



Government  
Actuary's  
Department

## The Armed Forces Pension Scheme (AFPS)

# Advice on assumptions

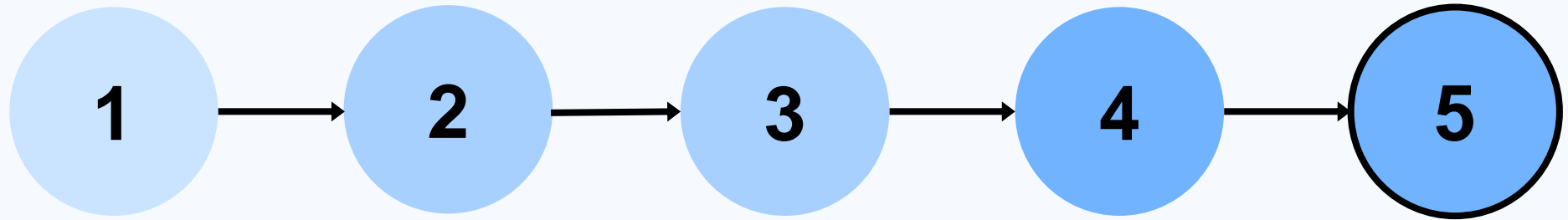
Actuarial valuation as at 31 March 2020

Joanne Rigby and Hayley Schofield

20 October 2023



# Assumptions setting process



**Current**

GAD analyse experience data, consider assumptions review group views, and prepare an initial set of recommended 'scheme-set' assumptions.

Details of our recommended assumptions can be found in Part B of this report.

GAD discuss recommended assumptions with AFPS policy team.

The purpose of these discussions is to:

- Go through our recommended assumptions to make sure they are reasonable and appropriately reflect scheme experience.
- Provide an opportunity for stakeholders to highlight any relevant additional information they hold which could impact our recommendations.

GAD discuss recommended assumptions with Assumptions Review Group.
























GAD present final recommended assumptions to AFPS policy team.

The Secretary of State for Defence has ultimate responsibility for setting the 'scheme-set' assumptions covered in this report, after considering GAD's advice.

The Secretary of State for Defence has decided to adopt all of the recommended 'scheme-set' assumptions set out in this report.

AFPS policy team liaise with Secretary of State for Defence to decide on the assumptions to be used in our calculations and informs GAD.

# Highlights

	Scheme-set assumptions		Our recommendations		
	Importance relative to scheme-set assumptions		Size of recommended changes		Impact of recommended changes on scheme costs
Mortality after retirement	 Most		 Small		 Higher costs
Proportion commuted	 Average		 Small		 Lower costs
Retirement ages	 Most		 Medium		 Lower costs (*)
Rates of leaving service	 Most		 Medium		
Promotional pay increases	 Average		 Small		 Lower costs
Rates of ill-health retirement	 Average		 Large		 Lower costs
Mortality before retirement	 Least		 None		 No impact
Family statistics	 Least		 Small		 Lower costs

This table provides a summary of the 'scheme-set' assumptions and their likely bearing on the valuation results. It is intended to highlight areas of potential focus to aid with the process of deciding on the 'scheme-set' assumptions to be adopted.

These assessments are indicative, rather than precise. More information on the approach used can be found in [Section B1](#).

Be aware that several of the most important valuation assumptions do not appear in this table as they will be directed by HM Treasury. The impact of these 'directed' assumptions could be much greater than that of the impact of 'scheme-set' assumptions.

\* This is the combined impact on scheme costs from changing both the age retirement and leaving service decrements.

# Advice on assumptions



# Contents

## Part A: Background

A1. Introduction	7
A2. Types of assumption	8
A3. Demographic assumptions	9
A4. Financial assumptions	10
A5. Setting assumptions	11
A6. Impact on employer contribution rates	12
A7. Impact on the scheme's cost cap cost	13
A8. Limitations	14

## Part B: Recommendations

B1. Summary	16
B2. Mortality after retirement	20
B3. Proportion commuted	29
B4. Retirement ages	35
B5. Rates of leaving service	46
B6. Promotional pay increases	54
B7. Rates of ill-health retirement	61
B8. Mortality before retirement	69
B9. Family statistics	76

## Part C: Appendices

C1. Directed assumptions	87
C2. Other minor assumptions	89
C3. Glossary	92

**Any terms that appear in this report in underlined text are defined in the Glossary.**

At the Government Actuary's Department (GAD), we seek to achieve a high standard in all our work. We are accredited under the Institute and Faculty of Actuaries' Quality Assurance Scheme. Our website describes [the standards](#) we apply.

# Part A: Background



# Introduction

## Who is this report for?

This report is addressed to the Secretary of State for Defence. The Directions require the scheme actuary to carry out a robust analysis of the demographic experience of the scheme. The purpose of this report is to provide our analysis, advice and recommendations on the 'scheme-set' assumptions to be adopted for the actuarial valuation of the Armed Forces Pension Scheme as at 31 March 2020 as required.

This report is intended to help the Secretary of State for Defence:

- understand the key assumptions about the future that need to be made in order to carry out the valuation
- understand the impact those assumptions can have on the valuation results
- decide on the 'scheme-set' assumptions to be adopted.

## Why are assumptions important?

Assumptions are estimates of uncertain variables needed to carry out the actuarial valuation of the AFPS as at 31 March 2020, in accordance with HM Treasury Directions.

The results of the valuation are critically dependent on the assumptions adopted. If what actually happens in the future turns out to be significantly different to these assumptions, employers could end up having over- or under-paid contributions, or benefit changes could be made when they otherwise wouldn't be.

Results

Assumptions

**Assumptions about the future are used, together with data, to calculate valuation results.**

Data

# Types of assumptions

## What assumptions are needed?

There are 2 main types of assumption:

- **Demographic assumptions.** These focus on member characteristics and help to determine when and for how long benefits are expected to be paid.
- **Financial assumptions.** These focus on financial factors and help to determine how much is expected to be paid to members.

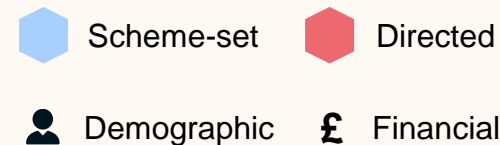
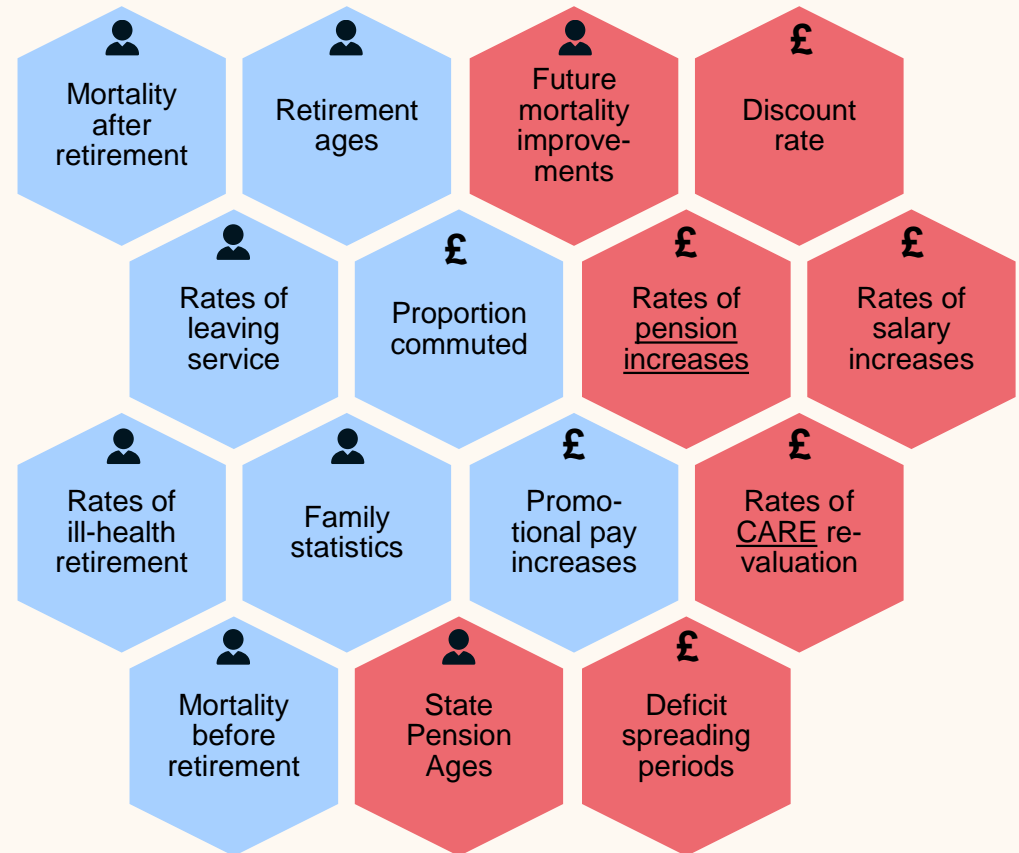
Together these assumptions determine how much needs to be set aside now, in order to meet future payments.

## Who is responsible for assumptions?

There are 2 parties responsible for setting assumptions:

- The Secretary of State for Defence, who is responsible for setting 'scheme-set' assumptions (after taking actuarial advice). These are usually demographic assumptions.
- HM Treasury, who are responsible for setting 'directed' assumptions through legislation. These are usually financial assumptions.

In this report we focus on 'scheme-set' assumptions, but directed assumptions are included for context. Directed assumptions are shown in Appendix C1.





# Demographic assumptions

## How are the assumptions used?

Demographic assumptions are used to predict what will happen to the status of members in the future, until their liability in the scheme is extinguished.

The chart to the right shows a simplified set of paths that an active member could follow. Demographic assumptions (shown in circles) are used to determine the likelihood that the member follows any given path.

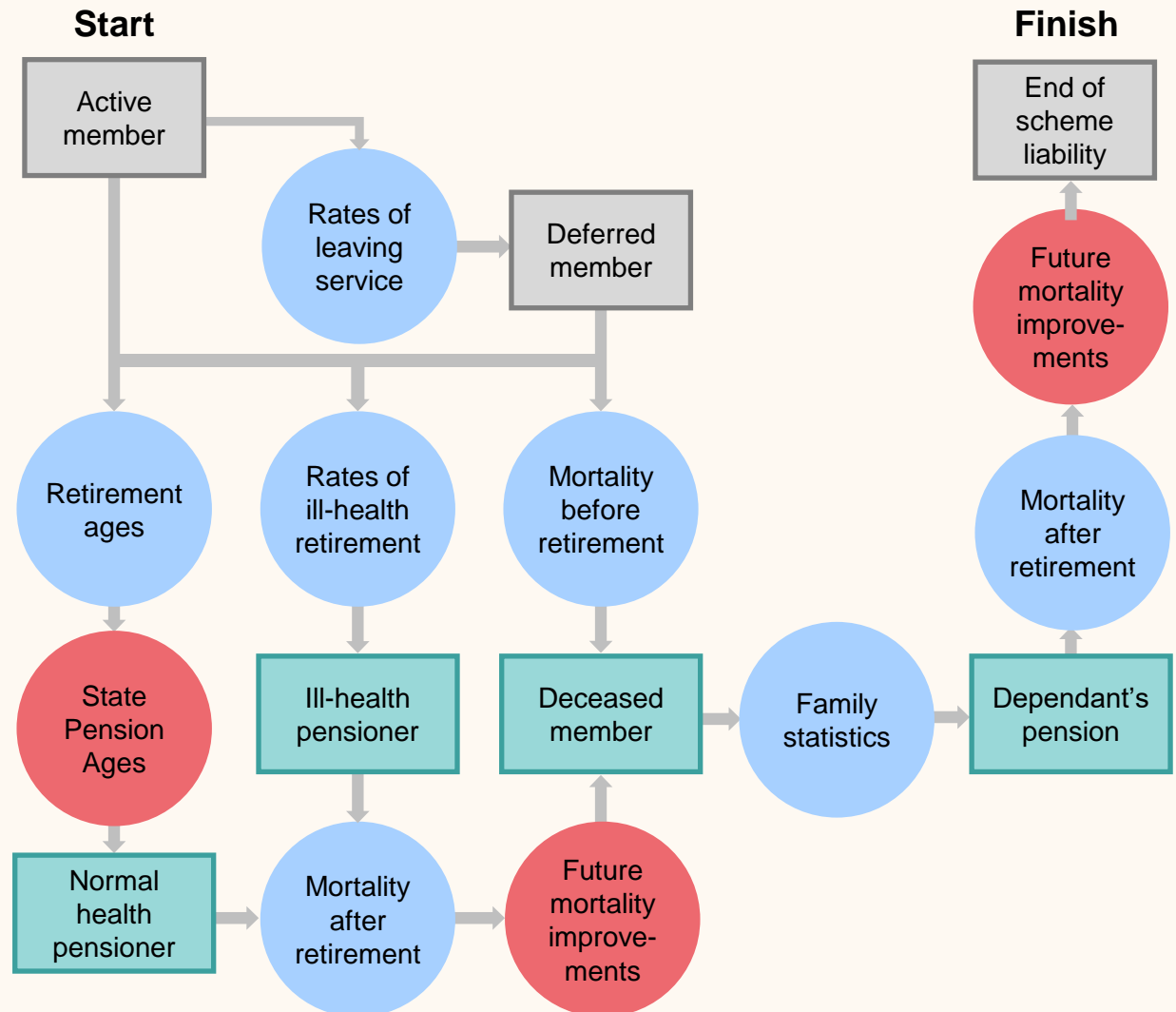
Most demographic assumptions are set by the scheme, rather than directed by HM Treasury.

Member status: **no benefits payable**

Member status: **benefits payable**

Scheme-set

Directed



# Financial assumptions

## How are the assumptions used?

Financial assumptions are used to predict:

- the size of future benefits due to members
- the current cost of those benefits to the scheme.

The chart to the right shows a simplified summary of how these assumptions are applied.

