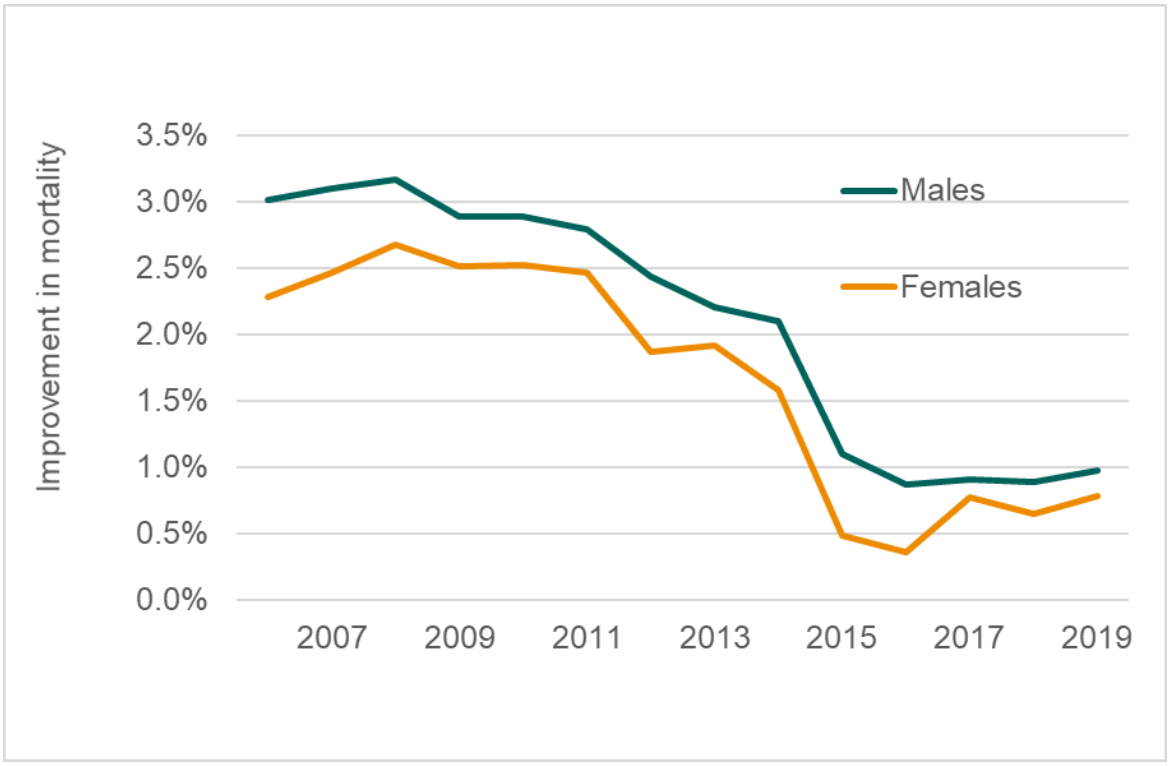
4.27 Improvements in the first half of the 20th century were driven largely by reductions in infant deaths and deaths from infectious diseases as well as vastly improved public hygiene. In the latter half of the 20th century, improvements were primarily a result of the introduction of the NHS, improved working conditions and the reduction of smoking. In the late 20th century and early 21st century, reductions in deaths from cardiovascular disease have considerably improved mortality rates at older ages.

Recent trends in life expectancy

2011 to 2019

4.28 Since 2011, improvements in life expectancy in the UK have slowed down, particularly at older ages when the majority of deaths occur[12,13]. Life expectancy has still been improving year-on-year, but the improvements have not been as fast as had previously been anticipated. This can be seen in Chart 4.3, covering ages 65-90 (where the most reliable relevant data on mortality improvements is available) which shows that annual improvement rates have fallen from around 3% to below 1% over the last decade.

Chart 4.3 – Age-standardised annual mortality improvements in the UK, ages 65-90 (5-year moving average)



Source: GAD calculations based on ONS data

4.29 It is uncertain whether improvements are likely to continue at this lower rate in the future. There does not appear to be a single factor that is likely to have caused this change from 2011, but several possible different reasons.

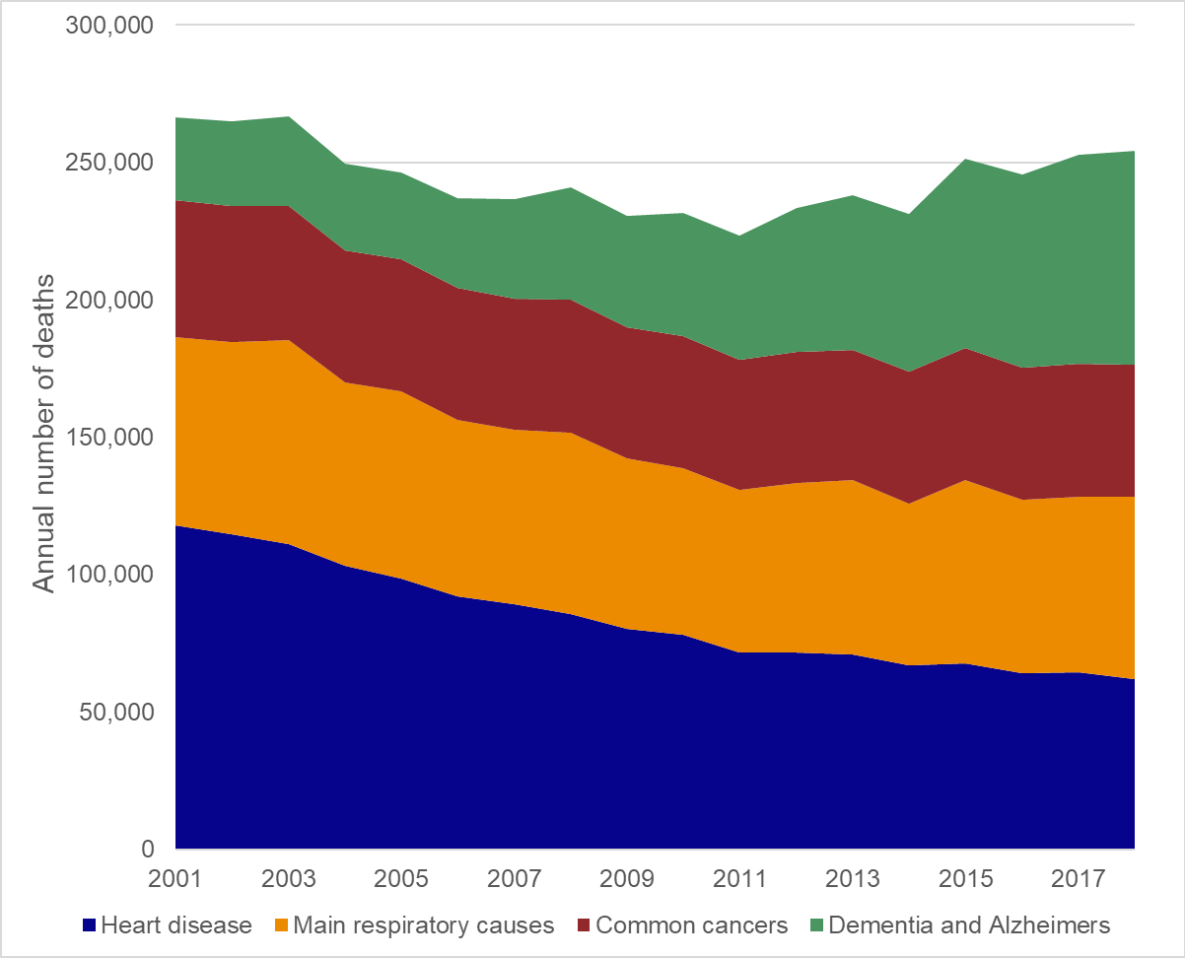
4.30 For those aged over 50, a reason for the change in trend is likely to be partially attributable to the number of deaths caused by cardiovascular and heart disease. It can be seen in Chart 4.4 below that whilst the number of deaths from these causes has decreased steadily over the last 20 years, the rate of decrease has slowed over the last decade (shown by a less steep reduction from around 2011).

[12] https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/articles/changingtrendsinmortality/acrossukcomparison1981to2016

[13] https://www.gov.uk/government/publications/health-profile-for-england-2018/chapter-2-trends-in-mortality

4.31 Meanwhile, the numbers of deaths from cancers and respiratory causes have remained broadly similar throughout the same period (despite an ageing and growing population), and deaths from dementia and Alzheimer's have increased. These increases can be partly attributed to more people reaching older ages where these illnesses are more common, but are also influenced by changes in the last decade in the way the causes of death are recorded.

Chart 4.4 – Annual number of deaths from leading causes in the UK (for over-50s)



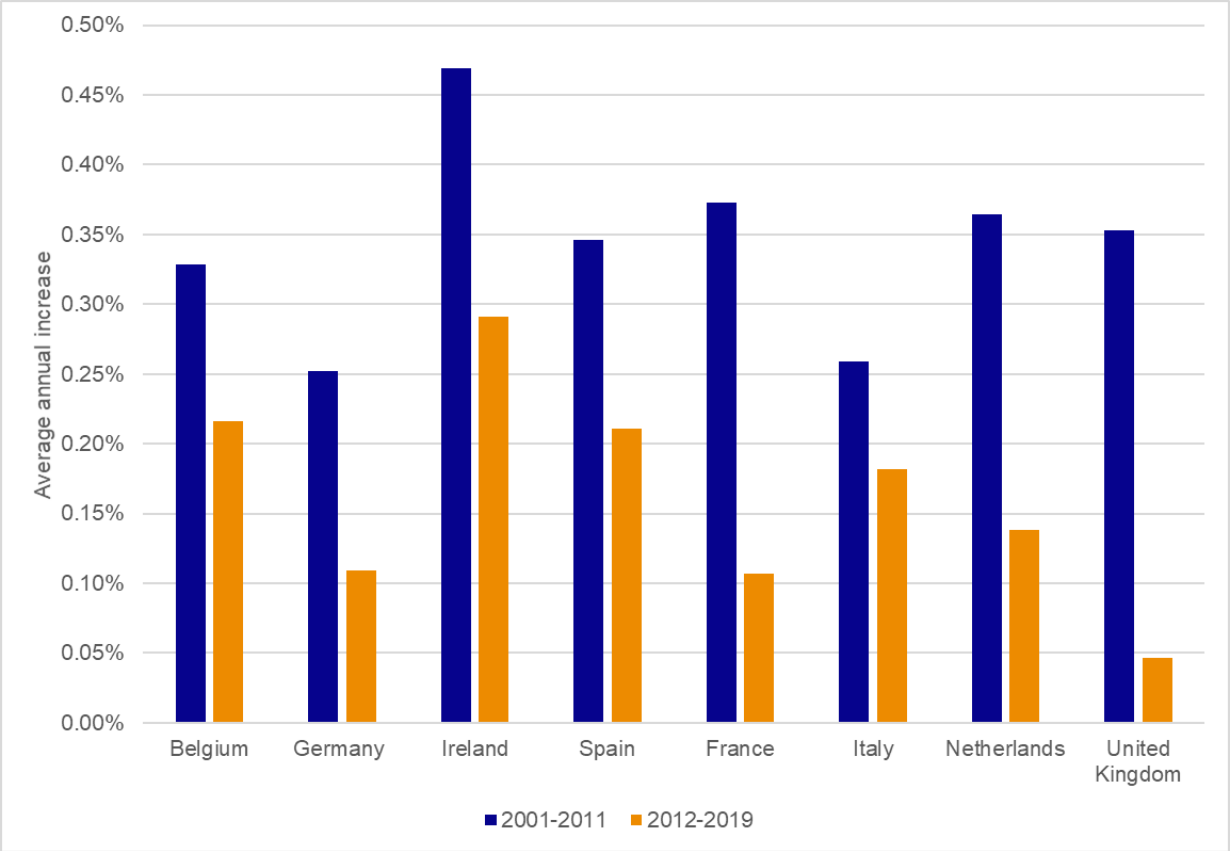
Source: GAD calculations based on ONS data

4.32 Excess winter mortality (the fact that more deaths occur in the winter months than the summer) may have contributed to the slowdown in improvements, as a few winters (particularly 2014-15) have had a particularly high number of deaths attributed to influenza. However, although year-on-year fluctuations have been high, this has not been enough alone to shift the longer-term trend – the decline in improvements has also been seen in non-winter months.

4.33 Several studies[14,15] have pointed to the global financial crisis of 2007-08 and restrained government spending in subsequent years on health and social care as a possible cause for the slowdown in mortality improvements.

4.34 It should be noted that similar slowdowns in improvements in mortality have occurred in other western European countries, although the decline in the UK is one of the largest, as shown in Chart 4.5 below.

Chart 4.5 – Change in the average annual increase in period life expectancy from birth for selected Western European countries



Source: GAD calculations based on Eurostat data

4.35 Other factors that may have contributed to the slowdown in improvements include migration, weather trends and cohort effects (individuals born in certain periods showing different trends). Analysis by Public Health England[15] indicates that the reduction in the rate of improvements in mortality has affected the most deprived parts of the population more than the least deprived, which may have further contributed to the average slowdown in improvements in the UK.

14 https://www.lse.ac.uk/business/consulting/reports/stalling-of-mortality-in-the-uk-and-europe

15 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/827518/Recent_trends_in_mortality_in_England.pdf

2020 to 2022

4.36 The COVID-19 pandemic meant that around 120,000[16] more deaths occurred in the UK over 2020 and 2021 than had been expected (compared to the deaths expected over that period using mortality rates experienced in 2019). This is equivalent to around 13% more deaths in 2020 and 7% more deaths in 2021, compared to 2019[17, 18].

4.37 As the pandemic has increasingly been brought under control, the number of deaths in the UK in 2022 has decreased compared to the same period in both 2020 and 2021. However, there were still around 16,000 more deaths than expected in the UK over the year to the end of August 2022[19]. In the first quarter of 2022, the number of deaths were similar to those expected prior to the pandemic. However, between April and August 2022 there were more deaths than would have been expected. Whilst not all the additional deaths appear to be directly related to COVID-19[20], some may be due to indirect causes related to the pandemic.

Future trends in life expectancy

COVID-19 – short to medium term

4.38 It is important to consider whether the pandemic will result in any changes to the trend of the lower improvements in mortality seen in the decade prior to 2020. At this stage it is impossible to ascertain this, but it is important to consider reasons and ways that the trend could change.

4.39 The Department of Health and Social Care (DHSC) and the Scientific Advisory Group for Emergencies (SAGE), in conjunction with the ONS, published some detailed analysis in September 2021[21] on direct and indirect health impacts of COVID-19 in England, which explores these issues in more detail. This analysis noted that people in the most deprived socio-economic groups experienced the greatest adverse health impacts from COVID-19, consistent with the overall mortality trends experienced in the previous decade (see paragraph 4.35).

4.40 An allowance has been made in the ONS 2020-based projections for excess deaths due to COVID-19 in the projections of life expectancy (see paragraph 4.15 to 4.17). However, further variants resistant to vaccines could increase mortality rates again, as could issues resulting from long COVID, both potentially reducing future improvements.

16 https://www.actuaries.org.uk/system/files/field/document/Mortality%20pandemic%20monitor%20Week%2052%202021%20v01%202022-01-11.pdf

17 https://www.actuaries.org.uk/system/files/field/document/Mortality%20monitor%20end-2020%20v01%202021-01-12.pdf

18 https://www.actuaries.org.uk/system/files/field/document/Mortality%20monitor%20Q4%202021%20v01%202022-01-11.pdf

19 https://www.actuaries.org.uk/system/files/field/document/Mortality%20summary%20pandemic%20monitor%20Week%2035%202022%20v01%202022-09-13.pdf

20 https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredweeklyinenglandandwalesprovisional/weekending2september2022

21 https://www.gov.uk/government/publications/dhsc-direct-and-indirect-health-impacts-of-covid-19-in-england-long-paper-9-september-2021

4.41 By the start of 2022, an estimated 2.1% of the population self-reported long COVID symptoms more than four weeks after contracting the virus[22]. Studies have suggested that COVID-19 (even in some asymptomatic cases) has potentially caused some lung damage[23], and increased the risk of developing diabetes[24]. It could turn out that these or other aspects of COVID-19 or long COVID could shorten life expectancy for some people.

4.42 COVID-19 could also indirectly affect future life expectancy in a positive or negative way. Examples[25] of this include the features set out in Table 4.2.

Table 4.2 – Legacy effects of COVID-19 on life expectancy

Increased life expectancy	**Decreased life expectancy**
Behavioural issues e.g. such as a reduction in car journeys reducing air pollution, improved exercise, diet and work-life balance.	Effects on medical treatment due to patients delaying reporting symptoms, NHS postponing diagnoses and procedures, and pressure on healthcare funding.
Improving public health and preventative treatments.	Changes to mental health conditions, increased alcohol consumption and physical deconditioning among older people.
More innovation in health treatments generally and quicker approval of drugs following the success of the COVID-19 vaccines.	Adverse economic factors such as recession or unemployment are often associated with higher mortality as well as potentially affecting funding for the NHS and social care.

4.43 It is possible none of these factors could have a major influence on life expectancy and the trend in life expectancy reverts to that prior to the pandemic, but it will take some time for the position to become clearer.

Longer-term trends

4.44 Trends in life expectancy in the longer term are very difficult to predict, but need to be considered in the context of this review which includes projections over the period to 2070.

4.45 It is possible that some of the factors affecting the slowdown of improvements between 2011 and 2019 will be reversed in future. This could include a reduction in the number of deaths from influenza in some winters and a narrowing of the gap between the life expectancy of the most and least deprived.

22 https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/prevalenceofongoingsymptomsfollowingcoronaviruscovid19infectionintheuk/3february2022

23 https://oxfordbrc.nihr.ac.uk/lung-abnormalities-found-in-long-covid-patients-with-breathlessness/

24 https://diabetesjournals.org/care/article/45/4/782/141025/The-Incidence-of-Diabetes-Among-2-777-768-Veterans

25 https://www.gov.uk/government/publications/mortality-insights-from-gad-december-2020/mortality-insights-from-gad-december-2020

4.46 As noted earlier, studies have suggested a link between spending on health care and improvements in life expectancy. Prioritising government spending on health and social care in the future on particular groups of the population could mean that it is possible for the return of the higher improvements experienced prior to 2011.

4.47 Generally, there is no consensus between experts on the direction and magnitude of future increases as there are so many factors that can affect life expectancy, many of which are interrelated.

Table 4.3 – Examples of factors that can affect life expectancy

Cures and treatments for diseases such as cancers, dementia, circulatory diseases	
New types of treatments such as personalised medicine, stem cell therapy	
Development of treatments to slow the ageing process	
Increased proportion of the population being obese, having diabetes, poor diet and lack of exercise	
More of the population adopting healthier lifestyles for example healthier eating, increased exercise, more sleep	
New diseases, pandemics, long-term COVID-19 issues	
Economic climate, unemployment, health care funding	
Climate change	

Climate change

4.48 The effect of climate change on mortality can be divided into two areas – directly due to rising temperatures, and indirectly due to other associated factors. In the UK, climate change is expected to result in a greater number of days in the year when temperatures exceed an ‘optimum’ level, and fewer days when temperatures are lower than the ‘optimum’ level.

4.49 As the UK currently has far more ‘excess cold’ deaths than ‘excess heat’ deaths, the expected trend may lead to lower mortality rates, although recent experience suggests that aggregate mortality may not be overly sensitive to the average temperatures experienced[26].

4.50 Climate change could also indirectly lead to societal changes as we transition to a low carbon state. This could have knock on long-term implications for our air quality, a greater risk of infectious diseases, the diets that we adopt and other life-style changes affecting life expectancy.

[26] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/900518/Mortality_Insights_July_2020.pdf

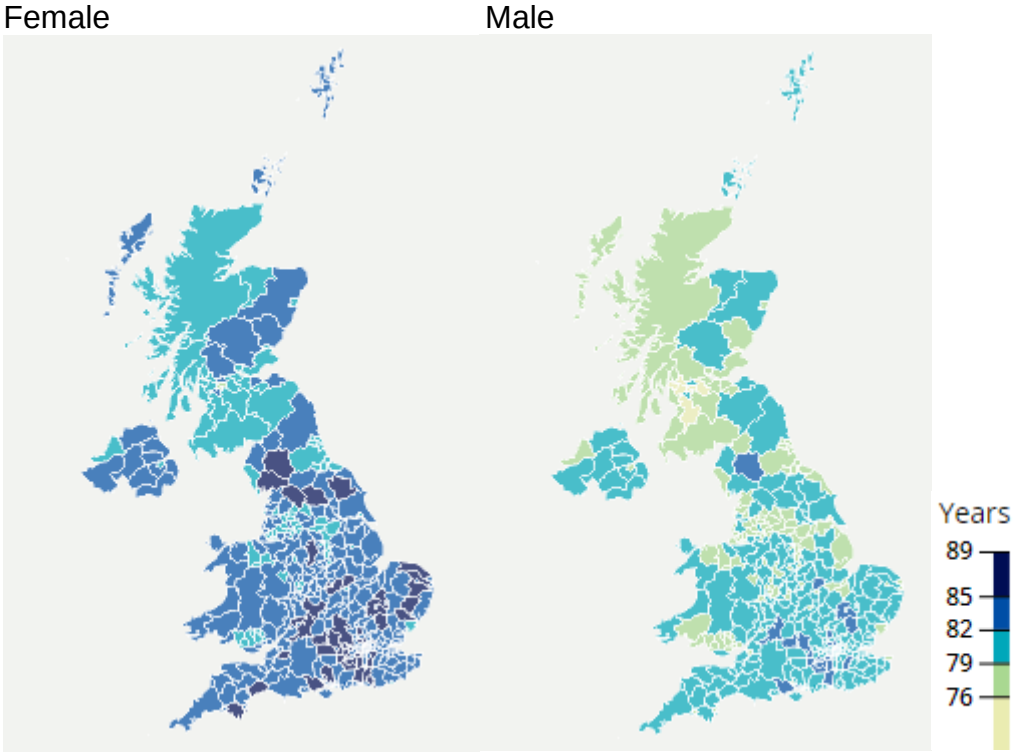
4.51 As many of the factors are interwoven it can be useful to consider different possible scenarios allowing for a group of factors and considering how these could influence improvements in mortality. This can help illustrate the range of extreme scenarios on future life expectancy, together with a potential range of more likely scenarios.

Variations in life expectancies for different population sub-groups

4.52 In carrying out the analysis on the UK population as a whole, it is important to bear in mind that the life expectancies calculated are averages across the whole population. In practice, there are huge variations in experience from one individual to another, and the use of average life expectancies masks the variations that exist between different individuals within the population.

4.53 Many studies have shown that average life expectancy can vary between groups of the population with different characteristics. For example, on average women live longer than men, non-smokers live longer than smokers, and mortality rates vary considerably by geographical location[27] across the country (as illustrated in Chart 4.6 below). Geographical location is unlikely to be a factor in itself but is likely to reflect that people in particular locations are often affected by similar factors such as socio-economic class, income, occupation, health status and behaviours.

Chart 4.6 – Period life expectancy at birth 2018-2020



Source: ONS

4.54 However, such differences in life expectancies are not uniform within these groups, as between individuals within any sub-grouping with a common risk factor, there is heterogeneity in life expectancy.

[27] https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/lifeexpectancyforlocalareasoftheuk/between2001to2003and2018to2020

4.55 For example, whilst the experience of certain lives in a geographical location may be statistically significantly different from the general population, geography is not the driver of that experience, rather it is more likely to be socio-economic. Moreover, there is still sizeable variation within geographical areas.

4.56 Cardiovascular disease is one of the conditions most strongly associated with health inequalities; with probability of premature death caused by this being four times more likely in England's most deprived areas compared to the least deprived areas[28].

4.57 Recently we have seen clear examples of how mortality rates have varied between different groups with certain characteristics. The rate of deaths from COVID-19 has varied across the population. For example, there has been a disproportionate number of deaths from COVID-19 in people with pre-existing medical conditions, certain ethnic minorities, those with low income, those working in certain face-to-face occupations and those living in large households.

4.58 Not only do inequalities exist, but the gap in life expectancy between some groups has been widening in recent years. A recent study[29] showed that males in the least-deprived 10% of areas in England can expect to live around a decade longer on average than males in the 10% most-deprived areas.

4.59 Furthermore, socio-economic inequalities in life expectancy are widening as a result of greater gains in life expectancy in the least-deprived populations. People living in the least-deprived areas of England saw a marked increase in life expectancy between 2014 and 2019 whereas no such changes were observed in the most-deprived areas.

4.60 The recent sharp increases in the cost of living, particularly in food and energy prices, are likely to have more effect on the most-deprived people in the population. This could have some effect on their health, and in turn potentially widen the gap in future in life expectancy between the most and least deprived.

4.61 The issues discussed above illustrate the difficulty with predicting future mortality and life expectancy improvements for the population as a whole when there is such a variation between individuals and sub-groups.

Healthy life expectancy

4.62 Recent increases in SPa have been linked to people living longer. We know life expectancy in the UK has been increasing for a very long time. An associated factor to consider is whether the proportion of peoples' lives spent in good health is increasing in the same way. This review looks at people spending a certain proportion of their life in receipt of the State Pension, but as life expectancy increases and SPa potentially rises, the extent to which people are still in good health when they reach SPa may be considered important.