The only financial assumptions set by the scheme are:

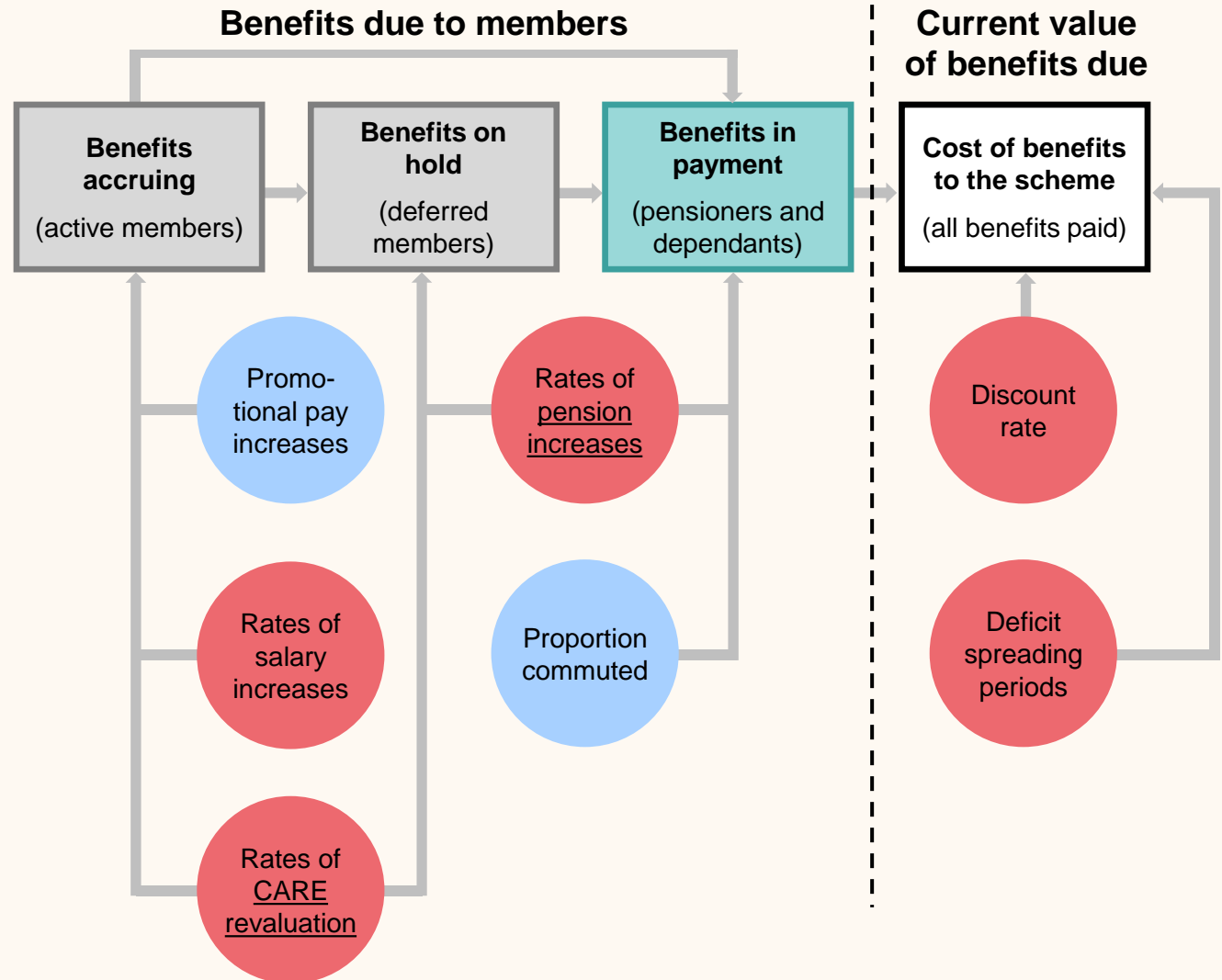
- promotional pay increases
- commutation proportions.

■ Member status: **no benefits payable**

■ Member status: **benefits payable**

● **Scheme-set**

● **Directed**



# Setting assumptions

## How are the assumptions decided?

We recommend 'scheme-set' assumptions after considering all relevant information. The picture to the right summarises the 3 main inputs.

The Secretary of State for Defence then decides on the 'scheme-set' assumptions to be adopted, after considering GAD's advice.

## What rules need to be followed?

HM Treasury Directions specify that 'scheme-set' assumptions must be the Secretary of State for Defence's best estimates of future experience. This means they cannot include any margins for prudence or optimism.

The Directions also require that assumptions must consider:

- previous valuation assumptions
- an analysis of demographic experience, where there is enough data to perform such an analysis
- any other relevant data, including anything that only became available after the date of the valuation
- Any emerging evidence about historic or expected future long-term trends.



The assumptions are required to be best-estimate, including an allowance for expected future GDP growth and life expectancy progression.

In our Valuation Results report dated 20 October 2023 we also consider three future climate scenarios; their potential impact on valuation assumptions; and how these in turn might impact on the cost of future benefits payable from the scheme.

# Impact on employer contribution rates

## Which assumptions are most important for setting employer contribution rates?

The chart to the right shows the importance of each assumption on employer contribution rates, relative to that of other assumptions. This shows that:

- there is a large degree of variation in the significance of each assumption
- the more significant assumptions tend to be directed by HM Treasury.

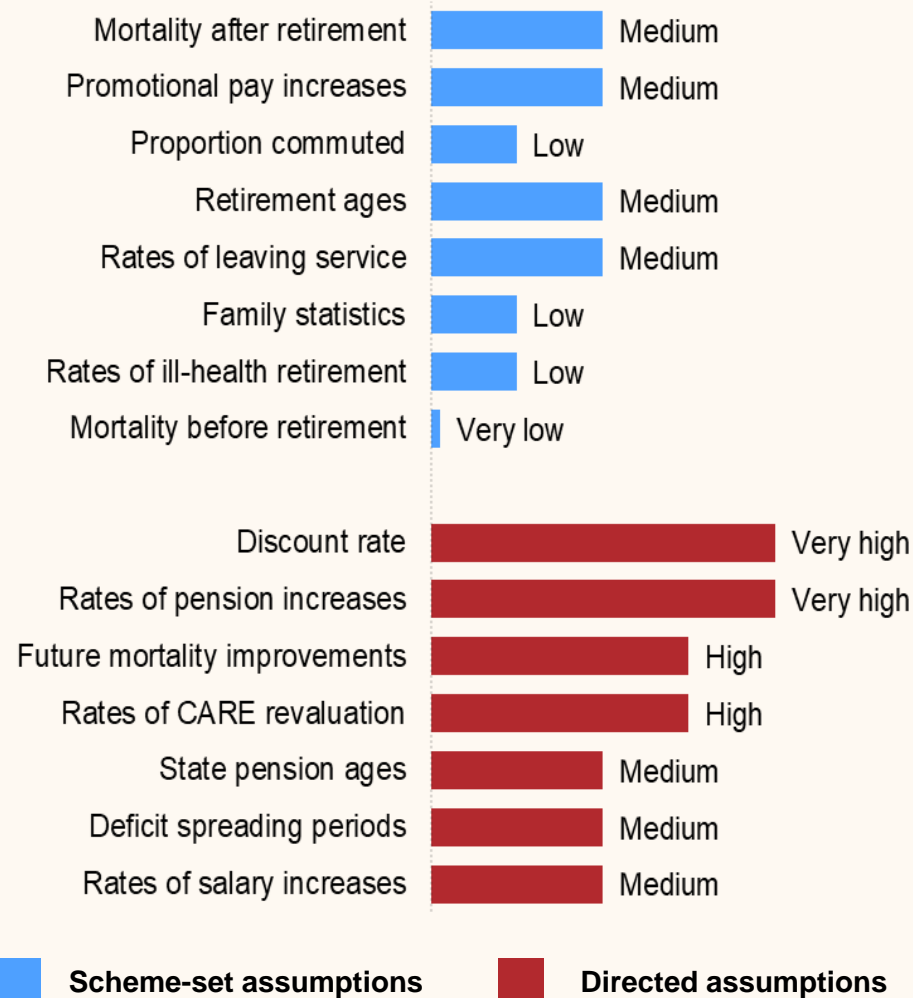
For example, the discount rate is shown as very highly significant compared to mortality before retirement. This means that even if the discount rate changes by a small amount, the impact on employer contribution rates could be very large compared to a fairly large change in mortality before retirement.

For context, the employer contribution rate is currently 63.5% of pensionable pay. In monetary terms, this was equivalent to employer contributions of £4 billion in 2022-23.

The rankings shown are approximate and are based on the relative significance of each assumption only. They are intended as an illustration and are not a prediction of potential future changes.

This comparison considers all assumptions and therefore differs to the earlier Highlights summary and the later Summary statistics.

## Importance relative to all assumptions



# Impact on the scheme's cost cap cost

## Are the same assumptions important for calculating the cost cap cost?

The significance of each assumption on the cost cap cost can be very different to the significance of the same assumption on employer contribution rates. This is because the cost cap process was designed to exclude certain costs.

The chart to the right shows the significance of each assumption on the cost cap cost of the scheme, which itself tends to be lower than the employer contribution rates. This excludes the effect of the economic check.

It's important to be aware that even a small change in an assumption with low significance could result in cost cap thresholds being breached and member benefits being adjusted.

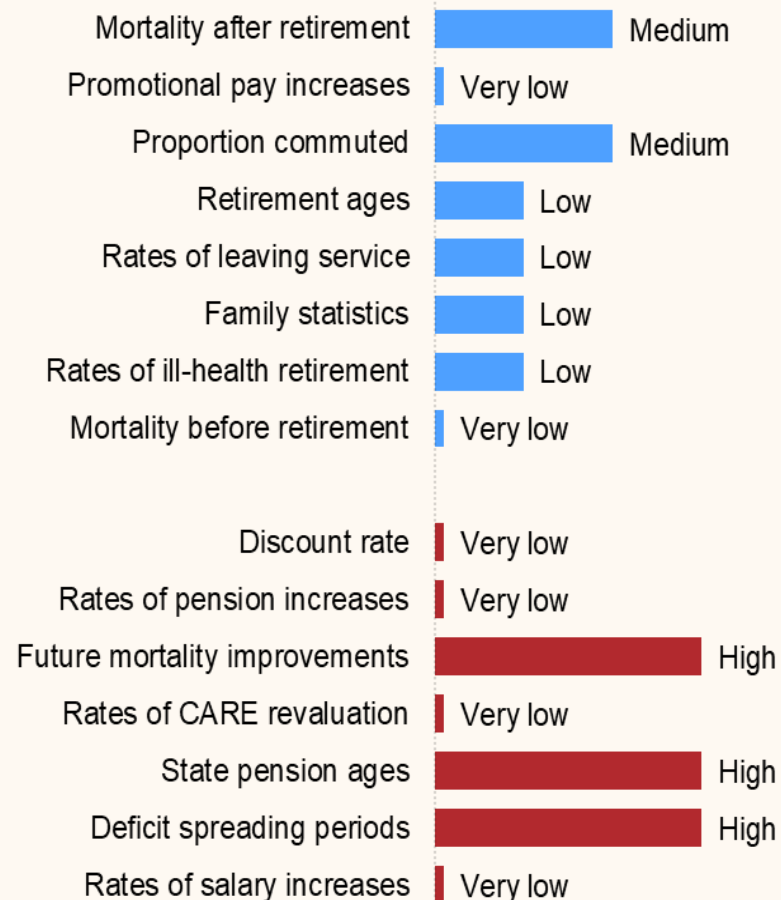
The main differences when compared to the significance of assumptions on the employer contribution rate are:

- Most financial assumptions, such as the discount rate, are not very significant to the cost cap cost
- The significance of directed assumptions (relative to 'scheme-set' assumptions) tends to be lower for the cost cap cost than for employer contribution rates.

For context, the current target cost of the scheme is 34.6% of pensionable pay.

As before, the rankings shown are approximate and are intended as an illustration, not a prediction of potential future changes.

## Importance relative to all assumptions



■ Scheme-set assumptions
 ■ Directed assumptions

# Limitations

## Data

In preparing this report, GAD has relied on data and other information supplied by the administrators of the Armed Forces Pension Scheme, Defence Business Services (DBS), as described in our report entitled 'Membership data', dated 20 October 2023. The limitations set out in that report apply equally to this report.

Unless stated otherwise, all data adjustments mentioned in that report apply equally to the data used for setting assumptions. Any additional data adjustments made solely for the purpose of setting assumptions are detailed in this report.

## Assumptions

We have used the data provided to analyse the scheme experience and develop our recommended assumptions.

When considering appropriate assumptions, experience usually provides the most reliable evidence.

However, robust analysis of scheme experience will only be possible where there is both sufficient quality, and quantity, of data. The level of reliance that can be placed on assumptions derived from the analysis will also vary depending on these two factors.

Our recommended assumptions are long term and are not suitable for predicting short term future experience.

## Sharing

This report has been prepared for the use of the Secretary of State for Defence and the Ministry of Defence. This report will be published as part of completing the 2020 valuation of the scheme, and we are content for the Secretary of State for Defence to release this report to third parties, provided:

- It is released in full;
- The advice is not quoted selectively or partially;
- GAD is identified as the source of the report, and;
- GAD is notified of such release.

Other than the Secretary of State for Defence and the Ministry of Defence, no person or third party is entitled to place any reliance on the contents of this report, except to any extent explicitly stated herein. GAD has no liability to any person or third party for any action taken or for any failure to act, either in whole or in part, on the basis of this report.

## Compliance statement:

This report has been prepared in accordance with the applicable Technical Actuarial Standards: TAS 100 and TAS 300 issued by the Financial Reporting Council (FRC). The FRC sets technical standards for actuarial work in the UK.

**Part B:  
Recommendations**



































# B1. Summary





# Summary statistics

Scheme-set assumptions	Assumption information		Our recommendations		
	Importance relative to scheme-set assumptions	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs	
Mortality after retirement	 Most	 Low	 Small	 Higher costs	
Proportion commuted	 Average	 Medium	 Small	 Lower costs	
Retirement ages	 Most	 Low	 Medium	 Lower costs (*)	
Rates of leaving service	 Most	 Low	 Medium	 Lower costs (*)	
Promotional pay increases	 Average	 High	 Small	 Lower costs	
Rates of ill-health retirement	 Average	 Medium	 Large	 Lower costs	
Mortality before retirement	 Least	 Low	 None	 No impact	
Family statistics	 Least	 Medium	 Small	 Lower costs	














This table provides a summary of the 'scheme-set' assumptions and their likely bearing on the valuation results. It is intended to highlight areas of potential focus to aid with the process of deciding on the 'scheme-set' assumptions to be adopted.

These assessments are indicative, rather than precise. More information on the approach used can be found on the next page.

Be aware that several of the most important valuation assumptions do not appear in this table as they will be directed by HM Treasury. The impact of these 'directed' assumptions could be much greater than that of the impact of 'scheme-set' assumptions.

\* This is the combined impact on scheme costs from changing both the age retirement and leaving service decrements.

# Interpretation of summary statistics

	Importance relative to scheme-set assumptions	Volatility of experience and unreliability of data	Size of recommended changes	Impact of recommended changes on scheme costs
<b>What does it show?</b>	The importance of this assumption on <u>employer contribution rates</u> (ECR) and the <u>cost cap cost</u> (CCC) of the scheme, relative to other 'scheme-set' assumptions	The variability of experience and unreliability of data observed in the past. This can impact the weight we place on current experience.	The size of change we recommend, relative to the assumptions used at the last valuation.	The likelihood of our recommendations leading to higher or lower <u>employer contribution rates</u> (ECR) and <u>cost cap cost</u> (CCC) of the scheme
<b>What is it based on?</b>	Our actuarial judgement and the sensitivity analysis carried out at the last valuation.	Public service pension scheme experience at previous valuations	Assumptions recommended at this valuation and those used at the last valuation.	Our actuarial judgement and the sensitivity analysis carried out at the last valuation.
<b>What are the possible ratings?</b>	<p> <b>Most</b> An assumption that could plausibly impact the <u>ECR</u> or <u>CCC</u> by more than 1%.</p> <p> <b>Average</b> An assumption with an impact in between most and least.</p> <p> <b>Least</b> An assumption that could plausibly impact both the <u>ECR</u> and the <u>CCC</u> by less than 0.2%.</p>	<p> <b>High</b> A current or previous lack of credible data, or large changes in member behaviour.</p> <p> <b>Medium</b> Volatility of experience or unreliability of data classified in between high and low.</p> <p> <b>Low</b> A large pool of credible data that doesn't tend to change much.</p>	<p> <b>Large</b> An average change in assumption of over 25%.</p> <p> <b>Medium</b> An average change in assumption of between 10% and 25%.</p> <p> <b>Small or None</b> An average change in assumption of between 0% and 10%.</p>	<p> <b>Higher</b> <u>ECR</u> and <u>CCC</u> likely to be higher.</p> <p> <b>Lower</b> <u>ECR</u> and <u>CCC</u> likely to be lower.</p> <p> <b>Uncertain</b> Likely impact on the <u>ECR</u> and <u>CCC</u> is still uncertain. For example, if assumptions for different categories move in different directions.</p> <p> <b>No impact</b> Likely to be no material impact on the <u>ECR</u> or <u>CCC</u>.</p>

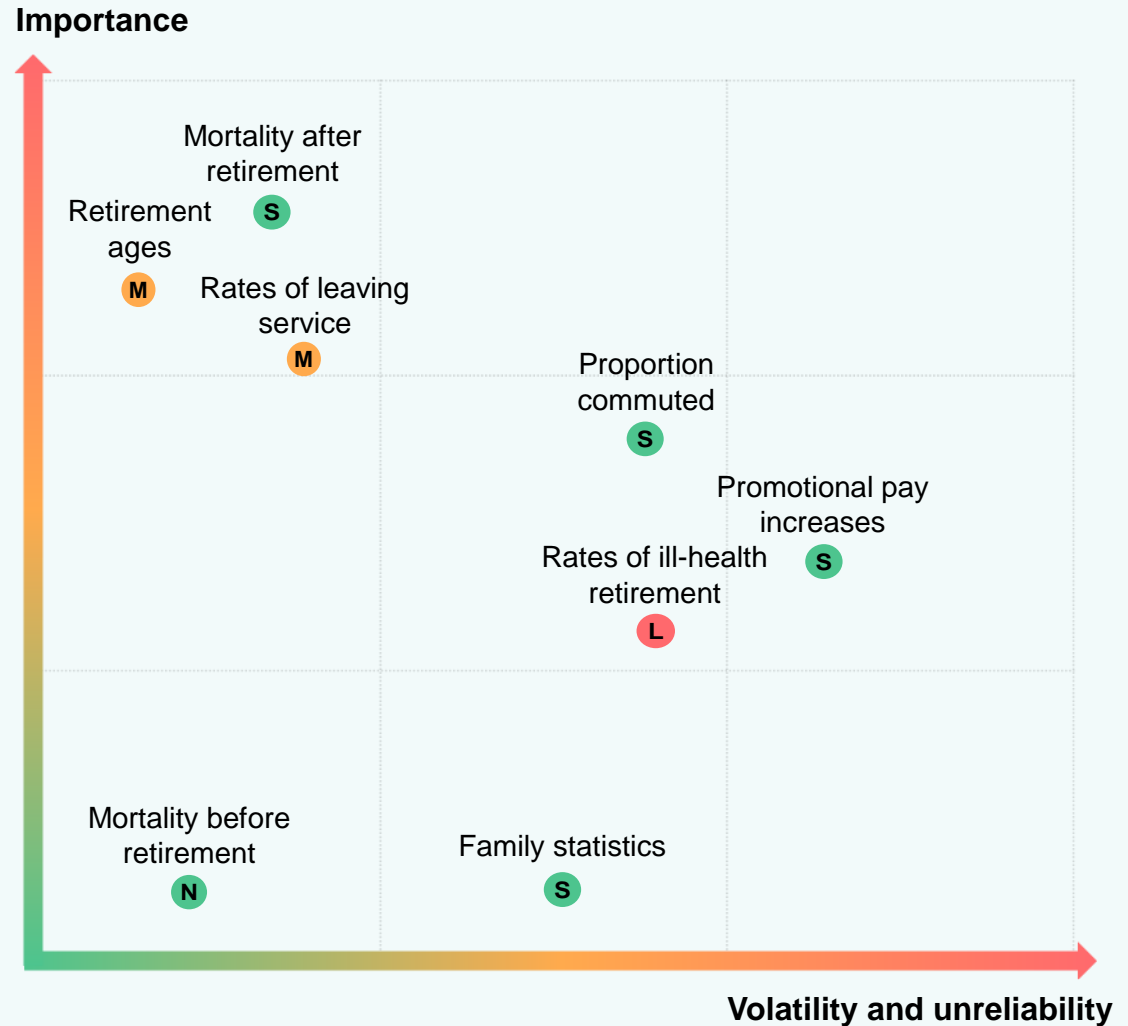
# Significance, volatility and size of changes

The diagram to the right shows, for the 'scheme-set' assumptions:

- **Relative importance of assumption.** It's important to pay regard to the more significant assumptions, as any changes can have a big impact. Assumptions placed higher up the page are those that are more significant.
- **Volatility of experience and unreliability of data.** Assumptions placed further to the right of the page are also important to consider, as they are more volatile or have uncertain experience. This means that they are more likely to change substantially.
- **Size of recommended changes.** Larger changes are key as they are more likely to have a large impact on valuation results (although this also depends on how significant the assumption is). The coloured circles signify the size of our recommended change, as specified in the key below.

## Key: Size of recommended changes

**L** Large   **M** Medium   **S** Small   **N** None



## **B2. Mortality after retirement**



# Mortality after retirement



## What does this assumption represent?

Mortality assumptions are a series of probabilities which represent the likelihood of a member dying at any given age. Different assumptions usually apply to different groups, e.g., for males and females, or normal health or ill-health retirees.

**Baseline mortality rates** are a 'scheme-set' assumption and are the focus of this section.

**Future mortality improvements** are a directed assumption, and typically act to reduce baseline mortality rates in future years. They are directed to be in line with the improvements underlying the ONS-2020 population projections, which reflect the latest views on the long-term effect of the COVID-19 pandemic. The rate of improvements can be negative.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Most	 Low	 Small	 Higher costs

## Our recommendations and rationale

We recommend updating the baseline mortality rates for males (pensioners and dependants), using an equal allowance for recent experience and the 2016 assumption to help smooth out volatility. This is consistent with the approach used for the 2016 valuation.

There is insufficient data to set the baseline mortality rates for female pensioners. We recommend setting the percentage adjustment to the standard tables to give the same change in life expectancy as male members, a reduction of 0.3 years at age 65. We recommend adopting a separate baseline mortality assumption for female dependants based on analysis of recent experience. This is a change in the approach used for the 2016 valuation.

The ONS-2020 population projections allow for the impact of the COVID-19 pandemic, so it would be inappropriate to adjust the baseline mortality assumptions.

Baseline mortality rates are set by adjusting the 'S3' standard mortality tables issued in December 2018 by the Continuous Mortality Investigation (CMI). These tables are derived from a larger amount of public service data, and so are more appropriate for the scheme than the S2 tables adopted at the 2016 valuation. There is a known issue with the unadjusted 'S3' standard tables over-estimating life expectancy. However, our approach of fitting the tables to the scheme's experience negates this issue.

# Practical implications

Mortality assumptions can be used to estimate the life expectancy of individual members. Higher life expectancies mean a higher cost of providing benefits, as benefits must be paid for longer periods of time.

The table below shows the impact of our recommended assumptions. For each category shown:

- The **first column** for males and females is the assumption adopted for the 2016 valuation.
- The **middle column** for males and females is the 2016 assumption, but updated to use a valuation date of 2020 and ONS-2020 improvements.
- The **last column** for males and females is the assumption we recommend for the 2020 valuation.

The changes between the first and middle columns show the impact of directed changes to future mortality improvements and the normal passage of time. The changes between the middle and last columns show the impact of our recommended changes to baseline mortality assumptions.

All numbers shown are cohort life expectancies that have been calculated allowing for future mortality improvements.

## Life expectancies for normal health pensioners

	Males			Females		
	2016 valuation assumption	2016 assumption updated	2020 valuation recommendation	2016 valuation assumption	2016 assumption updated	2020 valuation recommendation
<b>Current pensioners, age 55</b>	86.5	85.5	85.6	88.0	87.2	88.0
<b>Future pensioners, age 40</b>	88.1	86.9	87.2	89.6	88.6	89.4

# Recommendations in detail

Category		2016 Assumptions			2020 Recommendations		
		Standard table	Adjustment	Based on	Standard table	Adjustment	Based on
<b>Pensioners and dependants</b>	<b>Male</b>	S2PMA	110%	Scheme experience	S3NMA_H	85%	Scheme experience
<b>Pensioners</b>	<b>Female</b>	S2PFA	110%	Scheme experience	S3NFA_H	95%	Scheme experience
<b>Dependants</b>	<b>Female</b>	S2PFA	110%	Scheme experience	S3PFA_H	88%	Scheme experience

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# Our approach

## Analysis

We have analysed the scheme's mortality experience over the period 01 April 2016 to 31 March 2019.

Our analysis has been carried out on an 'amounts' basis (as opposed to a 'lives' basis).

An 'amounts' analysis gives more weight to members with larger pensions, better reflecting the impact they have on scheme costs. A 'lives' analysis on the other hand gives an equal weighting to every member being analysed.

As members with higher pensions tend to live longer, an 'amounts' analysis usually results in lighter mortality assumptions than a 'lives' analysis would, based on the same data.

## Setting recommended assumptions

We recommend that all baseline mortality assumptions are based on the 'S3' series of standard tables.

Our general approach is:

- Identify groups of members we would expect to have different life expectancies, for example by gender and by health at retirement.
- Identify the most appropriate 'S3' table for each group. Where we have enough scheme experience, we carry out a series of statistical tests to find tables which best fit recent experience. This is approximate, so we apply judgement to select the most appropriate table.
- The last four years of experience may not accurately reflect the longer-term, so we generally 'smooth out' any excess volatility by setting adjustments based on an equal allowance for recent experience and the 2016 valuation assumptions, which were set using pre-2016 experience.
- Where there is not enough scheme experience, we look at assumptions from other groups of members or other schemes which may have similar experience, adjusted to allow for any available information.

We have analysed male pensioner and dependant experience and female dependant experience to set assumptions. There is insufficient data to carry out a credible analysis for female pensioners. The relevant indicators in the data provided were not sufficiently reliable to support separate analysis by normal health/ill health or by Officers/Other Ranks.

We have not included 2019-20 in our analysis as our review of the movement data showed a drop of more than 10% in the death data in this year which would influence our analysis of the long term rates.