[28] https://ukhsa.blog.gov.uk/2019/02/14/health-matters-preventing-cardiovascular-disease/

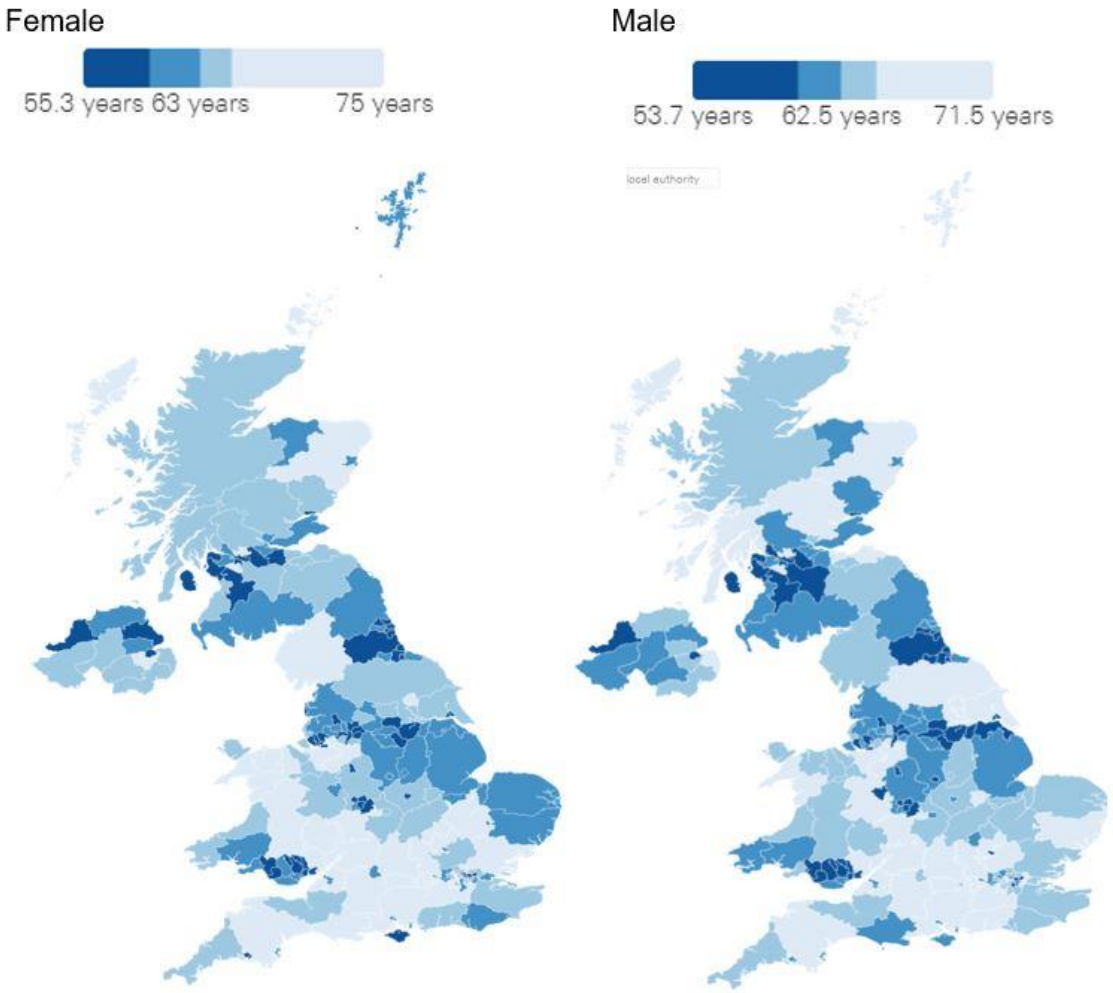
[29] https://www.kingsfund.org.uk/publications/whats-happening-life-expectancy-england#covid-19-and-inequalities-in-mortality

4.63 The ONS produces measures of healthy life expectancies (HLE) which estimate the average number of years spent in good health[30]. HLE is calculated from data collected from questionnaires where individuals self-rate their health.

4.64 Recent data produced by ONS shows that whilst life expectancy for the UK population as a whole has continued to increase in recent years (albeit at lower rates than in previous decades), the proportion of life spent in good health does not appear to have followed this pattern. In 2018 to 2020, HLE at birth in the UK was 62.8 years for males and 63.6 years for females, showing no particular change since 2015 to 2017 (whilst Scottish males saw a decrease of over 1 year in HLE over the same period).

4.65 HLE varies a lot between groups of the population, for example by socio-economic group and geographical location as illustrated by Chart 4.7 below, which shows a range in HLE of around 20 years in different parts of the country. This also suggests that a proportion of the population (shown in the two darkest blue shades) are likely to be in poor health when they reach the current SPa (66 years).

Chart 4.7 – Healthy life expectancy at birth 2017-2019



Source: The Health Foundation based on ONS data

[30] https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/healthstatelifeexpectanciesuk/2018to2020

4.66 One of the missions in the government's Levelling Up White Paper issued in February 2022[31] is "*by 2030, the gap in HLE between local areas where it is highest and lowest will have narrowed, and by 2035 HLE will rise by five years*". This focus might help increase average HLE nearer to or above SPa for more of the population.

4.67 However, there are a number of factors which make HLE figures less reliable than standard life expectancies. These include that:

- HLE is a relatively new metric and data on health status was first collected in the 2001 Census so a long-term historic series of data is not available
- the data that the ONS collect between censuses is based on only a sample of the population (unlike deaths where all are required to be registered)
- individuals self-assess their health so it is very subjective; different individuals with the same conditions may classify themselves differently and change over time
- HLEs are generally only available on a "period" basis – that is, without any allowance for either future mortality improvements or future changes in health status or disability rates by age. This is likely to underestimate true HLEs, particularly for younger people compared to if cohort HLEs were used.

4.68 In my opinion, whilst HLE should be considered as part of the wider considerations impacting SPa, it would be difficult to frame a policy for setting the SPa directly using HLE due to the issues surrounding sampling and subjectivity.

Concluding comments

4.69 It should be recognised that predictions of future trends in life expectancy require assumptions to be made about factors that are inherently uncertain. Recent experience has shown a shift away from the longer-term historical trend of rising life expectancies. It is not always clear why such trends have occurred, and resultant predictions based on assumptions about the future have varied accordingly.

4.70 Predicting life expectancy trends in the future is even more difficult as there are unknown factors that could affect life expectancy in either direction with unknown magnitude. Furthermore, life expectancy between individuals and groups of the population with similar characteristics vary enormously due to a variety of reasons.

4.71 This is made all the more difficult at present as we emerge from the COVID-19 pandemic, which makes projecting future trends even more uncertain. It is important that this inherent uncertainty in future mortality rates is acknowledged when setting an SPa timetable with regard to life expectancy.

[31] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052708/Levelling_up_the_UK_white_paper.pdf

5. Results on specified parameters and assumptions

The analysis shows that, under a proportion of adult life in retirement of up to 32%, and using the specified parameters and assumptions, the projected timetable for future SPa increases is somewhat slower than both legislation and current government policy.

Key results

5.1 This section of the report sets out a summary of the results of the calculations under each of the three scenarios for the specified proportion of adult life in retirement, based on the assumptions and parameters set out in section 3. More detailed results are set out in Appendix B.

5.2 The key assumptions and parameters used for the results in this section are:

- mortality assumptions – ONS 2020-based interim UK principal population projections
- age adult life assumed to begin – 20
- specified proportion of adult life in retirement – (i) 32%, (ii) 31%, (iii) 30%

5.3 Based on the assumptions above, and following the specified methodology outlined in section 3, a summary of the key results is set out in the tables below. Table 5.1 shows the two-year period for each SPa increase under the various specified proportions of adult life in retirement, with the Tables 5.2 and 5.3 illustrating this on a year-by-year basis. SPa changes are assumed to take place over two-year periods commencing on 6 April.

Table 5.1 – Summary SPa timetables under specified parameters and assumptions

			Proportion of adult life in retirement		
SPa increase	**Current legislation**	**Current policy**	**32%**	**31%**	**30%**
66 to 67	2026-28	2026-28	2037-39	2026-28	2023-25**
67 to 68	2044-46	2037-39	2053-55	2041-43	2030-32
68 to 69	**-**	-	n/a*	2058-60	2046-48
69 to 70	**-**	-	n/a*	n/a*	2062-64

** These increases would take place after the end of the specified projection period in 2070*

*** This increase is calculated to be required immediately, because the proportion is already over 30%. For the purposes of this report it is assumed that the earliest it could take place in theory is from April 2023.*

Table 5.2 – SPa timetables under specified parameters and assumptions, by tax year

Tax year		current	current	specified proportion		
6 April	to 5 April	legislation	policy	32%	31%	30%
2023	2024	66	66	66	66	66.0-66.5*
2024	2025	66	66	66	66	66.5-67.0*
2025	2026	66	66	66	66	67
2026	2027	66.0-66.5*	66.0-66.5*	66	66.0-66.5*	67
2027	2028	66.5-67.0*	66.5-67.0*	66	66.5-67.0*	67
2028	2029	67	67	66	67	67
2029	2030	67	67	66	67	67
2030	2031	67	67	66	67	67.0-67.5*
2031	2032	67	67	66	67	67.5-68.0*
2032	2033	67	67	66	67	68
2033	2034	67	67	66	67	68
2034	2035	67	67	66	67	68
2035	2036	67	67	66	67	68
2036	2037	67	67	66	67	68
2037	2038	67	67.0-67.5*	66.0-66.5*	67	68
2038	2039	67	67.5-68.0*	66.5-67.0*	67	68
2039	2040	67	68	67	67	68
2040	2041	67	68	67	67	68
2041	2042	67	68	67	67.0-67.5*	68
2042	2043	67	68	67	67.5-68.0*	68
2043	2044	67	68	67	68	68
2044	2045	67.0-67.5*	68	67	68	68
2045	2046	67.5-68.0*	68	67	68	68
2046	2047	68	68	67	68	68.0-68.5*
2047	2048	68	68	67	68	68.5-69.0*
2048	2049	68	68	67	68	69
2049	2050	68	68	67	68	69
2050	2051	68	68	67	68	69
2051	2052	68	68	67	68	69
2052	2053	68	68	67	68	69
2053	2054	68	68	67.0-67.5*	68	69
2054	2055	68	68	67.5-68.0*	68	69
2055	2056	68	68	68	68	69
2056	2057	68	68	68	68	69
2057	2058	68	68	68	68	69
2058	2059	68	68	68	68.0-68.5*	69
2059	2060	68	68	68	68.5-69.0*	69
2060	2061	68	68	68	69	69
2061	2062	68	68	68	69	69
2062	2063	68	68	68	69	69.0-69.5*
2063	2064	68	68	68	69	69.5-70.0*
2064	2065	68	68	68	69	70
2065	2066	68	68	68	69	70
2066	2067	68	68	68	69	70
2067	2068	68	68	68	69	70
2068	2069	68	68	68	69	70
2069	2070	68	68	68	69	70

** Transitional period – SPa will increase steadily over the range indicated*

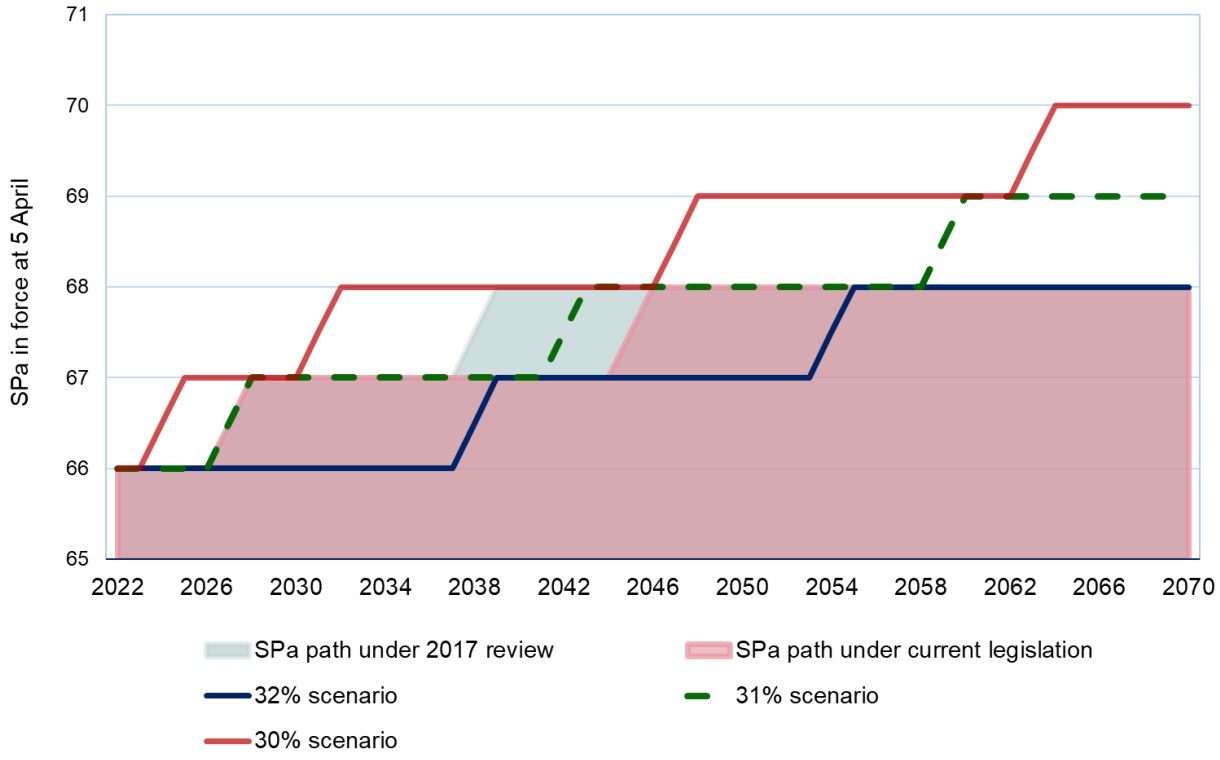
Table 5.3 – SPa timetables under specified parameters and assumptions, by date of birth