# Scheme experience: overall

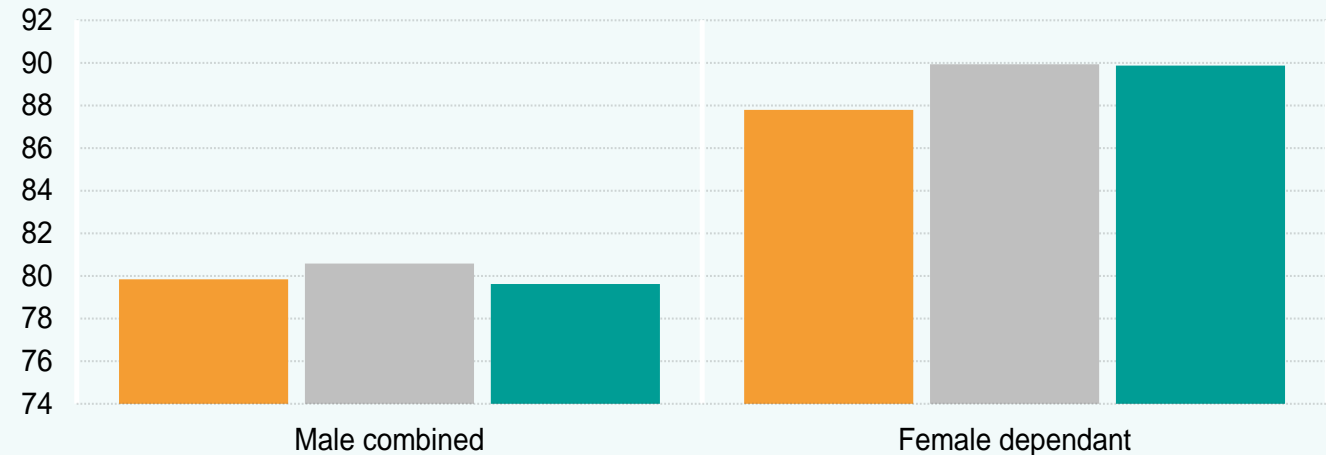
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

The chart to the right and those on the following pages compare:

- **actual experience** (orange) on the left – what has happened over the last 3 years.
- **2016 assumptions** (grey) in the middle – what we thought would happen, based on the baseline mortality assumptions adopted for the 2016 valuation. Uses ONS-2020 mortality improvements.
- **2020 recommendations** (teal) on the right – what we would have expected to happen, had our recommended baseline mortality assumptions been adopted for the 2016 valuation. Uses ONS-2020 mortality improvements.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

## Experience vs expectations: average age at death



## Summary

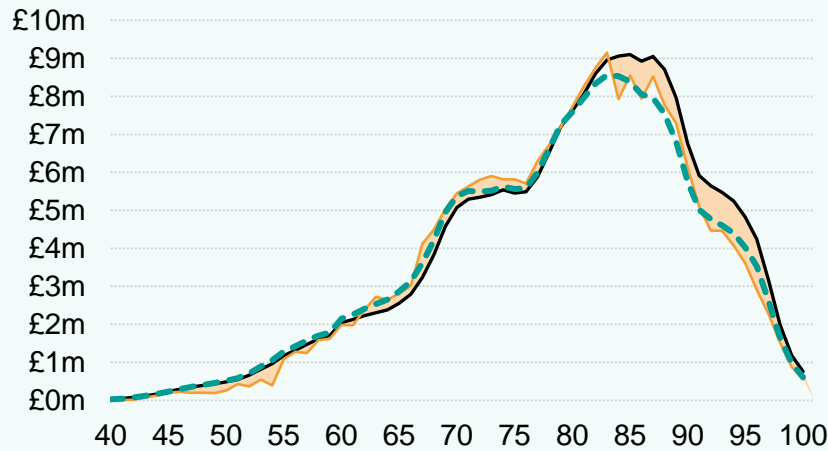
The 2016 assumptions and the 2020 recommendations are largely in line with the baseline mortality experience. This can be seen through the average age at death on the chart above and the distribution of deaths by age shown on the next page.

Updating the baseline mortality assumption has a relatively small effect on the life expectancies, shown previously, which have reduced due to directed future mortality improvements.

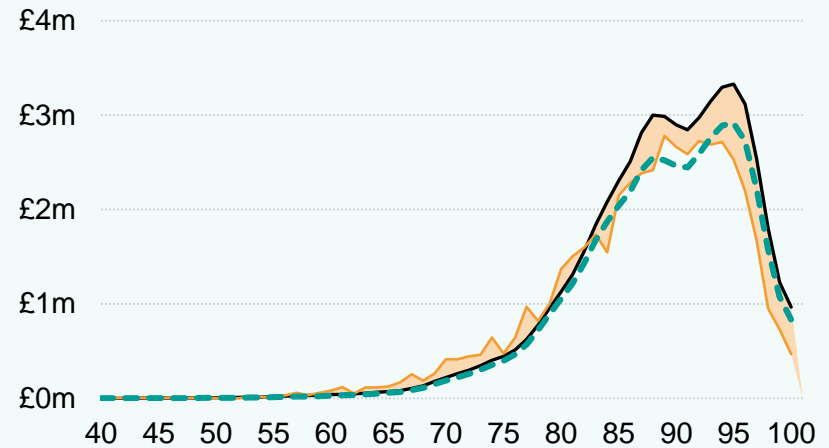
# Scheme experience: in detail

Pension ceasing as a result of death by age, split by category

Male - Combined



Female - Dependants



**Key:**    **—** 2016 assumptions    **- - -** 2020 recommendations    **Experience** (line) and difference from 2016 assumptions (shaded area)

# Scheme experience: in numbers

Category		Experience Actual pension ceasing due to death over 2016-2019	2016 Expectations Pension expected to cease under the 2016 assumptions	Experience ÷ 2016 Expectations	2020 Expectations Pension expected to cease under the 2020 recommendations	Experience ÷ 2020 Expectations
Pensioners and dependants	Male	£221 m	£231 m	95%	£222 m	99%
	Female	£51 m	£58 m	87%	£51 m	100%

There was around £5m of pension ceasing due to death over 2016-2019 for female pensioners. This was insufficient to produce a robust analysis and therefore we have not included any output in the table above.

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# Wider environment: COVID-19

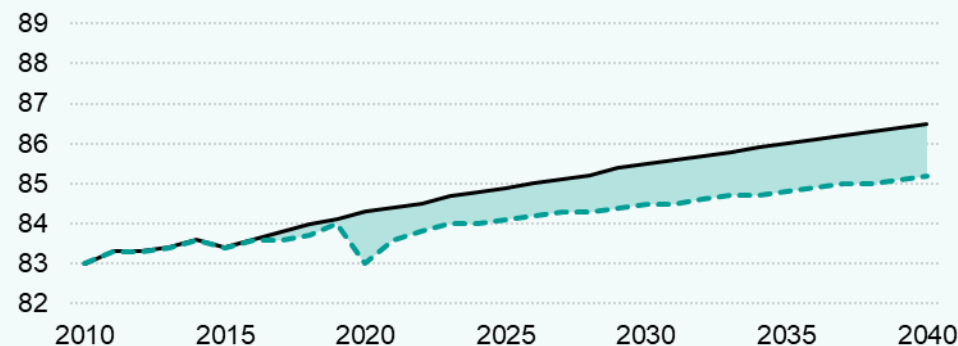
No explicit allowance has been made for the COVID-19 pandemic in our recommended assumptions for **baseline mortality rates**. Our recommendations are based on scheme experience up to 2020 so will only have included deaths from the very start of the pandemic. We do not expect these deaths to have had a material impact on our recommendations.

However, an explicit allowance is included in assumed **future mortality improvements**. These are directed to be in line with the improvements underlying the ONS-2020 population projections.

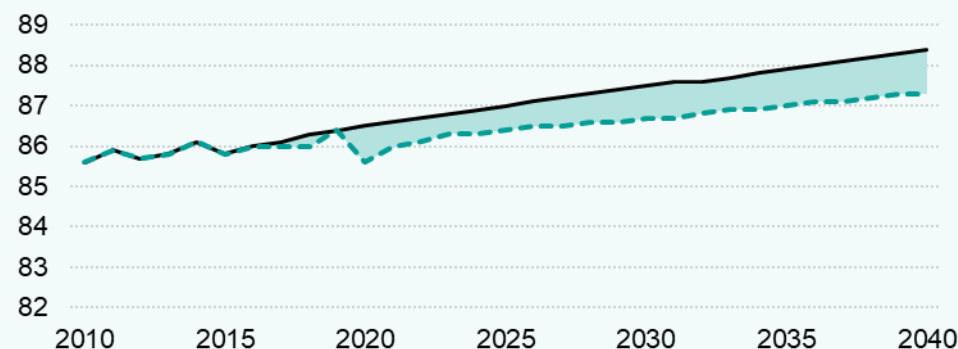
When deriving the ONS-2020 projections, a panel of mortality experts gave their views on the impact of COVID-19 pandemic on mortality rates in the short term. Based on this, short term adjustments were made to the 2019 to 2024 period to allow for estimated deaths in 2021 and an averaging of the experts' views on estimated improvements by age group over this period. Long term rates of future mortality improvement are not projected to change as a result of COVID-19.

The charts on this page show the impact of the ONS-2020 projections on future life expectancies for a typical UK male and UK female, aged 65. There is a clear drop in life expectancies in 2020 as result of the COVID-19 pandemic. In the longer term, even though mortality is expected to start improving again, the 2020 drop means we start from a lower baseline and the impact of COVID-19 will be with us long into the future.

Life expectancies for UK males, aged 65



Life expectancies for UK females, aged 65



**Key:** — Based on **ONS-2016 projections**, which were adopted for the 2016 valuation

— Based on **ONS-2020 projections** (dotted line) and difference from the 2016 projections (shaded area)

## **B3. Proportion commuted**



# Proportion commuted

## What does this assumption represent?


The proportion commuted represents the fraction of pension that members give up at retirement, in return for a single tax-free lump sum payment (subject to HMRC tax limits).

Commutation is a 'scheme-set' assumption for this valuation. In the 2016 valuation, it was 'scheme-set' for some groups of members and directed for other groups.

The proportion commuted is an important assumption because the value of the lump sum received is often less than the value of the pension given up. Higher proportions commuted therefore tend to lead to lower scheme costs.

The lump sum is typically calculated using a commutation rate of £12 lump sum for every £1 of annual pension given up. The commutation rate is not being reviewed in this valuation.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Average	 Medium	 Small	 Lower costs

## Our recommendations and rationale

We recommend retaining 0% commutation proportion assumptions for the following types of commutation:

- AFPS75 – resettlement commutation
- AFPS75 – life commutation
- AFPS05 – inverse commutation of lump sum
- AFPS15 – inverse commutation of Early Departure Payments (EDP) lump sum

as these commutation assumptions all have cost neutral factors compared to the valuation assumptions and so we expect there to be little impact on the cost of the scheme.

For the AFPS15 scheme, we recommend increasing the assumed commutation proportion to 20% for all members (+2.5%). There are too few scheme retirements to set an assumption. Therefore, this is based on the average experience from other large public service schemes (CS GB, NHS EW, TPS EW and LGPS EW), which has shown higher commutation proportions commuted since 2016. This change will reduce the employer contribution rate.

# Practical implications

Commutation can drastically alter the timing and amount of benefit payments for individual members.

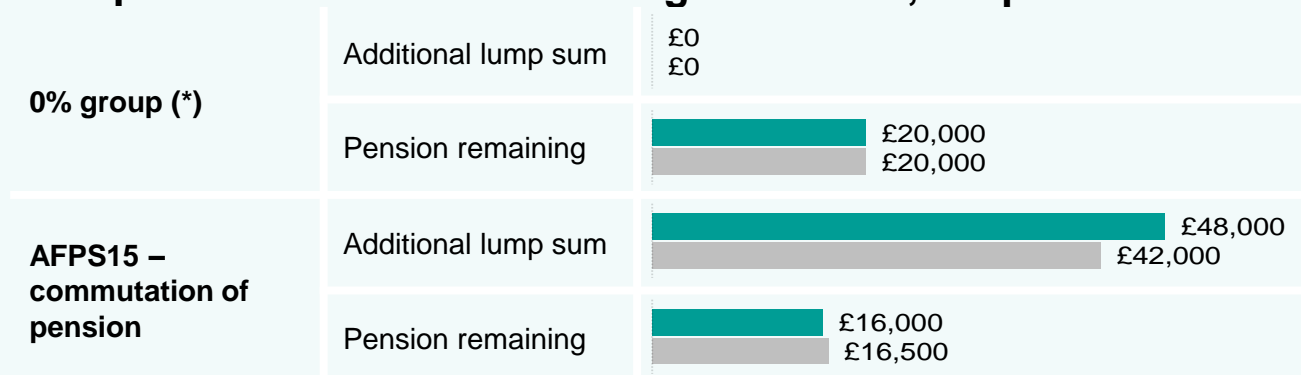
Members choose whether to commute based on their own individual circumstances. For example, their:

- Assessment of their future life expectancy
- Tax circumstances
- Preferences for higher future income vs an immediate lump sum.

The chart to the right shows the impact on assumed benefits of our recommended assumptions. For each category shown:

- The **top line** (■) shows the impact of the assumptions we recommend for the 2020 valuation.
- The **bottom line** (■) shows the impact of the assumptions adopted for the 2016 valuation.

## Lump sum for a member starting with a £20,000 pension



(\*) The 0% group includes: AFPS75 – resettlement commutation, AFPS75 – life commutation, AFPS05 – inverse commutation of lump sum and AFPS15 – inverse commutation of EDP lump sum

In the AFPS75 and AFPS05 schemes, members receive an automatic lump sum equal to three times pension.

# Our approach

## Analysis

We have insufficient data to carry out a credible analysis using the scheme's own data. Therefore, we have used the analysis carried out on the other large public service pension schemes commutation experience over the period 1 April 2016 to 31 March 2020.

Our analysis considered total pension that came into payment and total pension that was commuted and was carried out separately for groups expected to behave differently.

This approach places more weight on members with larger pensions, reflecting the bigger impact they can have on scheme costs.

## Setting recommended assumptions

Our general approach is:

- Identify groups of members we would expect to commute in different ways, for example by gender, pension amount and scheme section.
- Compare recent commutation experience against the 2016 valuation assumptions.
- Where there is not enough scheme experience, we look at assumptions from other groups of members or other schemes which may have similar experience, adjusted to allow for any available information
- Recommend a change to the assumption only if evidence points to a material change to the valuation results. In these cases, our recommendation is to fully align the assumption to recent experience, as there is limited evidence for in-year volatility.
- We make no explicit allowance for HMRC limits, which already influence member behaviours, or for the McCloud judgment as this is unlikely have a significant impact on members' commutation choices.

For schemes that have commutation factors offered at cost neutral rates compared to the valuation assumptions we will set the proportion commuted to be 0% for that section of benefits as we expect there to be little impact on the cost of the scheme.



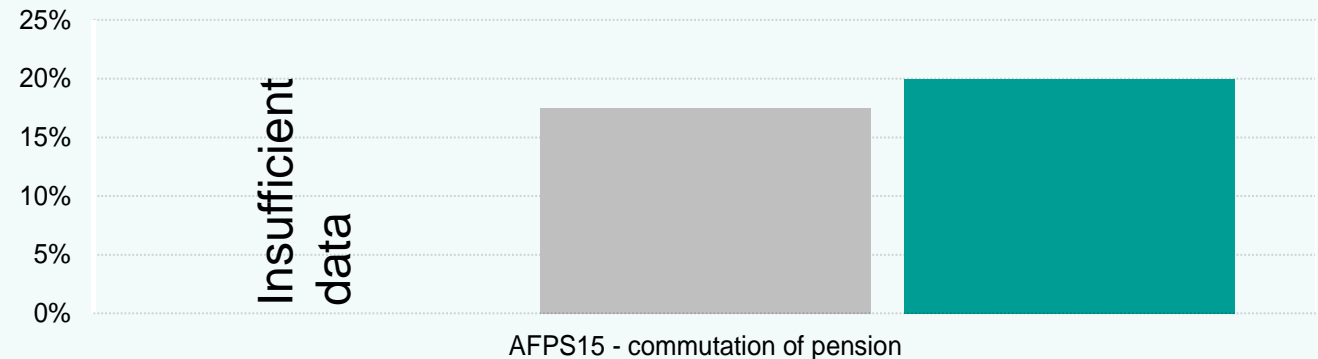
# Scheme experience: overall

Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

- **actual experience** ( █ ) on the left – what has happened over the last 4 years.
- **2016 assumptions** ( █ ) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** ( █ ) on the right – what we would have expected to happen, had our recommended assumptions for the 2020 valuation been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

## Experience vs expectations



## Summary

There was insufficient data to carry out any analysis for the AFPS15 Scheme due to low rates of retirement from the AFPS15 scheme in the 2016-20 period.

In the absence of any other AFPS scheme information, we looked at the average experience from other large public service schemes (CS GB, NHS EW, TPS EW and LGPS EW) over 2016-20. The “scheme experience: in numbers” table on the next page summarises the data and experience resulting from that analysis.

# Scheme experience: in numbers

Category	Total pension coming into payment over 2016-2020 (before commutation)	Total pension commuted over 2016-2020	Experience Proportion of pension commuted over 2016-2020 (weighted by pension amount)	2016 Expectations Pension expected to be commuted under the 2016 assumptions	2020 Expectations Pension expected to be commuted under the 2020 assumptions
<b>AFPS75 scheme – resettlement commutation</b>	N/A	N/A	N/A	0%	0%
<b>AFPS75 scheme – life commutation</b>	N/A	N/A	N/A	0%	0%
<b>AFPS05 scheme – inverse commutation of lump sum</b>	N/A	N/A	N/A	0%	0%
<b>AFPS15 scheme – inverse commutation of EDP lump sum</b>	N/A	N/A	N/A	0%	0%
<b>AFPS15 scheme – commutation of pension (*)</b>	N/A	N/A	N/A	17.5% (**)	20%
<b>Other large public service schemes (***)</b>	£255 m	£50 m	19.6%	17.5% (**)	20%

\* There were less than 500 retirements over 2016-2020 from the 2015 scheme which is insufficient to produce a robust analysis. Therefore, we have not included any output in the table above.

\*\* This assumption was previously HMT directed at the 2016 valuation.

\*\*\* Other large public service schemes data includes data from the National Health Service Pension Scheme (England and Wales) – 2008 section, Civil Service Pension Scheme (GB) – Non-Classic schemes, Teachers’ Pension Scheme (England and Wales) – NPA 65 section and Local Government Pension Scheme (England and Wales) – Post 2008 section.

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

## **B4. Retirement ages**



# Retirement ages

## What does this assumption represent?

Retirement age assumptions are a series of probabilities which represent the likelihood of a member retiring and claiming their pension at any given age.

Different assumptions usually apply to groups who are expected to behave differently, e.g., for members with different Normal Pension Ages.

Retirement age affects:

- The benefits members receive e.g. earlier retirement ages for active members means lower benefits, as members will have built up those benefits over a shorter period of time.
- The length of time benefits will be paid for – although in most schemes this impact is offset by early retirement reductions and late retirement uplifts.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Most	 Low	 Medium	 Lower costs (*)

## Our recommendations and rationale

We recommend moving to 2D tables which take account of both age and service which is a change in approach from the current age related tables. The proposed 2D tables are a materially better fit to the actual experience of the scheme.

The current 1D tables implicitly assume a single age of joining, but there is significant variability in members' ages of joining. There is also a service related component to members' benefits, which we would expect to influence members' behaviour. As this service related effect is observed in the experience data it seems appropriate to include both age and service as factors in setting the retirement decrements.

It is not yet possible to test the suitability of the 2015 scheme assumption, however, we recommend that the existing assumptions are also updated to 2D tables so a similar approach/methodology is maintained between the schemes.

The McCloud judgment could result in members exchanging up to 7 years' service from the SPa-linked 2015 scheme to earlier NPA legacy arrangements (or indeed the other way around). However, it would be very difficult to add an explicit allowance to the updated 2D tables for this judgment. We do not believe that an explicit allowance within the assumption would have a material impact on the valuation results. Also, any allowance would rely on spurious predictions of the future behaviour of members.

\* This is the combined impact on scheme costs from changing both the age retirement and leaving service decrements.

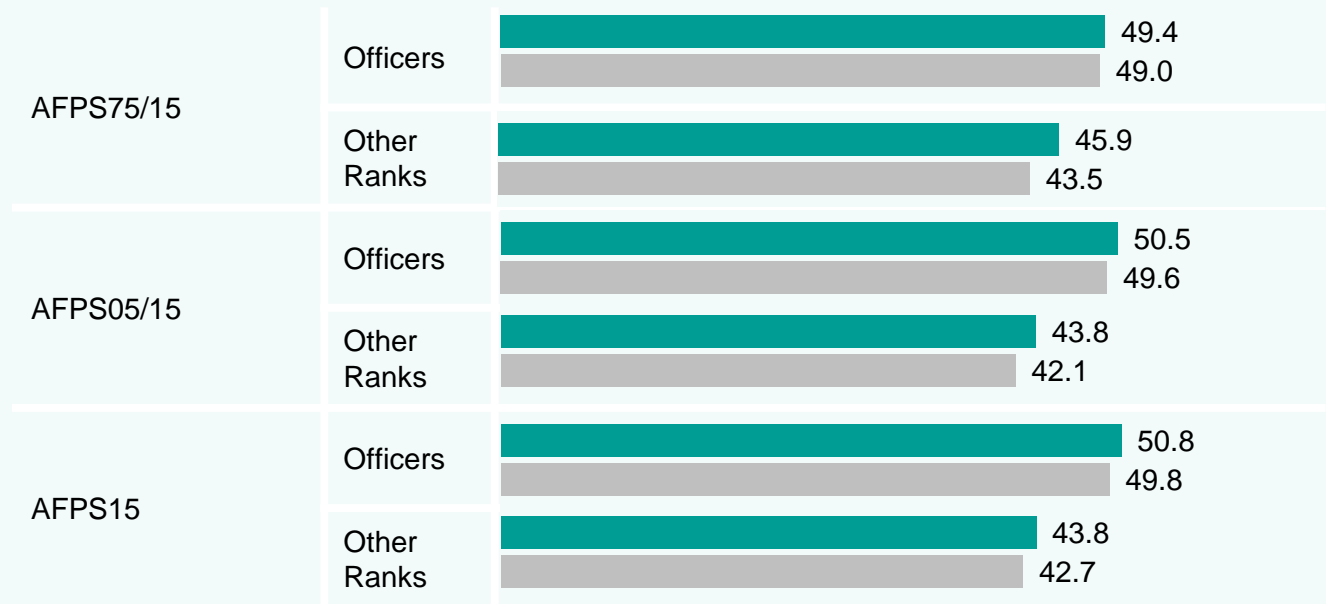
# Practical implications

The chart to the right shows the impact of our recommended assumptions. For each category shown:

- The **top line** (■) shows the impact of the assumptions we recommend for the 2020 valuation.
- The **bottom line** (■) shows the impact of the assumptions adopted for the 2016 valuation.

The numbers shown in this example assume that members retire from active service (\*). No allowance is made for the possibility of ill-health retirement, leaving service before retirement, or death in service. These assumptions are covered in other sections.

**Expected retirement age for members now aged 30 with 5 years of service for Officers and 10 years of service for Other Ranks**



\* This includes those members that leave service with Early Departure Payments (EDP) as well as leaving service entitled to a pension.

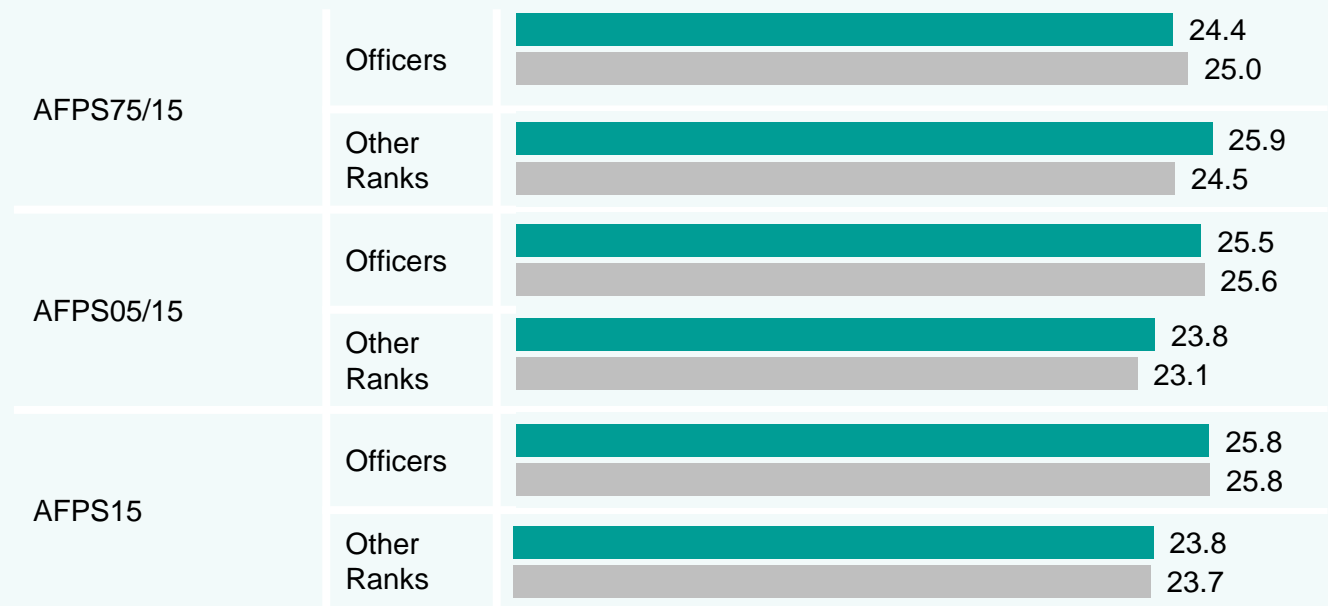
# Practical implications

The chart to the right shows the impact of our recommended assumptions. For each category shown:

- The **top line** (■) shows the impact of the assumptions we recommend for the 2020 valuation.
- The **bottom line** (■) shows the impact of the assumptions adopted for the 2016 valuation.

The numbers shown in this example assume that members retire from active service (\*). No allowance is made for the possibility of ill-health retirement, leaving service before retirement, or death in service. These assumptions are covered in other sections.

## Expected retirement service for members now aged 30 with 5 years of service for Officers and 10 years of service for Other Ranks



\* This includes those members that leave service with an EDP as well as leaving service entitled to a pension.

# Our approach

## Analysis

We have analysed the scheme's retirement experience over the period 1 April 2016 to 31 March 2019.

This analysis is based on active members of the scheme. This includes those members who leave service with an EDP as well as leaving service entitled to a pension. Deferred members are not analysed and are assumed to retire at their Normal Pension Age.

## Setting recommended assumptions

Our general approach is:

- Identify groups of members we would expect to have different retirement patterns, for example by rank and scheme section.
- Compare recent retirement experience against the 2016 assumptions.
- Where there is not enough scheme experience, we look at assumptions from other groups of members or other schemes which may have similar experience, adjusted to allow for any available information.
- Recommend that the assumption is updated only if evidence points to a material change to the valuation results.
- We typically only recommend a change to the assumed number of retirements, leaving the age profile of the existing assumption unaltered. We only recommend a change to the age profile if we see evidence of a material and non-temporary step change in membership behaviour.
- The last four years of experience may not accurately reflect the longer-term, so if we recommend a change we generally 'smooth out' any excess volatility by basing our recommendation on an equal allowance for recent experience and the 2016 valuations assumptions, which were in turn set using pre-2016 experience.

We have given consideration to discussion at the Assumptions Review Group initial meeting, which was in support of service-related decrements, as service is a key determinant of member behaviour.

We have not included 2019-20 in our analysis as our review of the movement data showed a noticeable reduction in the volume of membership movements in this year, which might influence our analysis of the long term rates.

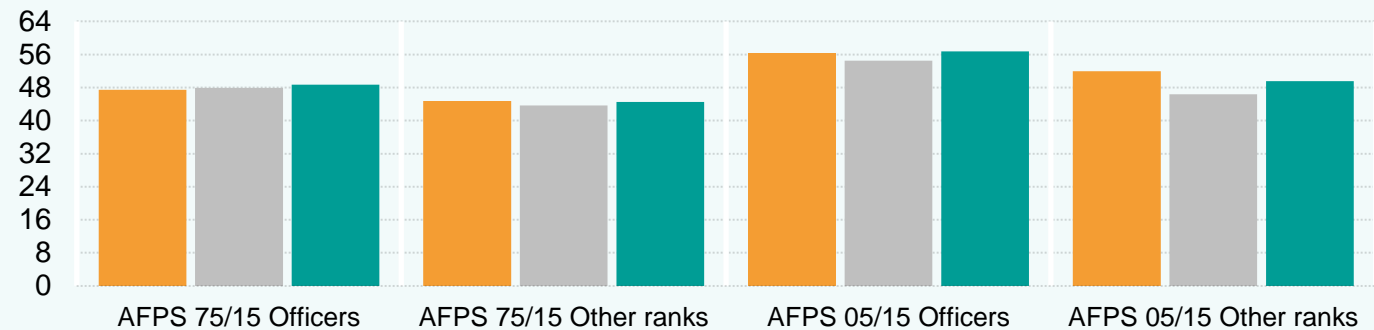
# Scheme experience: overall

Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

- **actual experience** (orange) on the left – what has happened over the last 3 years.
- **2016 assumptions** (grey) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** (teal) on the right – what we would have expected to happen, had our recommended assumptions for the 2020 valuation been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

## Experience vs expectations: average retirement ages



## Summary

The average ages of recent retirements are reasonably close to the 2016 assumptions, as shown above.