Date of birth		current	current	specified proportion		
6 April	to 5 April	legislation	policy	32%	31%	30%
1957	1958	66	66	66	66	66-67*
1958	1959	66	66	66	66	67
1959	1960	66	66	66	66	67
1960	1961	66-67*	66-67*	66	66-67*	67
1961	1962	67	67	66	67	67
1962	1963	67	67	66	67	67
1963	1964	67	67	66	67	67-68*
1964	1965	67	67	66	67	68
1965	1966	67	67	66	67	68
1966	1967	67	67	66	67	68
1967	1968	67	67	66	67	68
1968	1969	67	67	66	67	68
1969	1970	67	67	66	67	68
1970	1971	67	67-68*	66	67	68
1971	1972	67	68	66-67*	67	68
1972	1973	67	68	67	67	68
1973	1974	67	68	67	67	68
1974	1975	67	68	67	67-68*	68
1975	1976	67	68	67	68	68
1976	1977	67	68	67	68	68
1977	1978	67-68*	68	67	68	68
1978	1979	68	68	67	68	68-69*
1979	1980	68	68	67	68	69
1980	1981	68	68	67	68	69
1981	1982	68	68	67	68	69
1982	1983	68	68	67	68	69
1983	1984	68	68	67	68	69
1984	1985	68	68	67	68	69
1985	1986	68	68	67	68	69
1986	1987	68	68	67-68*	68	69
1987	1988	68	68	68	68	69
1988	1989	68	68	68	68	69
1989	1990	68	68	68	68	69
1990	1991	68	68	68	68-69*	69
1991	1992	68	68	68	69	69
1992	1993	68	68	68	69	69
1993	1994	68	68	68	69	69-70*
1994	1995	68	68	68	69	70
1995	1996	68	68	68	69	70
1996	1997	68	68	68	69	70
1997	1998	68	68	68	69	70
1998	1999	68	68	68	69	70
1999	2000	68	68	68	69	70

** Transitional period – SPa will increase steadily over the range indicated*

5.4 Chart 5.1 summarises the SPa increases over the projection period covered by this review under the various scenarios being considered.

Chart 5.1 – Calculated SPa timetables under specified parameters and assumptions



5.5 The results illustrate firstly the degree of sensitivity of the calculations to the specified proportion and secondly, the extent to which these results are materially different from those at the previous review.

5.6 For example, the projected increase in SPa from 67 to 68 varies over a period of 23 years when moving between 32% and 30% proportions. The increase in SPa from 67 to 68 under current legislation between 2044-46 is equivalent to a specified proportion of up to around 31.2%, and the equivalent increase under current government policy between 2037-39 is equivalent to a specified proportion of up to around 30.6%.

Methodology

5.7 As explained in section 3 of this report, the methodology used for these calculations provides for SPa to complete each increase to the next SPa in the year in which the proportion of adult life in retirement based on the current SPa first reaches the specified proportion (32%, 31% or 30% respectively).

5.8 This means that in practice for any scenario, the SPa change has to happen just in time so that the proportion of adult life in retirement never exceeds the relevant specified proportion, with the transition to the new SPa starting two years before the proportion would be expected to be exceeded.

5.9 The effect of this is illustrated by Charts 5.2 and 5.3 below which show how the calculated proportion of adult life in retirement changes over time under the 32% and 30% scenarios.

Chart 5.2 – Calculated proportion of adult life in retirement and SPa timetables under specified parameters and assumptions (32% scenario)

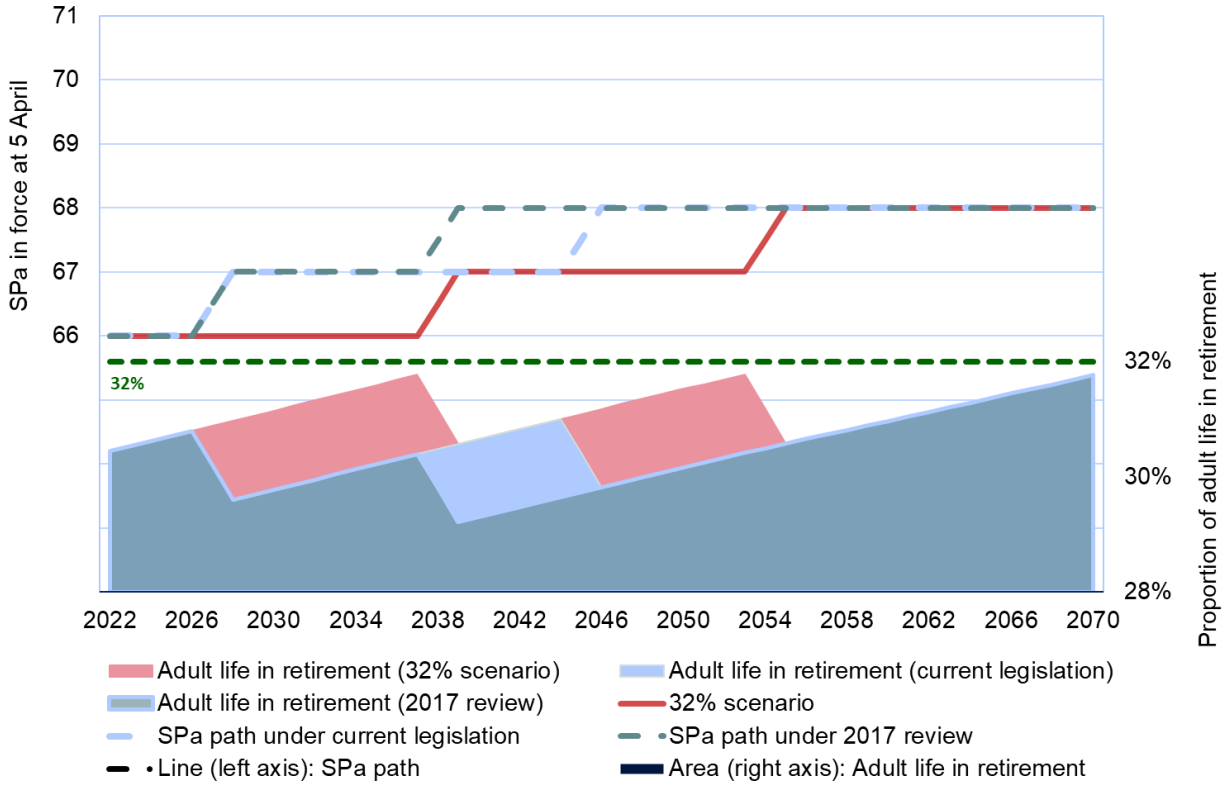
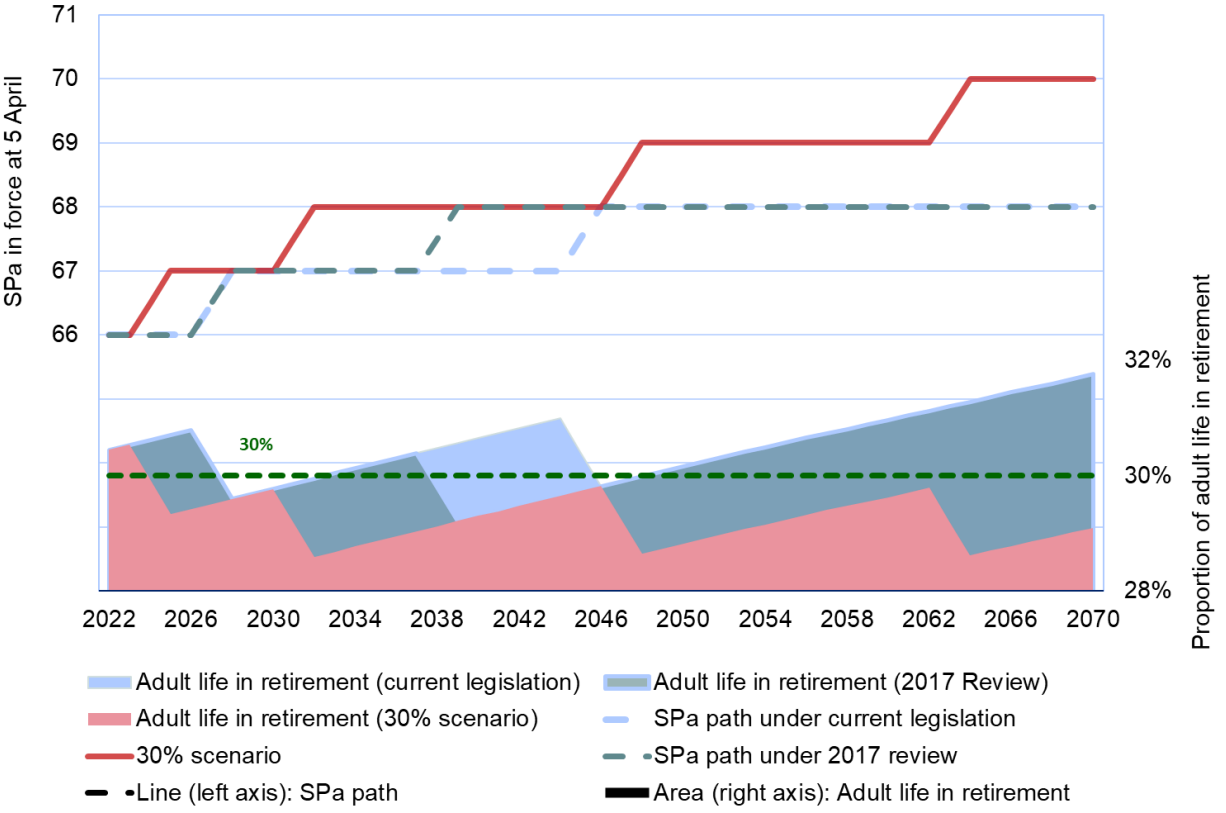


Chart 5.3 – Calculated proportion of adult life in retirement and SPa timetables under specified parameters and assumptions (30% scenario)



5.10 The charts above illustrate how the calculations work in practice under the various scenarios, with the blue blocks representing the proportion of adult life in retirement under current legislation and the red overlay showing how this would change under the 32% and 30% scenarios respectively.

5.11 This shows that under the 32% scenario, increases to SPa would be required later than under current legislation, whereas under the 30% scenario the increases would be required earlier than the current position[32].

Heterogeneity of experience

5.12 It is important to recognise that the prescribed formula for the calculations in this report does not mean that under each scenario, each individual will experience that proportion of adult life in retirement in practice. The specified proportion is the rate that would apply for those reaching SPa across the whole UK population on average.