However, with the existing 1D tables there are peaks at certain ages and service lengths which are not observed in the actual data. Therefore, we recommend updating the current age only (1D) tables to allow for service as well. The updated 2D tables take account of different ages of joining as many benefits are service dependent and so this can influence behaviour.

Our comparison of the existing 1D vs proposed 2D tables, on this page and on page 42, shows that both age and service are important components in member behaviour and that the proposed 2D tables are materially more accurate than the existing approach.



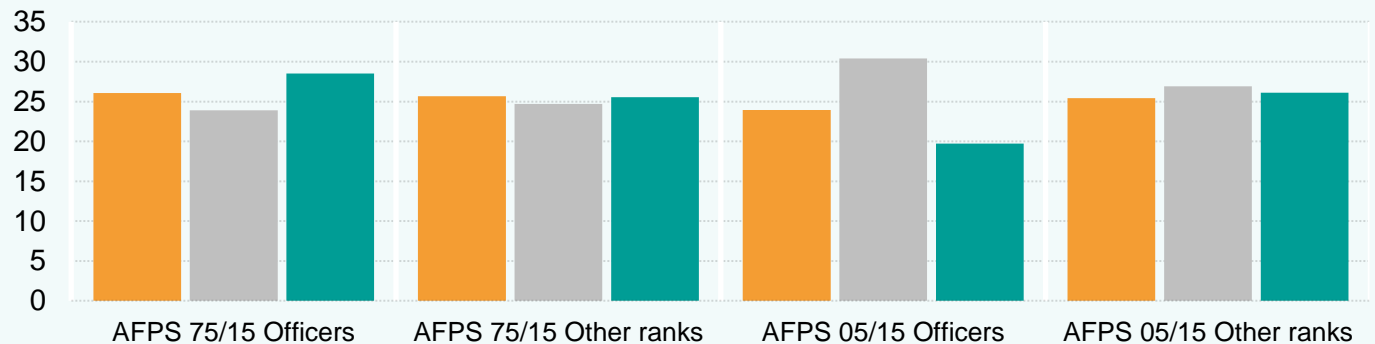
# Scheme experience: overall

Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

- **actual experience** (orange) on the left – what has happened over the last 3 years.
- **2016 assumptions** (grey) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** (teal) on the right – what we would have expected to happen, had our recommended assumptions for the 2020 valuation been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

## Experience vs expectations: average service at retirement



## Summary

The average service lengths of recent retirements are reasonably close to the 2016 assumptions, as shown above.

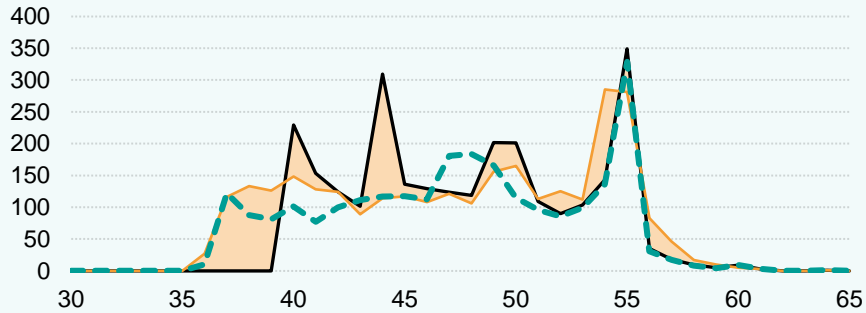
However, with the existing 1D tables there are peaks at certain ages and service lengths which are not observed in the actual data. Therefore, we recommend updating the current age only (1D) tables to allow for service as well. The updated 2D tables take account of different dates of joining as many benefits are service dependent and so this can influence behaviour.

Our comparison of the existing 1D vs proposed 2D tables, on this page and on page 43, shows that both age and service are important components in member behaviour and that the proposed 2D tables are materially more accurate than the existing approach.

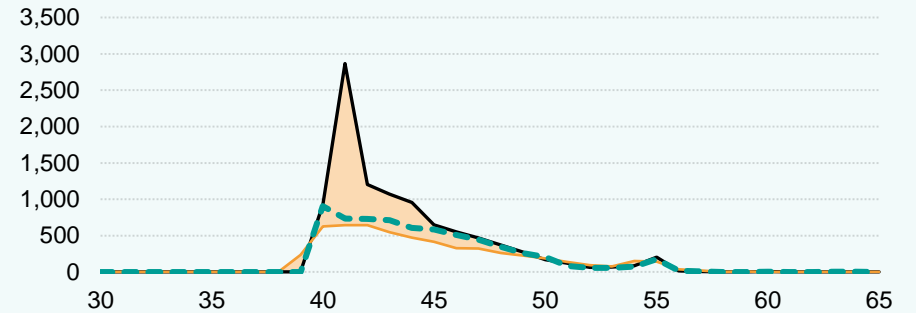
# Scheme experience: in detail

Number of retirements by age, for members with accrued pension in the specified scheme, split by category

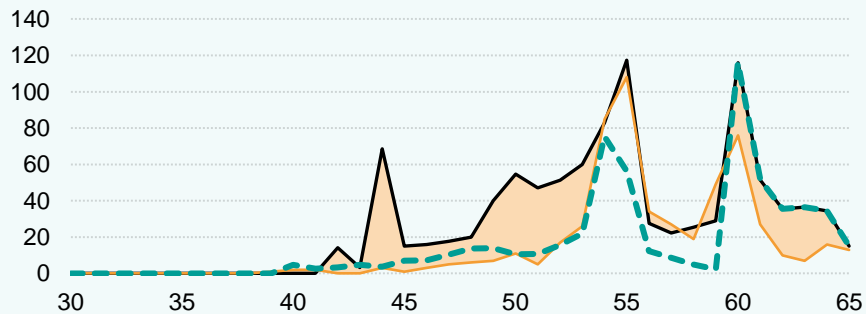
AFPS75/15 (Officers)



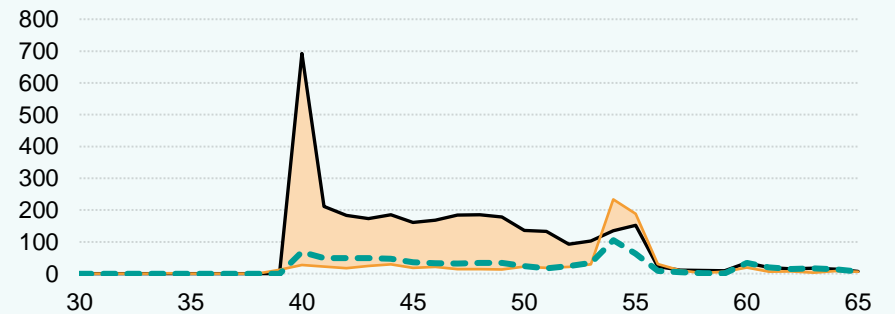
AFPS75/15 (Other ranks)



AFPS05/15 (Officers)



AFPS05/15 (Other ranks)

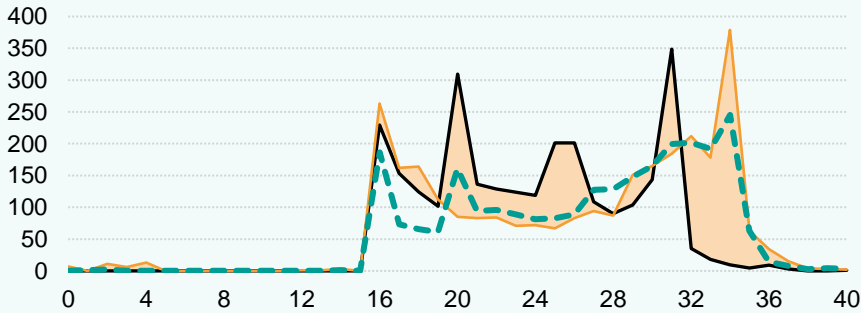


**Key:** — 2016 assumptions    - - - 2020 recommendations    Experience (line) and difference from 2016 assumptions (shaded area)

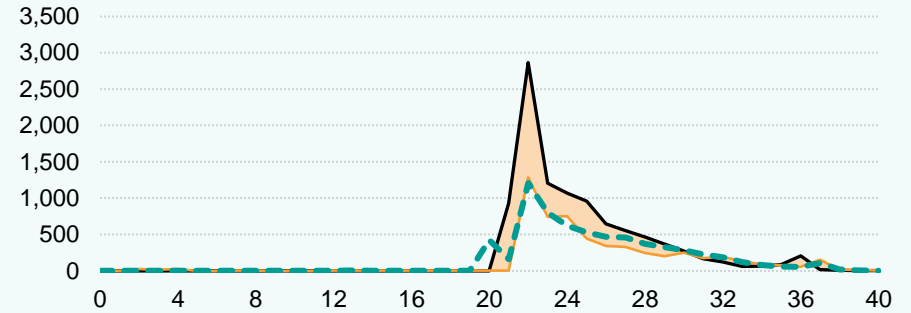
# Scheme experience: in detail

Number of retirements by service, for members with accrued pension in the specified scheme, split by category

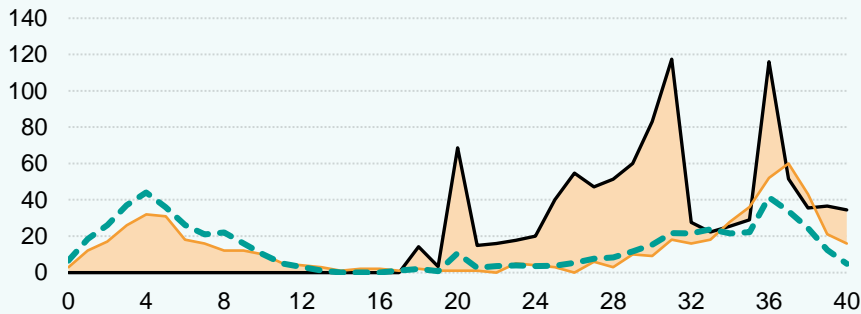
AFPS75/15 (Officers)



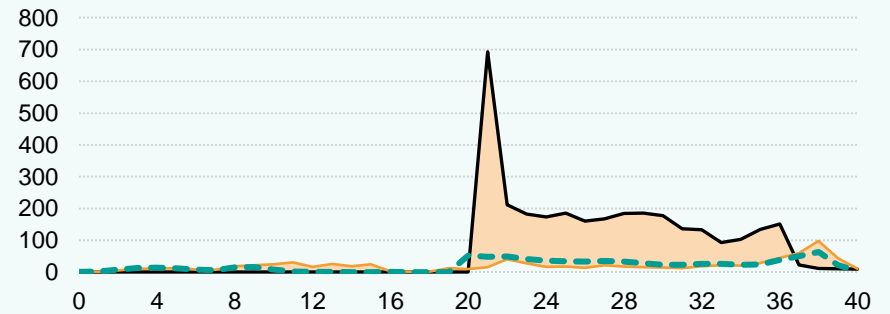
AFPS75/15 (Other ranks)



AFPS05/15 (Officers)



AFPS05/15 (Other ranks)



**Key:** — 2016 assumptions    - - - 2020 recommendations    Experience (line) and difference from 2016 assumptions (shaded area)

# Scheme experience: in numbers

<b>Category</b>	<b>Rank</b>	<b>Data</b> Number of retirements over 2016-2019	<b>Experience</b> Average age at retirement for retirements over 2016-2019	<b>Experience</b> Average years of service at retirement for retirements over 2016-2019	<b>2016 Expectations</b> Expected average age at retirement under the 2016 assumptions	<b>2016 Expectations</b> Expected average years of service at retirement under the 2016 assumptions	<b>2020 Expectations</b> Expected average age at retirement under the 2020 assumptions	<b>2020 Expectations</b> Expected average years of service at retirement under the 2020 assumptions
<b>AFPS75/15</b>	<b>Officers</b>	2,859	47.5	26.1	47.9	23.9	48.7	28.5
	<b>Other Ranks</b>	5,581	44.8	25.7	43.7	24.7	44.5	25.5
<b>AFPS05/15</b>	<b>Officers</b>	560	56.3	24.0	54.5	30.4	56.8	19.7
	<b>Other Ranks</b>	821	51.9	25.4	46.4	26.9	49.5	26.1

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# Wider environment: McCloud

## McCloud judgment

The McCloud judgment could result in many members exchanging up to 7 years' service from the SPa-linked 2015 scheme to earlier NPA legacy arrangements (or indeed the other way around).

We have not made any allowance for this judgment in our recommendations, in line with the decisions taken for the 2016 cost control valuations which were issued in 2022.

The additional service in the legacy schemes may lead to earlier retirements than previously assumed. However, the magnitude of any change is by no means clear, if it occurs at all. There are many other factors that might be working in the other direction which may influence member behaviour, such as changes in the State Pension age.

We also analysed a hypothetical scenario for the McCloud judgment on member behaviour which suggested an immaterial impact on the 2020 valuation results.

Following consultation with the Ministry of Defence, we do not see sufficient evidence to recommend any change to retirement ages following the McCloud judgment.

## Normal Minimum Pension Age

The Finance Act 2022 sets out that the minimum age at which most members can be permitted to draw their pension benefits will rise from 55 to 57 with effect from April 2028, to coincide with the rise of State Pension age to 67. However, many members have protected earlier retirement ages.

It is too early to speculate on the effect of this increased minimum age on member behaviours and the actuarial reductions applied to early retirement mean that any later retirements will have a minimal influence on the valuation results. Therefore, we recommend no change to the age retirement assumptions for the Finance Act 2022.

The effect of the 2022 Act should be kept under review at future valuations, when assumptions could be updated to ensure they mirror prevailing legislation.

## **B5. Rates of leaving service**



# Rates of leaving service

## What does this assumption represent?

Rates of leaving service (sometimes referred to as withdrawal rates) are a series of probabilities which represent the likelihood of a member voluntarily leaving service (without retiring) at any given age.