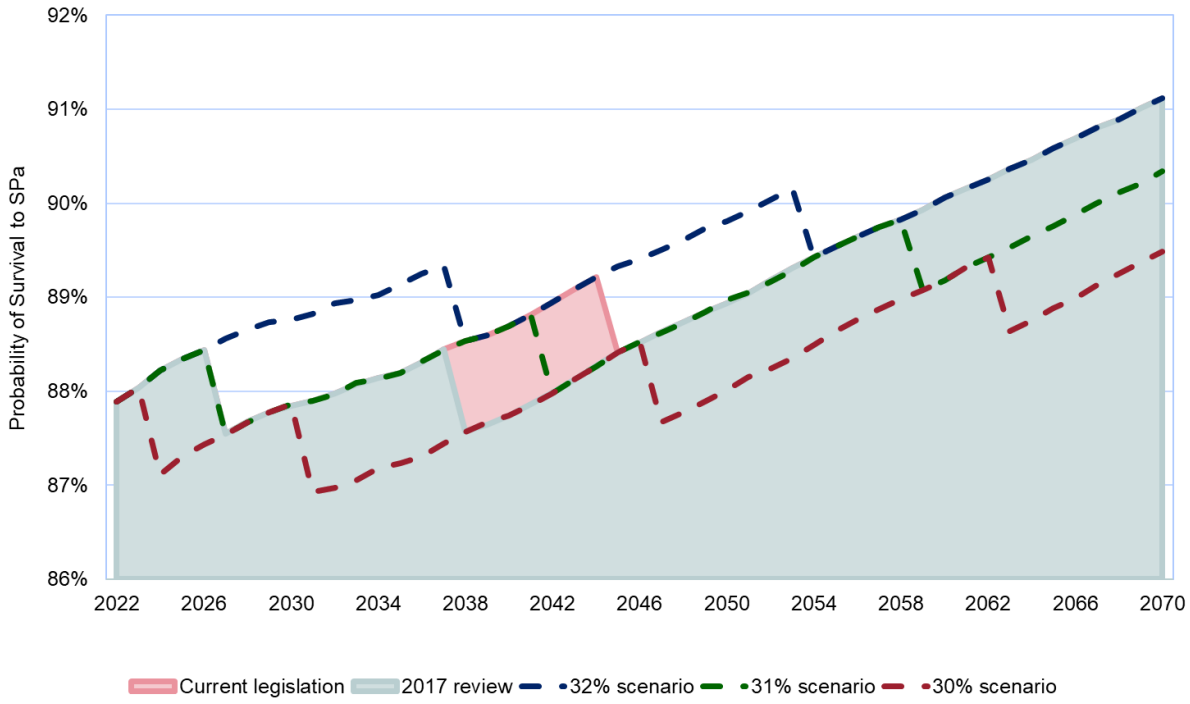
5.13 In reality, there is much variation in experience from one individual to another across the population. People reaching SPa will experience a proportion of their adult life in retirement unique to them, depending upon their own individual characteristics and circumstances, which will vary considerably across the population.

5.14 Many people will die before reaching SPa. Chart 5.4 below illustrates the likelihood of an individual reaching SPa in a given year and how this varies under the different scenarios. It illustrates the probability of an individual retiring in a given year having survived from the assumed start of adult life (age 20) to that the relevant SPa[33].

[32] Under the 30% scenario, the 66 to 67 SPa increase would be required to happen immediately to bring the proportion below 30%; for the purposes of this report I have assumed the earliest this change could commence in theory is April 2023.

[33] For example, a figure of 88% in 2022 shows that the probability of a person who was agreed 20 in 1976 surviving from then to retire at SPa 66 in 2022 was around 88% (calculated on a unisex basis).

Chart 5.4 – Probability of survival to SPa under different scenarios



5.15 This shows that the probability of individuals surviving to SPa is gradually expected to increase over time, from a level of around 88% in 2022 to around 89-91% by the end of the projection period in 2070, depending on the scenario being considered. However, this does illustrate that even over the very long term, many people will not reach their SPa at all, let alone spend a given proportion of their adult life in retirement.

5.16 Although each increase in SPa results in a temporary reduction in the survival rates, the long-term trend is upward, under all of the scenarios considered. This reflects continuing improvements in longevity rates expected over this period, based on the ONS principal population projections, and means that an increasing proportion of people are expected to reach SPa, even when SPa itself increases over time.

5.17 This feature does mean that despite future SPa increases, there is an increasing burden on public finances posed by the growing pension population, which can only partly be mitigated by an approach based on a fixed proportion of adult life in retirement, whatever that proportion may be.

5.18 These issues are explored in greater detail in my Quinquennial Review of the National Insurance Fund (most recently published in March 2022[34]), which considers the financial effects of long-term population trends such as this.

[34] https://www.gov.uk/government/news/quinquennial-review-2020

6. Sensitivity analysis

The projected SPa timetables are highly sensitive to the life expectancy assumptions used. This section sets out the results of sensitivity analysis around these parameters.

ONS projections

6.1 I have been asked to conduct sensitivity analysis of the likelihood of upward and downward revision of life expectancy forecasts to reflect recent fluctuations in ONS life expectancy projections and its effect on SPa age of entitlement.

6.2 This section sets out the results of these calculations under each of the three scenarios for the specified proportion of adult life in retirement, based on a number of alternative assumptions as set out below. For the results in this section, the key assumptions and parameters are all the same as those set out in section 5 unless indicated otherwise.

6.3 Section 4 discussed how future mortality rates are highly uncertain, and the effect on calculated SPa timetables is highly sensitive to both the assumptions and experience in the calculation of future life expectancies. It is important to consider the changes to both the short-term and long-term mortality assumptions.

6.4 Short-term assumptions are affected by recent mortality experience. As noted in section 4, the rates of mortality improvements have been declining over the last decade. Over this period, each successive set of ONS projections start at a lower point in the base year than had been previously projected, because of lower improvement rates being observed across the population in practice in the preceding years.

6.5 Long-term assumptions are more subjective. The ONS currently assumes long-term mortality improvement rates at most ages of 1.2% pa, broadly in line with the average improvement rate experienced in the past century. Although the long-term improvement rates assumed by ONS may change over time, this has not been the case in recent years – the current 1.2% long-term improvement rate has been in force since the ONS 2010-based projections.

Summary of results

6.6 The key finding from my sensitivity analysis is that what can appear to be relatively small changes in either the short-term or long-term mortality assumptions can have a material effect on the calculated SPa timetables. In particular, using successive sets of ONS population projections can result in very different calculated SPa timetables.

6.7 It is highly likely that using the next set of ONS population projections (expected to be published in 2023) would result in somewhat different calculated SPa timetables being derived for any given proportion, all other things being equal. This is particularly true because the next ONS projections will be the first to be set using the 2021 Census data, which therefore has the potential to lead to more considerable changes than the more recent projections (which have all been based on population data derived from the 2011 Census) as they will be based on a more accurate total population figure.

6.8 A summary of the key calculations from my sensitivity analysis is as follows:

- Relatively minor changes to the mortality assumptions can result in fairly large changes to the calculated SPa timetable.
- Moving from the ONS 2014-based principal projections (used in the previous SPa review) to the 2020-based projections used this time results in very different calculated SPa timetables. The SPa increase from 67 to 68 on a proportion of 32% takes place 27 years later under the latest projections compared to those used last time. Each successive set of ONS projections between this period results in successive movements between these two positions. The full results illustrating this sensitivity can be seen in Table 6.2.
- If the long-term mortality improvement rate assumed by ONS, which is currently 1.2% pa at most ages, was changed by 0.2% pa in either direction, the calculated SPa timetable for the increase from 67 to 68 on a 32% proportion could move by up to 10 years. The full results illustrating this sensitivity can be seen in Table 6.4.

6.9 These effects are similar for other proportions of adult life in retirement and different State Pension ages. Combinations of the two points above – that is, differences in successive sets of ONS population projections along with a change in the long-term mortality improvement rate – could lead to even greater volatility of SPa timetables calculated under the prescribed methodology.

6.10 I set out below more detailed information about the sensitivity calculations I have carried out.

Short-term mortality assumptions

6.11 The mortality rates assumed for the base year of each set of ONS projections, and the projected rates of improvement over the short-term after the base year, are based upon trends in population experience up to the preceding year. Each new set of ONS projections allows for more recent years of experience and contains the most recent available data on which to base projections.

6.12 Despite the smoothing methodologies adopted by ONS, successive sets of ONS projections can produce large variations in the calculated timetable of SPa increases under the prescribed methodology. This is because the use of more recent data by ONS affects not only the base year mortality rates, but also on the future improvement rates for each subsequent year over the short to medium term (until the assumed long-term improvement rate is reached after 25 years). This magnifies the effect of any changes when applied to the specified formula for calculating SPa timetables.

6.13 To illustrate the sensitivity of the results to changes in the ONS life expectancy projections, I have considered how the results outlined in section 5 would be different if the 2014-based projections (as used in the previous SPa review), the 2016-based or 2018-based principal projections had been used instead of the 2020-based principal projections. This gives an indication of how the life expectancy forecasts produced by ONS can fluctuate from one set of projections to the next in practice, and the resultant effect on the calculated SPa timetables.

6.14 In each of these sets of ONS projections, the assumed long-term rates of mortality improvement were the same – based on an ultimate long-term improvement rate of 1.2% pa at most ages – albeit coming into force at slightly different dates (25 years after the base year in each case, which for ONS-2020 would be 2045). However, the base tables and short-term improvement rates show more variability between the different sets of projections, reflecting fluctuations in recent mortality experience.

6.15 Table 6.1 below shows differences in cohort life expectancies at age 66 for men and women, on successive sets of ONS population projections, calculated in both 2020 (the start date of the most recent population projections) and 2050 (to illustrate the effect of projected mortality improvements over time).

Table 6.1 – Cohort life expectancies at age 66 (in 2020 and 2050) under successive sets of ONS principal population projections

ONS principal population projections	Cohort life expectancy at age 66			
	Men		Women	
	2020	2050	2020	2050
2014-based	21.1	24.3	23.2	26.3
2016-based	20.1	23.1	22.2	25.0
2018-based	19.2	21.9	21.3	23.8
2020-based	18.8	21.5	21.1	23.6

6.16 This shows that there have been substantial reductions in projected future life expectancies at retirement over successive sets of ONS projections, with the average reducing by over 2 years during the 6-year period between these sets of projections. Such variations result in material changes in the calculated proportion of adult life in retirement under the prescribed formula, as shown in Table 6.2.

Table 6.2 – Calculated SPa timetables under successive sets of ONS population projections

SPa increase	Proportion of adult life in retirement 32%	31%	30%
	ONS-2014		
66 to 67	2023-25**	2023-25**	2023-25**
67 to 68	2026-28†	2025-27**	2025-27**
68 to 69	2040-42	2030-32	2027-29**
69 to 70	2054-56	2043-45	2033-35
70 to 71	2068-70	2057-59	2047-49
71 to 72	n/a*	n/a*	2060-62
	ONS-2016		
66 to 67	2023-25	2023-25**	2023-25**
67 to 68	2037-39	2027-29	2025-27**
68 to 69	2052-54	2041-43	2030-32
69 to 70	2067-69	2056-58	2045-47
70 to 71	n/a*	n/a*	2059-61
	ONS-2018		
66 to 67	2034-36	2023-25	2023-25**
67 to 68	2050-52	2038-40	2027-29
68 to 69	2068-70	2055-57	2042-44
69 to 70	n/a*	n/a*	2059-61
	ONS-2020		
66 to 67	2037-39	2026-28	2023-25**
67 to 68	2053-55	2041-43	2030-32
68 to 69	n/a*	2058-60	2046-48
69 to 70	n/a*	n/a*	2062-64

** These increases would take place after the end of the specified projection period in 2070*

*** These increases are calculated to be required immediately, because the proportion is already exceeded. For the purposes of this report it is assumed that the earliest it could take place in theory is from April 2023.*

† In the 2017 SPa review, this increase was disclosed as 2028-30 because the projection period for future SPa increases covered by that review only commenced in 2028.

6.17 Charts 6.1 and 6.2 below illustrate the figures in Table 6.2 for the 32% and 30% scenarios:

Chart 6.1 – Calculated SPa timetables under successive sets of ONS population projections (32% scenario)

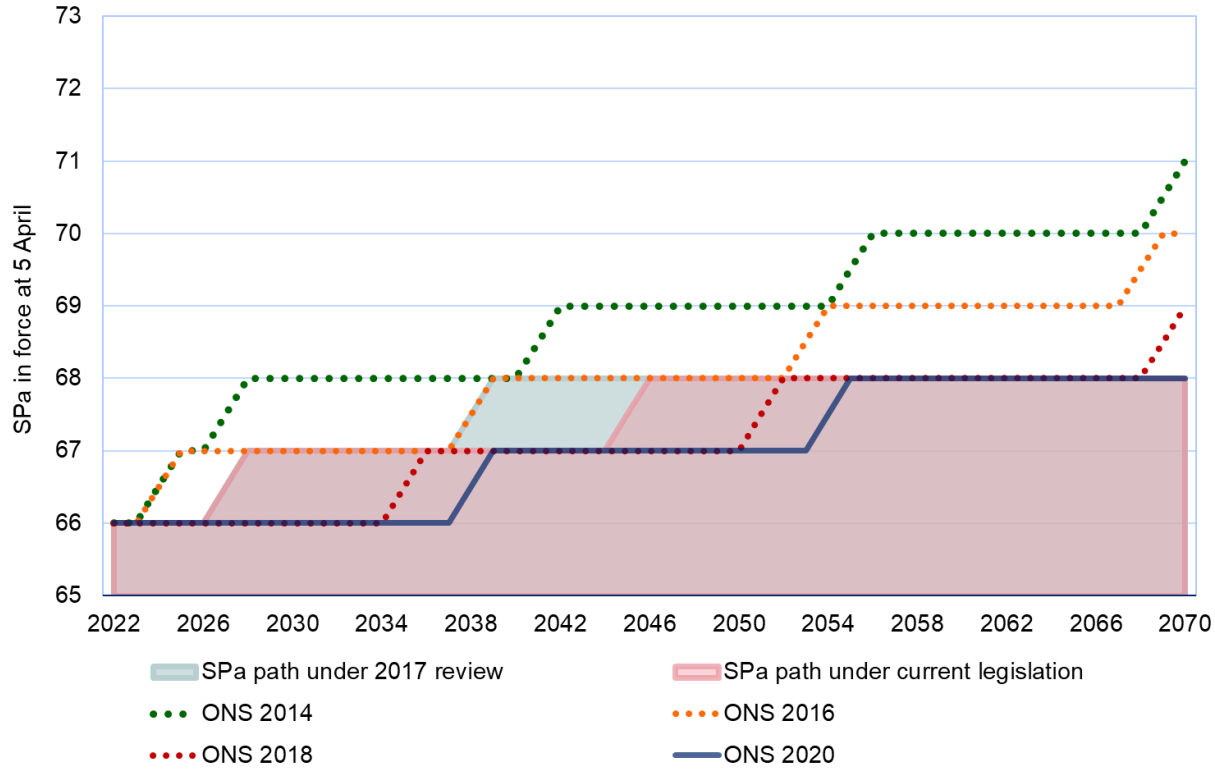
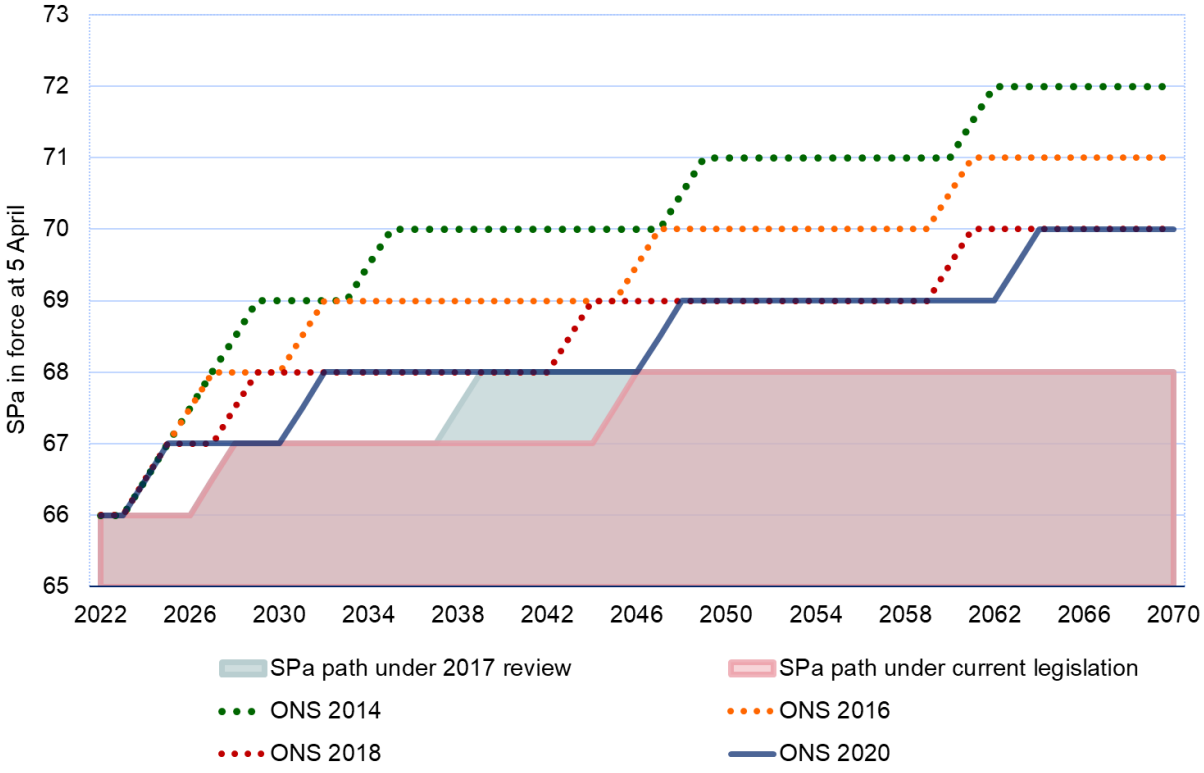


Chart 6.2 – Calculated SPa timetables under successive sets of ONS population projections (30% scenario)



6.18 The table and charts above show how the calculations to establish the future path of SPa changes can vary materially between different sets of ONS principal population projections. This illustrates how the results are very sensitive to changes in mortality assumptions, even though such changes are driven by relatively short periods of actual mortality experience over 2-year assessment periods.

6.19 These results also demonstrate the recent trend of a slowdown in life expectancy improvements. Under the ONS 2020-based projections, only two increases in SPa are required in the 32% scenario in the period up to 2070. However, under the ONS 2014-based projections then five increases in SPa would be required in the 32% scenario over the period to 2070, taking SPa to 71 by the end of that period.

6.20 The specified proportion of adult life also has a large bearing on the results. Using the ONS 2020-based projections, under the 30% scenario four increases in SPa would be required over the period to 2070, compared to just two increases required under the 32% scenario.

Long-term mortality improvements

6.21 As explained in section 4 of this report, the ONS mortality projections are derived by considering a combination of mortality rates experienced in the past and assumptions about future improvements. The long-term improvement rates are more subjective and changes to these rates could also result in material changes to calculated SPa timetables.

6.22 The ONS previously published “high” and “low” variant projections of future life expectancies alongside the principal projections. However, the 2020-based projections do not include such variant projections.

6.23 Changes to the ONS long-term improvement rate have tended to happen infrequently – the most recent change in the central long-term improvement rate was an increase from 1.0% pa to 1.2% pa in the 2010-based projections. However, given the continued downward trend in mortality improvement rates over the last decade, it is reasonable to consider whether the long-term improvement rate might be changed again by the ONS in the future and what the effect of that might be on the calculated SPa timetables.

6.24 For illustration, I set out below how the calculated SPa timetables might change if the long-term improvement rate under the 2020-based projections were changed by 0.2% pa in either direction – that is to 1.0% pa or 1.4% pa, rather than the principal assumption of 1.2% pa – and the differences in cohort life expectancies under these parameters.

6.25 Table 6.3 below shows the differences in cohort life expectancies at age 66, the current SPa, for the different long-term improvement rates mentioned above, calculated in both 2020 and 2050.

Table 6.3: Cohort life expectancies at age 66 (in 2020 and 2050) under ONS 2020-based principal population projections and adjusted long-term improvement rates

Long-term Improvement rate	Cohort life expectancy at age 66			
	Men		Women	
% pa	2020	2050	2020	2050
1.0%	18.7	20.9	21.0	23.1
1.2% (current)	18.8	21.5	21.1	23.6
1.4%	19.1	22.2	21.4	24.3

6.26 This shows that whilst varying the long-term improvement rate by 0.2% pa in either direction results in relatively small differences in cohort life expectancies at age 66 in 2020, the cumulative effect results in greater differences in life expectancy at age 66 in the future. These differences feed through to proportionate changes in the calculated SPa timetables, as illustrated in Table 6.4 below.

Table 6.4: Calculated SPa timetables under ONS 2020-based principal population projections and adjusted long-term improvement rates

SPa increase	Proportion of adult life in retirement		
	32%	31%	30%
Long-term improvement rate = 1.0%			
66 to 67	2043-45	2030-32	2023-25**
67 to 68	2063-65	2048-50	2035-37
68 to 69	n/a*	2068-70	2053-55
69 to 70	n/a*	n/a*	n/a*
Long-term improvement rate = 1.2% (current)			
66 to 67	2037-39	2026-28	2023-25**
67 to 68	2053-55	2041-43	2030-32
68 to 69	n/a*	2058-60	2046-48
69 to 70	n/a*	n/a*	2062-64
Long-term improvement rate = 1.4%			
66 to 67	2032-34	2023-25**	2023-25**
67 to 68	2046-48	2036-38	2026-28
68 to 69	2061-63	2050-52	2040-42
69 to 70	n/a*	2065-67	2054-56
70 to 71	n/a*	n/a*	2068-70

** These increases would take place after the end of the specified projection period in 2070*

*** These increases are calculated to be required immediately, because the proportion is already exceeded. For the purposes of this report it is assumed that the earliest increase to SPa 67 is from April 2023.*

6.27 Charts 6.3 and 6.4 below illustrate the figures in Table 6.4 for the 32% and 30% scenarios.

Chart 6.3 – Calculated SPa timetables under ONS 2020-based principal population projections and adjusted long-term improvement rates (32% scenario)

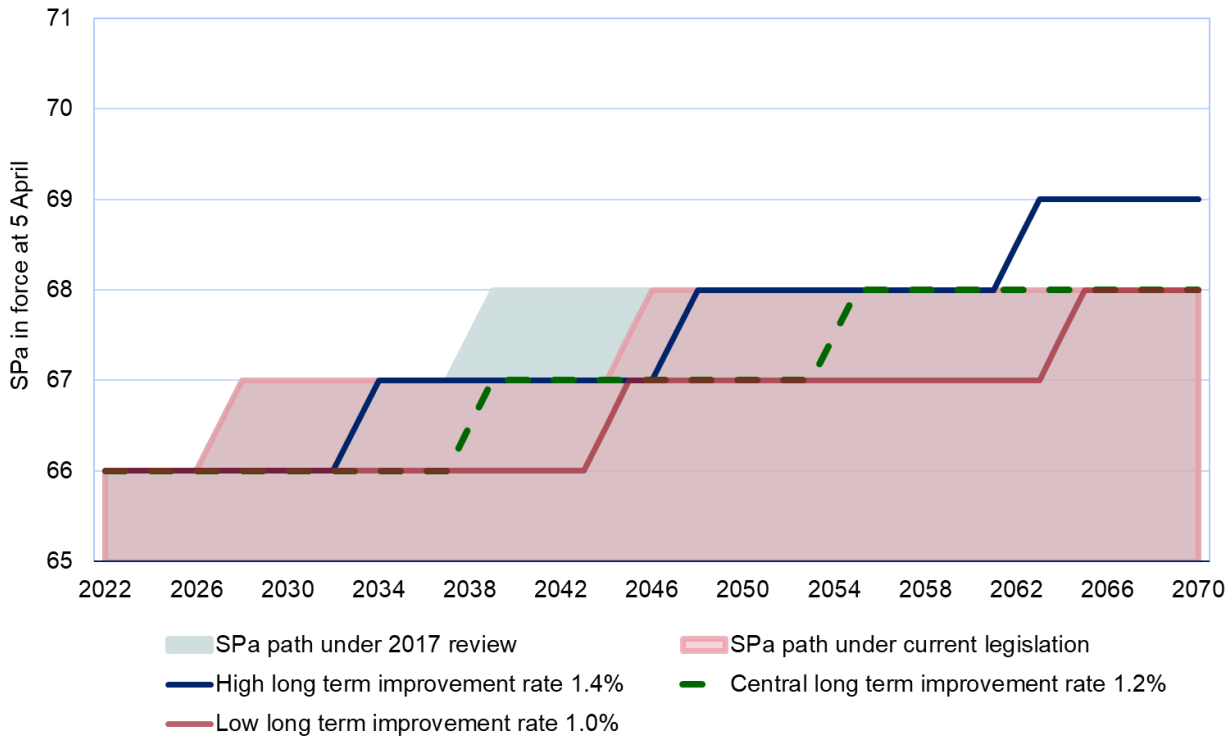
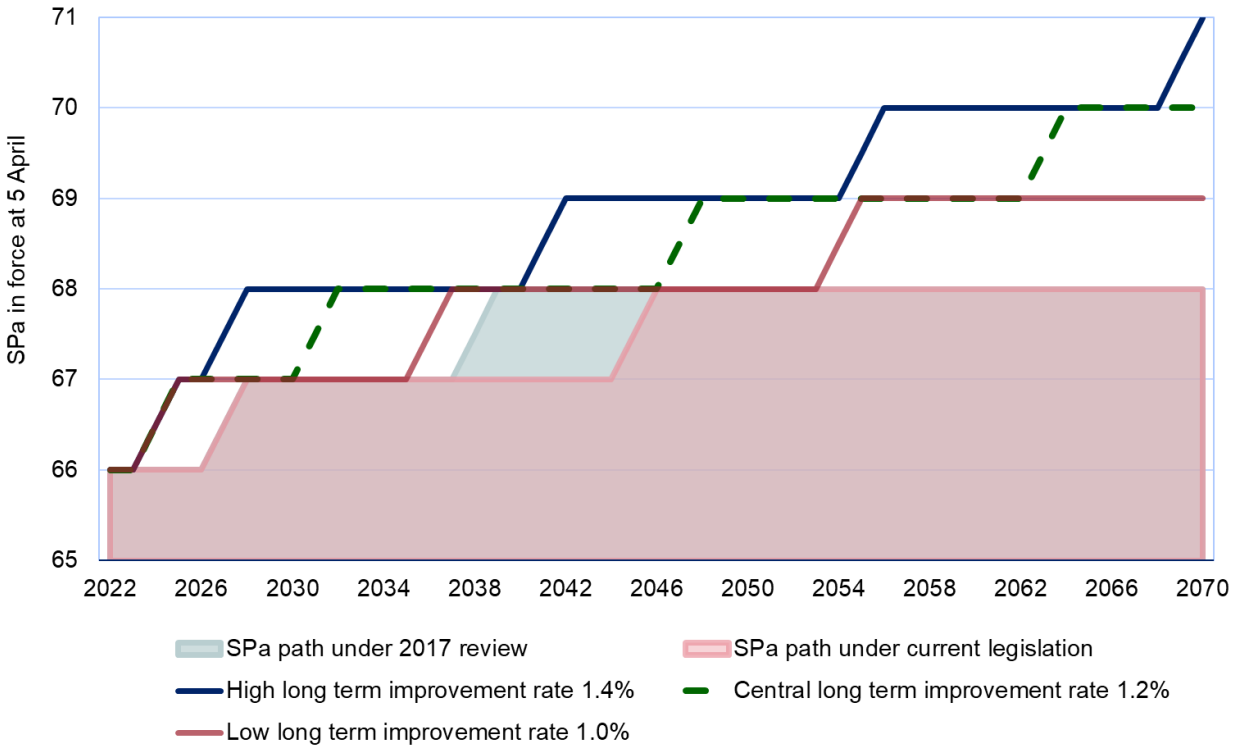


Chart 6.4 – Calculated SPa timetables under ONS 2020-based principal population projections and adjusted long-term improvement rates (30% scenario)



7. Concluding remarks

This report focuses on my analysis of SPa timetables calculated under certain prescribed assumptions and parameters, but there are other issues to be considered and a wider context when setting future SPa policy.