Different assumptions are usually adopted for groups who are expected to behave differently, e.g., for males and females, or members with pensions in different sections of the scheme.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Most	 Low	 Medium	 Lower costs (*)

## Our recommendations and rationale

We recommend moving to 2D tables which take account of both age and service which is a change in approach from the current age related tables. The proposed 2D tables are a materially better fit to the actual experience of the scheme.

The current 1D tables implicitly assume a single age of joining, but there is significant variability in members' ages of joining. There is also a service related component to members' benefits, which we would expect to influence members' behaviour. As this service related effect is observed in the experience data it seems appropriate to include both age and service as factors in setting the retirement decrements.

It is not yet possible to test the suitability of the 2015 scheme assumption, however, we recommend that the existing assumptions are also updated to 2D tables, so a similar approach/methodology is maintained between the schemes.

\* This is the combined impact on scheme costs from changing both the age retirement and leaving service decrements.

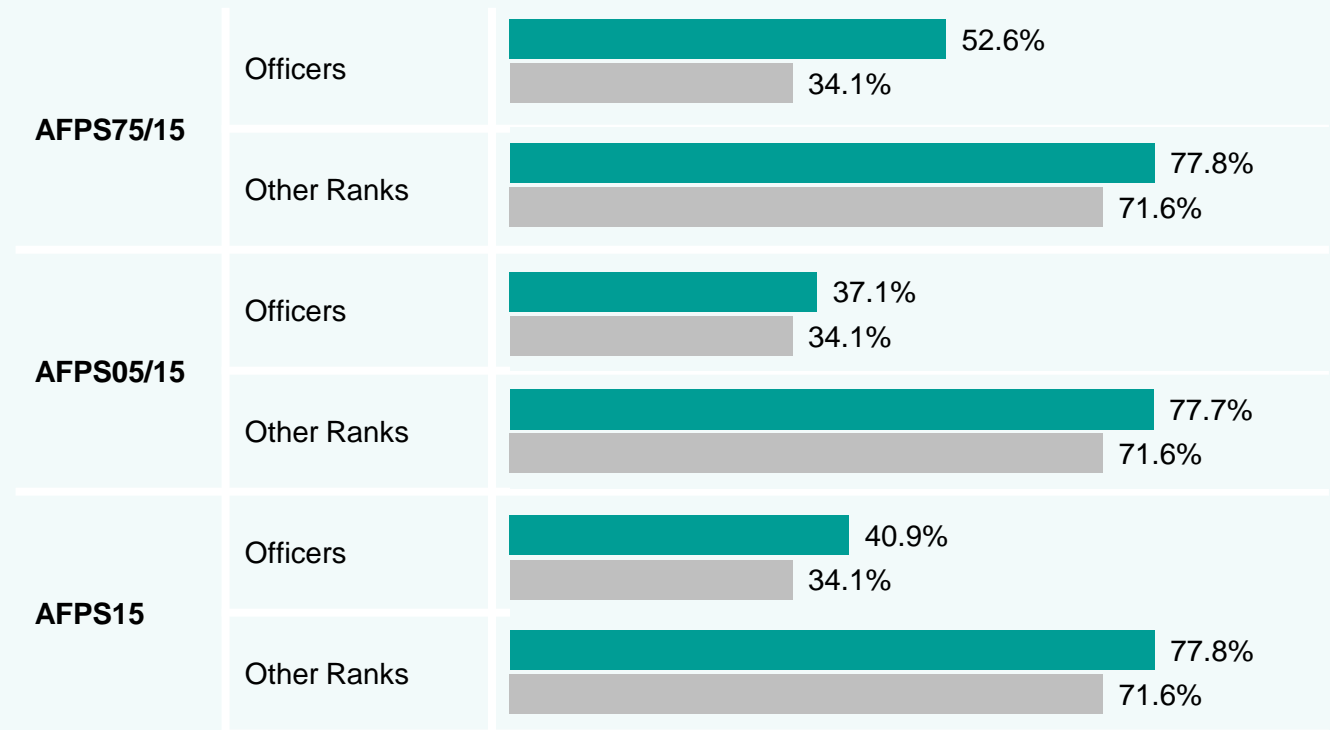
# Practical implications

The chart to the right shows the likelihood of a member leaving service before retirement. For each category shown:

- The **top line** (■) shows the likelihood under the assumptions we recommend for the 2020 valuation.
- The **bottom line** (■) shows the likelihood under the assumptions adopted for the 2016 valuation.

The numbers shown assume that members either leave service or remain in service until age 45 for Officers and age 40 for Other Ranks. No allowance is made for the possibility of early retirement, ill-health retirement, or death in service. These assumptions are covered in other sections.

## Likelihood of leaving service before age 45 for Officer member now aged 25 with 0 years of service, and before age 40 for Other rank member now aged 20 with 0 years of service





# Our approach

## Analysis

We have analysed the scheme's experience over the period 1 April 2016 to 31 March 2019.

Re-entry of members to pensionable service has been modelled by a 'net' withdrawal assumption for active members. This explicitly allows for a proportion of those leaving active service to return and is based on analysis undertaken on relevant member behaviour. No further explicit allowance has therefore been made in the valuation for a proportion of those deferred at the effective date to subsequently rejoin.

## Setting recommended assumptions

Our general approach is:

- Identify groups of members we would expect to have different rates of leaving service, for example by rank and scheme section.
- Compare recent withdrawal experience against the 2016 assumptions.
- Where there is not enough scheme experience, we look at assumptions from other groups of members or other schemes which may have similar experience, adjusted to allow for any available information.
- Recommend that the assumption is updated only if evidence points to a material change to the valuation results.
- We typically only recommend a change to the assumed number of withdrawals, leaving the age profile of the existing assumption unaltered. We only recommend a change to the age profile if we see evidence of a material and non-temporary step change in membership behaviour.
- The last four years of experience may not accurately reflect the longer-term, so if we recommend a change we generally 'smooth out' any excess volatility by basing our recommendation on an equal allowance for recent experience and the 2016 valuations assumptions, which were in turn set using pre-2016 experience.

We have given consideration to discussion at the Assumptions Review Group initial meeting, which was in support of service-related decrements, as service is a key determinant of member behaviour.

We have not included 2019-20 in our analysis as our review of the movement data showed a noticeable reduction in the volume of membership movements in this year, which might influence our analysis of the long term rates.

# Scheme experience: overall

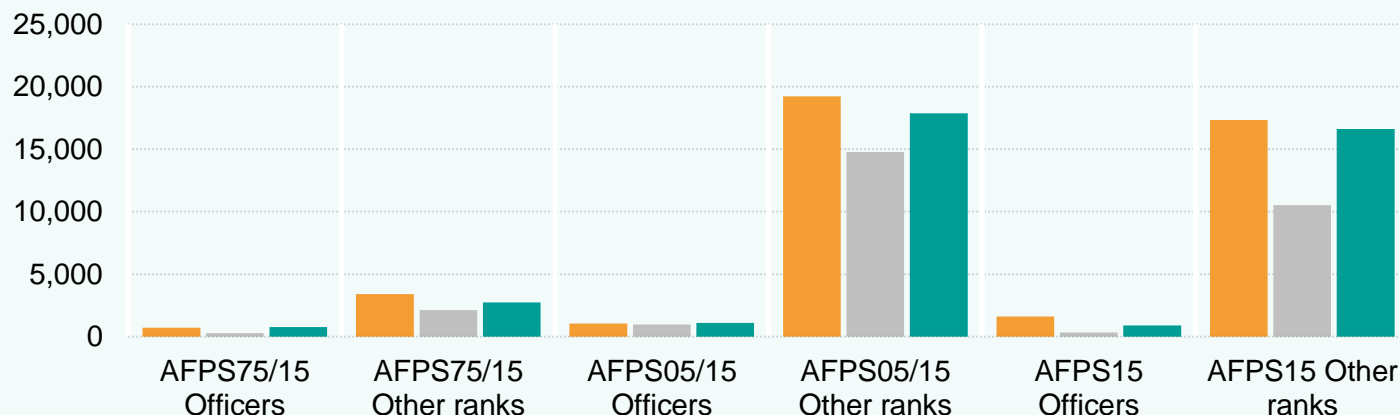
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

The chart to the right and those on the following pages compare:

- **actual experience** (orange) on the left – what has happened over the last 3 years.
- **2016 assumptions** (grey) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** (teal) on the right – what we would have expected to happen, had our recommended assumptions been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

**Experience vs expectations: number of leavers**



## Summary

The number of recent leavers for most groups are higher than the number of leavers assumed under the 2016 assumptions, as shown above.

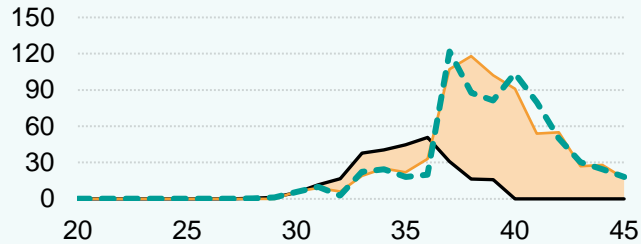
Consistently with the age retirement tables, we recommend updating the current age only (1D) tables to allow for service as well. The updated 2D tables take account of different ages of joining as many benefits are service dependent and so this can influence behaviour.

Our comparison of the existing 1D vs proposed 2D tables, on this page and on pages 51 and 52, shows that both age and service are important components in member behaviour and that the proposed 2D tables are materially more accurate than the existing approach.

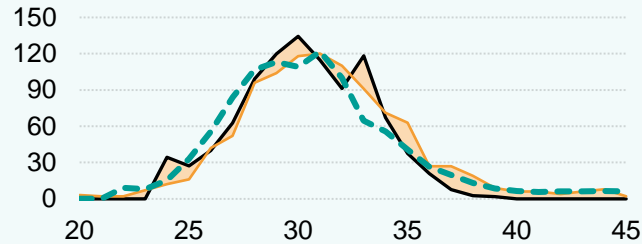
# Scheme experience: in detail

Number of leavers by age, split by category

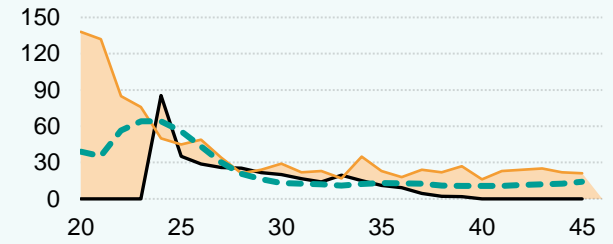
AFPS75/15 (Officers)



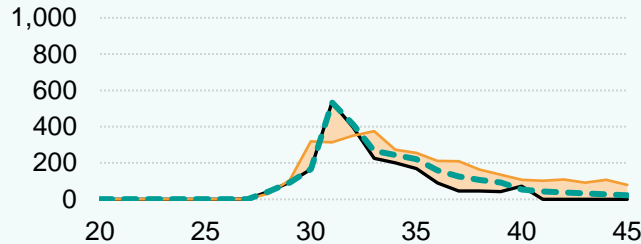
AFPS05/15 (Officers)



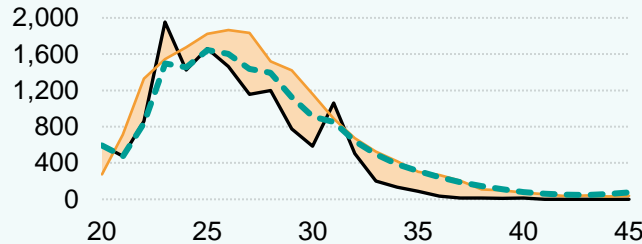
AFPS15 (Officers)



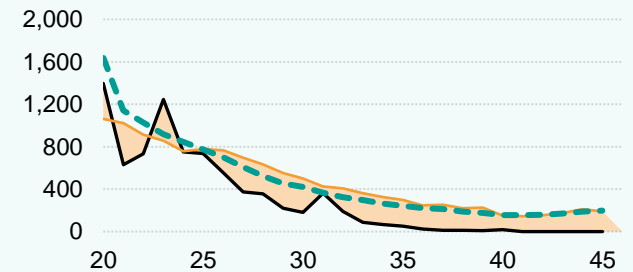
AFPS75/15 (Other ranks)



AFPS05/15 (Other ranks)



AFPS15 (Other Ranks)

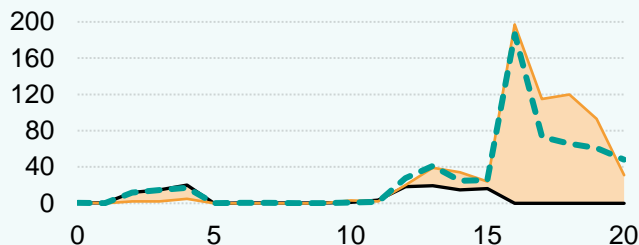


**Key:** — 2016 assumptions    - - - 2020 recommendations    Experience (line) and difference from 2016 assumptions (shaded area)

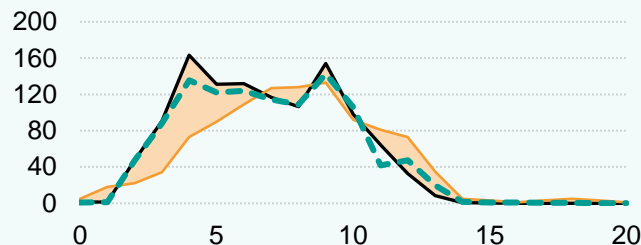
# Scheme experience: in detail

Number of leavers by service, split by category

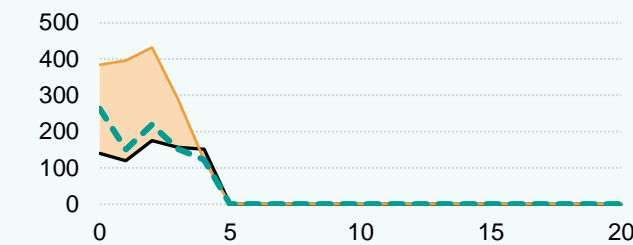
AFPS75/15 (Officers)