Long-term considerations

7.1 This report sets out my assessment of the SPa timetable changes required under various proportions of adult life in retirement, based on the specified parameters and assumptions.

7.2 The key results, set out in section 5 of this report, show that under a 32% proportion of adult life in retirement, using the latest ONS-2020 based population projections, the projected timetable for future SPa increases is somewhat slower than both legislation and current government policy – the increase in SPa from 66 to 67 would take place from 2037 to 2039 and the increase from 67 to 68 would take place from 2053 to 2055. Conversely, under a 30% proportion, the projected timetable would require SPa increases to take place much sooner than currently scheduled – the increase in SPa from 66 to 67 would need to take place with immediate effect and the increase from 67 to 68 would take place from 2030 to 2032.

7.3 The government has previously stated an intention that it will give at least 10 years' notice of any SPa changes. The projection period covered by this report extends all the way to 2070, but the next SPa review is due to be carried out within 6 years of this one, and so the projection period for the next SPa review will therefore overlap greatly with the projection period covered by this one.

7.4 The calculated SPa timetable according to the prescribed formula can vary substantially between different sets of ONS population projections. This highlights that relatively small changes in either the short-term or long-term mortality assumptions can shift the calculated SPa timetables under the prescribed methodology. Hence, the calculated SPa timetables in the Government Actuary's report for the next SPa review may be somewhat different to those outlined in this report for any given proportion, if the same approach is used.

7.5 In my opinion it is not unreasonable to consider the proportion of adult life expected to be spent above SPa in the reviews of the rules about SPa, but given the sensitivity of the results to both experience and assumptions, there are limits to the extent to which one single measure can be used to inform policy.

7.6 Clearly a number of other options are possible, and the parameters and assumptions set out in this report could be varied further. I would be pleased to carry out further calculations to illustrate the effect on the future SPa timetable of different parameters and assumptions being adopted under the prescribed formula, or any alternative methodologies.

7.7 It should be recognised that the government has not committed to follow any of the scenarios set out in this report and is considering future changes to SPa both in the context of this report and the separate independent report prepared by Baroness

Neville-Rolfe, which will also consider the metrics used to set SPa and alternatives that Government could consider. The final decision on changes to SPa may therefore be different from any of the scenarios in this report and may allow for other considerations such as those outlined in this report and elsewhere.

Appendix A: Terms of Reference

This appendix sets out the Terms of Reference for this report, issued by DWP in March 2022.

1. Purpose

The purpose of the report on State Pension age (SPa) by the Government Actuary is to contribute to the evidence examining the latest life expectancy data and to provide advice on:

a) whether the rules about pensionable age mean that, on average, a person who reaches pensionable age within a specified period can be expected to spend a specified proportion of his or her adult life in retirement; and
b) if not, ways in which the rules might be changed with a view to achieving that result.

2. Background

The relevant legislation to increase the SPa includes:

- **Pensions Act 2007** – Provision to increase the SPa to 68 over two years starting in April 2044;
- **Pensions Act 2014** – Provision to bring forward the increase in the SPa to 67 to between April 2026 and April 2028. The result is people born after 5 March 1961 but before 6 April 1977 have a SPa of 67.

The first Review of State Pension age was undertaken in 2017, informed by both the Government Actuary's Report and the independent report undertaken by John Cridland. He recommended bringing forward the increase to age 68 to 2037-39, based on 2012-based and 2014-based life expectancy data, and the government accepted these recommendations, subject to a further review before tabling the requisite legislative amendments.

As required by the 2014 Act, the Secretary of State must commission two independent reports to contribute to the evidence considered during this Review: a report from the Government Actuary and a report on other factors that the Secretary of State considers are relevant to the Review.

The Secretary of State has commissioned Baroness Neville-Rolfe to provide the latter report which will consider recent trends in life expectancy and the range of metrics we use for analysis when setting State Pension age.

The Review will consider a wide range of evidence, including the latest life expectancy data, impacts of previous changes to State Pension Age, fiscal costs and impacts on current taxpayers and those who may be, or become, reliant on the State Pension as their primary source of income, as well as how we best support an ageing population and their opportunities to work.

3. Scope of the GAD report

The Secretary of State for Work and Pensions requires the Government Actuary to assess whether the rules about pensionable age mean that on average, a person who reaches pensionable age within a specified period can be expected to spend a specified proportion of his or her adult life in retirement, and if not, ways in which the rules might be changed with a view to achieving that result. The future period and proportions of adult life are specified below.

This report should include:

- Commentary on trends in life expectancy data;
- Assessment of current legislative timings for the rise to 67 and 68 and the proposed 2017 Review change to bring forward the rise to 68, subject to consideration of the latest life expectancy projections in this Review;
- Sensitivity analysis as specified below.

4. Methodology and Assumptions

The proportion of adult life spent in receipt of State Pension based on life expectancy at SPa can be expressed as follows:

$$\text{Proportion of adult life spent in receipt of State Pension} = \frac{\text{Life Expectancy at SPa}}{\text{Life Expectancy at SPa} + \text{SPa} - \text{Age at start of adult life}}$$

There are a number of variables that feed into the above formula, including:

- Age when adult life begins
- Measurement of life expectancy

Age when adult life begins

Details of the core principles to guide the SPa review were set out by DWP alongside Autumn Statement 2013.[35] The DWP background note stated that the age of 20 should be used as the starting age for the purpose of calculating the proportion of adult life spent in receipt of State Pension. This is based on OECD convention and is commonly used as a comparator for matters relating to pensions. The Government Actuary should therefore consider 20 as the age at which adult life begins.

[35] For further detail see Department for Work and Pensions (2013), *"The core principle underpinning future State Pension age rises: DWP background note"*, December 2013

Measurement of life expectancy

The average "life expectancy at SPa" for use in the Report should be calculated using probabilities of death at each age and in each year, weighted for the different numbers of men and women in the population at the relevant age and year.

The principal projections of UK cohort life expectancy[36], published by the Office for National Statistics every two years, allow projected life expectancy at any age to be calculated. The Government believes that the ONS publication of 2020-based Cohort life expectancy statistics (released in January 2022) are the appropriate ones that must be used for the purposes of this report by the Government Actuary.

Life expectancies will be based on the age exact as at the middle of the calendar year that falls in the financial year in question.

Specified future period and specified proportions of adult life

The report by the Government Actuary must assess the rules around pensionable age and where required, ways in which the rules might be changed to meet the proportions of adult life spent in retirement as far as the published ONS figures (2070). That is the specified future period for the report. It must include an assessment of the rises to 67 in 2026-28 and 68 in 2044-46, and whether they are met using the following proportions of adult life spent in retirement. The report will also look at bringing forward the rise to 68 to 2037-39, as committed in the 2017 Government Review.

Given the projected increases in life expectancy seen in figures published in 2011 (the most recent figures at the time), the background note accompanying the Chancellor's 2013 Autumn statement suggested a core principle for the SPa review that people may expect to spend up to one third of adult life over State Pension Age.

To allow the Government Review to consider a range of options including the effect of the proportion of adult life measure on State Pension age, the Government Actuary report should include sensitivity analysis and therefore consider the following specified proportions of adult life:

- 32.0% - to reflect the recommended long-term aim of up to 32% contained in the previous Government review of State Pension age;
- 31% - to show the impacts of a lower proportion of adult life spent in retirement; and
- 30% - to model a lower proportion of adult life spent in retirement.

The Independent Report on other factors, led by Baroness Neville-Rolfe, will provide advice on the range of measures that government considers when considering the State Pension age, including whether the proportion of adult life over State Pension age remains an appropriate measure.

Modelling the rises of SPa

The proposed methodology provides that SPa completes any increase in the year in which the proportion of adult life spent in receipt of State Pension at the existing SPa first reaches the proportion set by Secretary of State (to the nearest 0.1 per cent). Increases in SPa have not happened instantly, but have been phased in over 2 years for each rise to ensure a smooth

[36] The Pensions Commission (2005) recommended that official publications use the cohort measurement of life expectancy when describing current and future trends in longevity.

transition to the new SPa. If at any point the proportion of adult life spent drawing a State Pension is projected in the following two years to be within 0.1 per cent of the desired proportion, the transition to a further increase would begin.

For modelling purposes, in the event that consecutive increases in SPa are necessary in order to reach the desired percentage of adult life over SPa, it should be assumed that the second two-year transition period would follow directly after the first, with no gap between them.

Geographical Coverage

The analysis will be for the United Kingdom as a whole.

State Pension and setting State Pension age is a reserved matter for Great Britain, The Northern Ireland Executive has asked that the Review covers Northern Ireland. Any policy decisions for citizens of Northern Ireland will be the responsibility of the Northern Ireland Executive.

Sensitivity analysis

The Government Actuary is invited to conduct sensitivity analysis as follows:

- Analysis of the likelihood of upward and downward revision of life expectancy forecasts to reflect recent fluctuations in ONS life expectancy projections, and its effect on State Pension age of entitlement;
- Should the Government Actuary wish to conduct analysis on other factors outside of the scope of this Terms of Reference for the purpose of sensitivity analysis, a costed proposal should be submitted to DWP in writing; the DWP will then confirm, in writing, if they are content for this analysis to proceed.

5. Deliverables

The Government will consider the findings as part of its Review of State Pension age, therefore, emerging findings and recommendations must be submitted to the Secretary of State for Work and Pensions at a date to be determined by the Minister for Pensions and Financial Inclusion/Secretary of State. The content of the Government Actuary report is the sole responsibility of the Government Actuary who will have the final say on all key outputs and recommendations. The timing and manner of the publication the Government Actuary's report will be determined by the Secretary of State.

Appendix B: Detailed results

This appendix contains detailed results of the main analysis carried out for this report.

The following pages set out detailed tables of the calculation results, illustrating the proportion of adult life in retirement at each tax year of the projection period (from 2023 to 2070) under the current legislation and the 32%, 31% and 30% scenarios, as set out in section 5 of this report.

Life expectancies and proportions of adult life in retirement in these tables have been calculated based on age exact at the middle of the calendar year that falls in the tax year in question and SPa at the end of that tax year, consistent with the methodology outlined in section 3.

Table B.1 – SPa under current legislation

Tax year	SPa at end of tax year	Projected life expectancy at Spa	Proportion of adult life in retirement
2023-2024	**66**	**20.3**	**30.6%**
2024-2025	**66**	**20.4**	**30.7%**
2025-2026	**66**	**20.5**	**30.8%**
2026-2027	**66.5**	**20.1**	**30.2%**
2027-2028	**67**	**19.8**	**29.6%**
2028-2029	**67**	**19.8**	**29.7%**
2029-2030	**67**	**19.9**	**29.8%**
2030-2031	**67**	**20.0**	**29.9%**
2031-2032	**67**	**20.1**	**30.0%**
2032-2033	**67**	**20.2**	**30.0%**
2033-2034	**67**	**20.3**	**30.1%**
2034-2035	**67**	**20.4**	**30.2%**
2035-2036	**67**	**20.4**	**30.3%**
2036-2037	**67**	**20.5**	**30.4%**
2037-2038	**67**	**20.6**	**30.5%**
2038-2039	**67**	**20.7**	**30.6%**
2039-2040	**67**	**20.8**	**30.7%**
2040-2041	**67**	**20.9**	**30.7%**
2041-2042	**67**	**21.0**	**30.8%**
2042-2043	**67**	**21.0**	**30.9%**
2043-2044	**67**	**21.1**	**31.0%**
2044-2045	**67.5**	**20.8**	**30.4%**
2045-2046	**68**	**20.4**	**29.8%**
2046-2047	**68**	**20.5**	**29.9%**
2047-2048	**68**	**20.6**	**30.0%**
2048-2049	**68**	**20.7**	**30.1%**
2049-2050	**68**	**20.7**	**30.2%**
2050-2051	**68**	**20.8**	**30.3%**
2051-2052	**68**	**20.9**	**30.3%**
2052-2053	**68**	**21.0**	**30.4%**
2053-2054	**68**	**21.1**	**30.5%**
2054-2055	**68**	**21.1**	**30.6%**
2055-2056	**68**	**21.2**	**30.7%**
2056-2057	**68**	**21.3**	**30.7%**
2057-2058	**68**	**21.4**	**30.8%**
2058-2059	**68**	**21.5**	**30.9%**
2059-2060	**68**	**21.5**	**31.0%**
2060-2061	**68**	**21.6**	**31.1%**
2061-2062	**68**	**21.7**	**31.1%**
2062-2063	**68**	**21.8**	**31.2%**
2063-2064	**68**	**21.9**	**31.3%**
2064-2065	**68**	**21.9**	**31.4%**
2065-2066	**68**	**22.0**	**31.4%**
2066-2067	**68**	**22.1**	**31.5%**
2067-2068	**68**	**22.2**	**31.6%**
2068-2069	**68**	**22.3**	**31.7%**
2069-2070	**68**	**22.3**	**31.8%**

Table B.2 – SPa under stated Government policy from 2017 Review

Tax year	SPa at end of tax year	Projected life expectancy at Spa	Proportion of adult life in retirement
2023-2024	**66**	**20.3**	**30.6%**
2024-2025	**66**	**20.4**	**30.7%**
2025-2026	**66**	**20.5**	**30.8%**
2026-2027	**66.5**	**20.1**	**30.2%**
2027-2028	**67**	**19.8**	**29.6%**
2028-2029	**67**	**19.8**	**29.7%**
2029-2030	**67**	**19.9**	**29.8%**
2030-2031	**67**	**20.0**	**29.9%**
2031-2032	**67**	**20.1**	**30.0%**
2032-2033	**67**	**20.2**	**30.0%**
2033-2034	**67**	**20.3**	**30.1%**
2034-2035	**67**	**20.4**	**30.2%**
2035-2036	**67**	**20.4**	**30.3%**
2036-2037	**67**	**20.5**	**30.4%**
2037-2038	**67.5**	**20.2**	**29.8%**
2038-2039	**68**	**19.8**	**29.2%**
2039-2040	**68**	**19.9**	**29.3%**
2040-2041	**68**	**20.0**	**29.4%**
2041-2042	**68**	**20.1**	**29.5%**
2042-2043	**68**	**20.1**	**29.6%**
2043-2044	**68**	**20.2**	**29.6%**
2044-2045	**68**	**20.3**	**29.7%**
2045-2046	**68**	**20.4**	**29.8%**
2046-2047	**68**	**20.5**	**29.9%**
2047-2048	**68**	**20.6**	**30.0%**
2048-2049	**68**	**20.7**	**30.1%**
2049-2050	**68**	**20.7**	**30.2%**
2050-2051	**68**	**20.8**	**30.3%**
2051-2052	**68**	**20.9**	**30.3%**
2052-2053	**68**	**21.0**	**30.4%**
2053-2054	**68**	**21.1**	**30.5%**
2054-2055	**68**	**21.1**	**30.6%**
2055-2056	**68**	**21.2**	**30.7%**
2056-2057	**68**	**21.3**	**30.7%**
2057-2058	**68**	**21.4**	**30.8%**
2058-2059	**68**	**21.5**	**30.9%**
2059-2060	**68**	**21.5**	**31.0%**
2060-2061	**68**	**21.6**	**31.1%**
2061-2062	**68**	**21.7**	**31.1%**
2062-2063	**68**	**21.8**	**31.2%**
2063-2064	**68**	**21.9**	**31.3%**
2064-2065	**68**	**21.9**	**31.4%**
2065-2066	**68**	**22.0**	**31.4%**
2066-2067	**68**	**22.1**	**31.5%**
2067-2068	**68**	**22.2**	**31.6%**
2068-2069	**68**	**22.3**	**31.7%**
2069-2070	**68**	**22.3**	**31.8%**

Table B.3 – 32% scenario

Tax year	SPa at end of tax year	Projected life expectancy at Spa	Proportion of adult life in retirement
2023-2024	**66**	**20.3**	**30.6%**
2024-2025	**66**	**20.4**	**30.7%**
2025-2026	**66**	**20.5**	**30.8%**
2026-2027	**66**	**20.6**	**30.9%**
2027-2028	**66**	**20.6**	**31.0%**
2028-2029	**66**	**20.7**	**31.1%**
2029-2030	**66**	**20.8**	**31.1%**
2030-2031	**66**	**20.9**	**31.2%**
2031-2032	**66**	**21.0**	**31.3%**
2032-2033	**66**	**21.1**	**31.4%**
2033-2034	**66**	**21.2**	**31.5%**
2034-2035	**66**	**21.2**	**31.6%**
2035-2036	**66**	**21.3**	**31.7%**
2036-2037	**66**	**21.4**	**31.8%**
2037-2038	**66.5**	**21.1**	**31.2%**
2038-2039	**67**	**20.7**	**30.6%**
2039-2040	**67**	**20.8**	**30.7%**
2040-2041	**67**	**20.9**	**30.7%**
2041-2042	**67**	**21.0**	**30.8%**
2042-2043	**67**	**21.0**	**30.9%**
2043-2044	**67**	**21.1**	**31.0%**
2044-2045	**67**	**21.2**	**31.1%**
2045-2046	**67**	**21.3**	**31.2%**
2046-2047	**67**	**21.4**	**31.3%**
2047-2048	**67**	**21.5**	**31.4%**
2048-2049	**67**	**21.6**	**31.4%**
2049-2050	**67**	**21.6**	**31.5%**
2050-2051	**67**	**21.7**	**31.6%**
2051-2052	**67**	**21.8**	**31.7%**
2052-2053	**67**	**21.9**	**31.8%**
2053-2054	**67.5**	**21.5**	**31.2%**
2054-2055	**68**	**21.1**	**30.6%**
2055-2056	**68**	**21.2**	**30.7%**
2056-2057	**68**	**21.3**	**30.7%**
2057-2058	**68**	**21.4**	**30.8%**
2058-2059	**68**	**21.5**	**30.9%**
2059-2060	**68**	**21.5**	**31.0%**
2060-2061	**68**	**21.6**	**31.1%**
2061-2062	**68**	**21.7**	**31.1%**
2062-2063	**68**	**21.8**	**31.2%**
2063-2064	**68**	**21.9**	**31.3%**
2064-2065	**68**	**21.9**	**31.4%**
2065-2066	**68**	**22.0**	**31.4%**
2066-2067	**68**	**22.1**	**31.5%**
2067-2068	**68**	**22.2**	**31.6%**
2068-2069	**68**	**22.3**	**31.7%**
2069-2070	**68**	**22.3**	**31.8%**

Table B.4 – 31% scenario

Tax year	SPa at end of tax year	Projected life expectancy at Spa	Proportion of adult life in retirement
2023-2024	**66**	**20.3**	**30.6%**
2024-2025	**66**	**20.4**	**30.7%**
2025-2026	**66**	**20.5**	**30.8%**
2026-2027	**66.5**	**20.1**	**30.2%**
2027-2028	**67**	**19.8**	**29.6%**
2028-2029	**67**	**19.8**	**29.7%**
2029-2030	**67**	**19.9**	**29.8%**
2030-2031	**67**	**20.0**	**29.9%**
2031-2032	**67**	**20.1**	**30.0%**
2032-2033	**67**	**20.2**	**30.0%**
2033-2034	**67**	**20.3**	**30.1%**
2034-2035	**67**	**20.4**	**30.2%**
2035-2036	**67**	**20.4**	**30.3%**
2036-2037	**67**	**20.5**	**30.4%**
2037-2038	**67**	**20.6**	**30.5%**
2038-2039	**67**	**20.7**	**30.6%**
2039-2040	**67**	**20.8**	**30.7%**
2040-2041	**67**	**20.9**	**30.7%**
2041-2042	**67.5**	**20.5**	**30.2%**
2042-2043	**68**	**20.1**	**29.6%**
2043-2044	**68**	**20.2**	**29.6%**
2044-2045	**68**	**20.3**	**29.7%**
2045-2046	**68**	**20.4**	**29.8%**
2046-2047	**68**	**20.5**	**29.9%**
2047-2048	**68**	**20.6**	**30.0%**
2048-2049	**68**	**20.7**	**30.1%**
2049-2050	**68**	**20.7**	**30.2%**
2050-2051	**68**	**20.8**	**30.3%**
2051-2052	**68**	**20.9**	**30.3%**
2052-2053	**68**	**21.0**	**30.4%**
2053-2054	**68**	**21.1**	**30.5%**
2054-2055	**68**	**21.1**	**30.6%**
2055-2056	**68**	**21.2**	**30.7%**
2056-2057	**68**	**21.3**	**30.7%**
2057-2058	**68**	**21.4**	**30.8%**
2058-2059	**68.5**	**21.0**	**30.2%**
2059-2060	**69**	**20.6**	**29.6%**
2060-2061	**69**	**20.7**	**29.7%**
2061-2062	**69**	**20.8**	**29.8%**
2062-2063	**69**	**20.9**	**29.9%**
2063-2064	**69**	**20.9**	**29.9%**
2064-2065	**69**	**21.0**	**30.0%**
2065-2066	**69**	**21.1**	**30.1%**
2066-2067	**69**	**21.2**	**30.2%**
2067-2068	**69**	**21.3**	**30.3%**
2068-2069	**69**	**21.3**	**30.3%**
2069-2070	**69**	**21.4**	**30.4%**

Table B.5 – 30% scenario

Tax year	SPa at end of tax year	Projected life expectancy at Spa	Proportion of adult life in retirement
2023-2024	**66.5**	**19.9**	**29.9%**
2024-2025	**67**	**19.5**	**29.3%**
2025-2026	**67**	**19.6**	**29.4%**
2026-2027	**67**	**19.7**	**29.5%**
2027-2028	**67**	**19.8**	**29.6%**
2028-2029	**67**	**19.8**	**29.7%**
2029-2030	**67**	**19.9**	**29.8%**
2030-2031	**67.5**	**19.6**	**29.2%**
2031-2032	**68**	**19.2**	**28.6%**
2032-2033	**68**	**19.3**	**28.7%**
2033-2034	**68**	**19.4**	**28.8%**
2034-2035	**68**	**19.5**	**28.9%**
2035-2036	**68**	**19.6**	**28.9%**
2036-2037	**68**	**19.6**	**29.0%**
2037-2038	**68**	**19.7**	**29.1%**
2038-2039	**68**	**19.8**	**29.2%**
2039-2040	**68**	**19.9**	**29.3%**
2040-2041	**68**	**20.0**	**29.4%**
2041-2042	**68**	**20.1**	**29.5%**
2042-2043	**68**	**20.1**	**29.6%**
2043-2044	**68**	**20.2**	**29.6%**
2044-2045	**68**	**20.3**	**29.7%**
2045-2046	**68**	**20.4**	**29.8%**
2046-2047	**68.5**	**20.0**	**29.2%**
2047-2048	**69**	**19.7**	**28.6%**
2048-2049	**69**	**19.8**	**28.7%**
2049-2050	**69**	**19.8**	**28.8%**
2050-2051	**69**	**19.9**	**28.9%**
2051-2052	**69**	**20.0**	**29.0%**
2052-2053	**69**	**20.1**	**29.1%**
2053-2054	**69**	**20.2**	**29.2%**
2054-2055	**69**	**20.2**	**29.2%**
2055-2056	**69**	**20.3**	**29.3%**
2056-2057	**69**	**20.4**	**29.4%**
2057-2058	**69**	**20.5**	**29.5%**
2058-2059	**69**	**20.6**	**29.6%**
2059-2060	**69**	**20.6**	**29.6%**
2060-2061	**69**	**20.7**	**29.7%**
2061-2062	**69**	**20.8**	**29.8%**
2062-2063	**69.5**	**20.4**	**29.2%**
2063-2064	**70**	**20.0**	**28.6%**
2064-2065	**70**	**20.1**	**28.7%**
2065-2066	**70**	**20.2**	**28.8%**
2066-2067	**70**	**20.3**	**28.9%**
2067-2068	**70**	**20.4**	**28.9%**
2068-2069	**70**	**20.4**	**29.0%**
2069-2070	**70**	**20.5**	**29.1%**

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E02808983

978-1-5286-3731-2