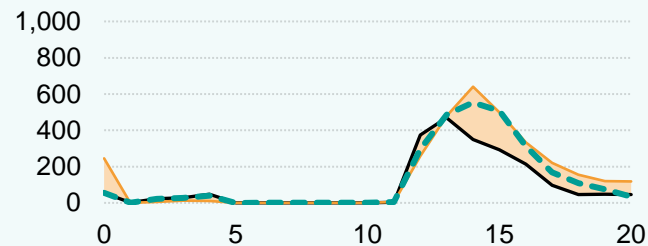
AFPS05/15 (Officers)



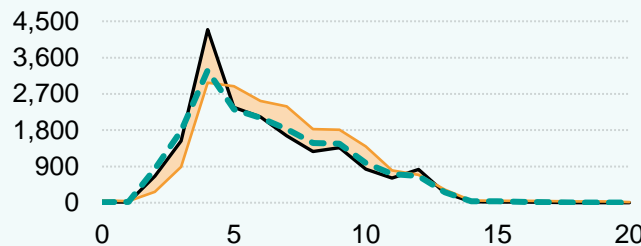
AFPS15 (Officers)



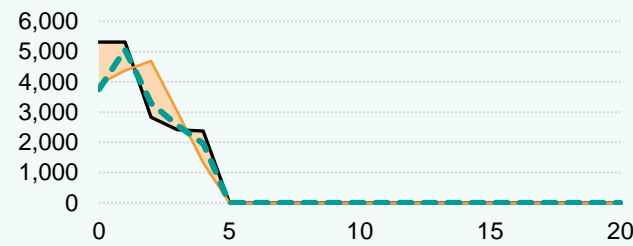
AFPS75/15 (Other ranks)



AFPS05/15 (Other ranks)



AFPS15 (Other Ranks)



**Key:** — 2016 assumptions    - - - 2020 recommendations    Experience (line) and difference from 2016 assumptions (shaded area)

# Scheme experience: in numbers

Category	Rank	Experience Number of leavers over 2016-2019	2016 Expectations Expected number of leavers under the 2016 assumptions	2020 Expectations Expected number of leavers under the 2020 assumptions
AFPS75/15	Officers	727	272	758
	Other Ranks	3,400	2,119	2,734
AFPS05/15	Officers	1,044	979	1,104
	Other Ranks	19,237	14,764	17,870
AFPS15	Officers	1,623	336	906
	Other Ranks	17,324	10,526	16,621

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

## **B6. Promotional pay increases**



# Promotional pay increases

## What does this assumption represent?





Promotional pay assumptions are a series of pay increases that members are assumed to receive **in addition to** normal annual salary increases. The assumptions are usually tied to a member's age or length of service.

**Promotional pay increases** are a 'scheme-set' assumption. **Salary increases** are a directed assumption and are not covered in this section.

Promotional pay increase assumptions are important as they help determine the value of 'final salary' benefits which make up a high proportion of scheme costs. The final salary proportion will reduce over time as more CARE benefits are built up in the reformed scheme, which are less dependent on promotional pay increases.

Costs of the McCloud remedy are highly sensitive to promotional pay increase assumptions.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Average	 High	 Small	 Lower costs

## Our recommendations and rationale

We recommend that the promotional pay increases assumptions adopted for the 2016 valuation are retained for the 2020 valuation but that they are assumed to apply based on a member's length of service, rather than a member's age. This change is recommended to provide a more robust assumptions in light of increasing variability in the starting age of members. This change is intended to apply in respect of both Pensionable Pay and Representative Pay.

Two sets of profile analysis were carried out, analysing the experience with reference to age and length of service. Both sets of analysis showed some volatility in the experience, but the overall shape of the experience is broadly in line with the 2016 assumption. The volatility in experience is in line with expectations as the analysis is affected by the shape of the active membership profile.



Adjusting the assumptions for recent experience for these members would not have a material effect on the valuation results.

# Practical implications

The number and size of promotional pay increases can dramatically affect member benefits. This is especially true for final salary benefits (which are based on salary at retirement), but also true for career average benefits (which are based on earnings over a member’s working lifetime in the scheme).

The chart to the right shows the potential salary at 30 years of service of a member currently with 5 or 10 years of service and paid £30,000 a year.

For each category shown:

- The **top line** (  ) shows the impact of the assumptions we recommend for the 2020 valuation.
- The **bottom line** (  ) shows the impact of the assumptions adopted for the 2016 valuation.

General (non-promotional) salary increases are set to be zero in the chart so that the impacts of different promotional pay assumptions can be seen more clearly.

## Salary at 30 years of service for a member now with 5 years of service for pensionable pay and 10 years of service for representative pay, and paid £30,000



Pensionable Pay is the relevant pay measure for members of AFPS 05 and AFPS 15.

Representative Pay is the relevant pay measure for members of AFPS 75.

The figures based on the 2016 assumptions assume entry ages of 24 for Officers and 19 for Other Ranks.



# Our approach

## Analysis

We have analysed the scheme's salary growth by comparing the average (whole-time equivalent) pensionable pay of the overall active membership as at 31 March 2020 for each year of age (or service) with that for the next year of age (or service). This is known as "profile analysis".

We have made no allowance for members moving between categories.

## Setting recommended assumptions

Our general approach is:

- Identify groups of members where we see different levels of promotional increases. This has included rank in the past, and we continue to examine whether rank differences exist.
- Compare recent levels of promotional increases against the 2016 valuation assumptions.
- Where there is not enough scheme experience, we look at assumptions from other groups of members or other schemes which may have similar experience, adjusted to allow for any available information.
- Recommend a change to the assumption only if evidence points to a material change to the valuation results.
- We typically only recommend an overall adjustment to the assumed promotional increases, leaving the profile of the existing assumption unaltered. We only recommend a change to the profile if we see evidence of a material and non-temporary change in membership behaviour.
- The experience analysed as at the 2020 valuation may not accurately reflect the longer-term, so if we recommend a change we generally 'smooth out' any excess volatility by basing our recommendation on an equal allowance for recent experience and the 2016 valuation assumptions, which were in turn set using pre-2016 experience.

We have given consideration to discussion at the Assumptions Review Group initial meeting, which was in support of service-related decrements, as service is a key determinant of member behaviour.

# Scheme experience: overall

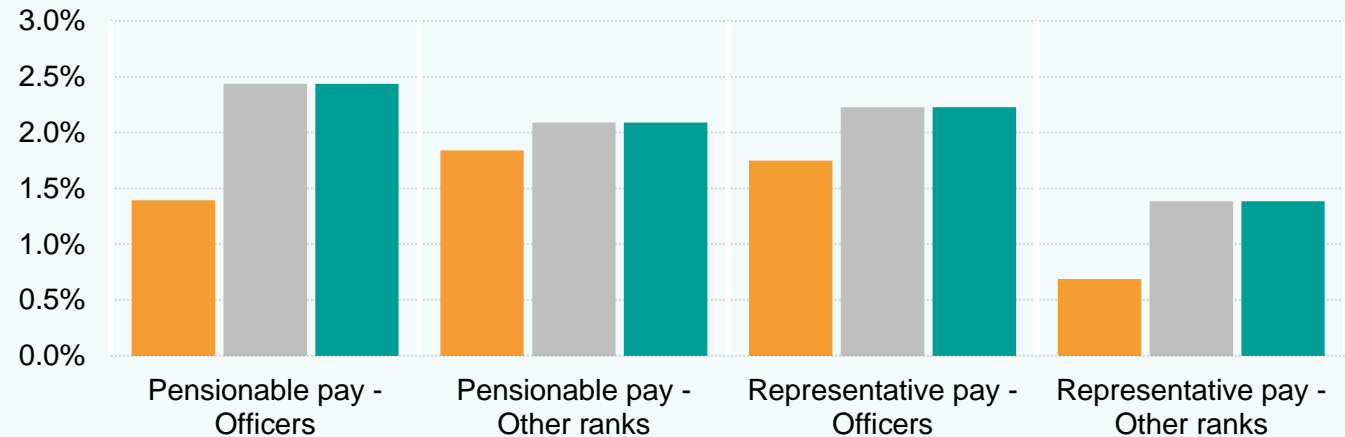
Experience vs expectations: average annual increases to 30 years of service

Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

The chart to the right and those on the following pages compare:

- **actual experience** (orange) on the left – what has happened.
- **2016 assumptions** (grey) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** (teal) on the right – what we would have expected to happen, had our recommended assumptions been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.



## Summary

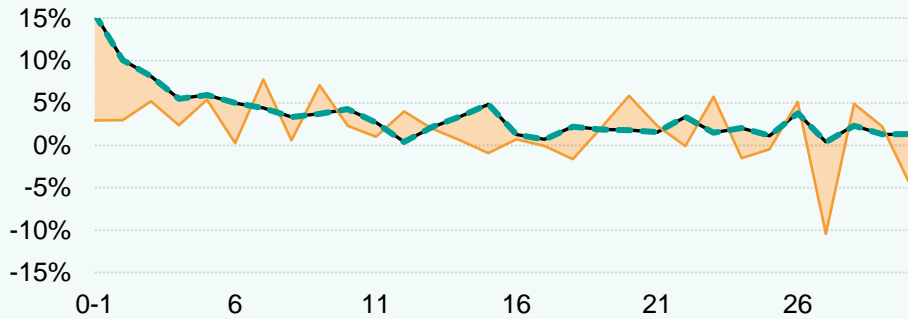
Overall, the promotional pay experience has been lower than expected based on the 2016 assumptions. The differences are generally small and there is some volatility in the experience. The overall shape of the experience is broadly in line with the 2016 assumption. The volatility in experience is in line with expectations as the analysis is affected by the shape of the active membership profile.

Adjusting the assumptions for recent experience would not have a material effect on the valuation results.

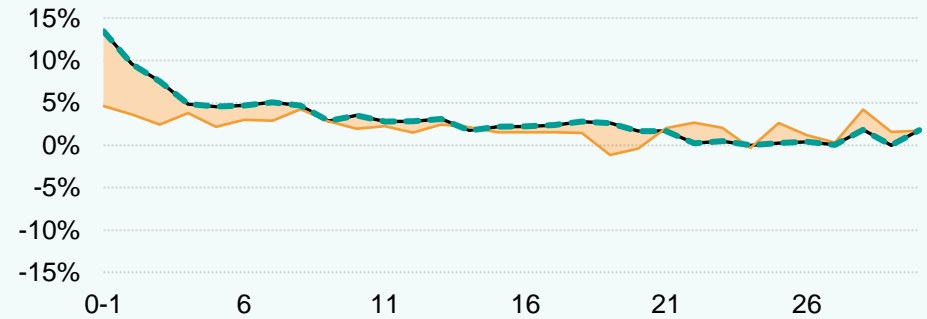
# Scheme experience: in detail

Annual promotional pay increases by service, split by category

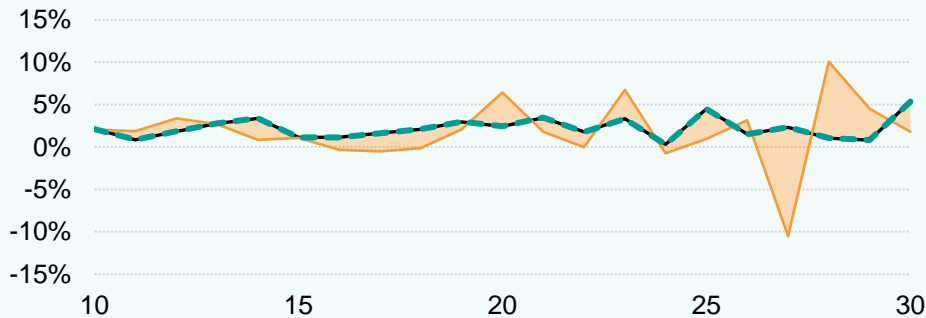
Pensionable pay Officers



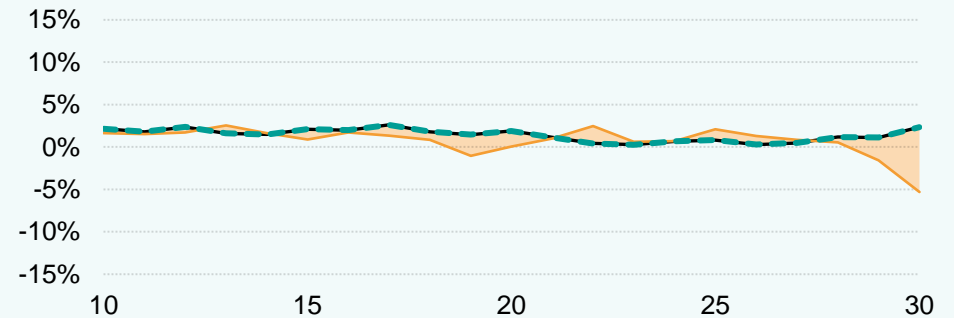
Pensionable pay Other ranks



Representative pay Officers



Representative pay Other ranks



Analysis of Representative Pay is restricted to those with at least 10 years' service as this pay measure is only relevant for members of AFPS 75.

**Key:** — 2016 assumptions    - - - 2020 recommendations    Experience (line) and difference from 2016 assumptions (shaded area)

# Scheme experience: in numbers

Category (*)		2020 payroll of analysed members	Experience Implied annual promotional pay increase, after removal of general salary increases	2016 Expectations Expected annual promotional pay increase under the 2016 assumptions	2020 Expectations Expected annual promotional pay increase under the 2020 assumptions
Pensionable pay	Officers	£2.0 billion	1.4%	2.4%	2.4%
	Other Ranks	£5.0 billion	1.8%	2.1%	2.1%
Representative pay	Officers	£0.9 billion	1.7%	2.2%	2.2%
	Other Ranks	£1.3 billion	0.7%	1.4%	1.4%

\* Representative pay is applicable for AFPS75 members only, whereas pensionable pay is applicable for members in AFPS75, AFPS05 and AFPS15.

For the Pensionable Pay scales, the Experience and Expectations figures shown in the table above show the average annual promotional pay increases to 30 years' service for a member now with 5 years' service. For the Representative Pay scales, the figures shown are the average annual promotional increases to 30 years' service for a member currently with 10 years' service. Different rates would apply for different service periods.

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# **B7. Rates of ill-health retirement**



# Rates of ill-health retirement

## What does this assumption represent?

Rates of ill-health retirement are a series of probabilities which represent the likelihood of a member retiring in ill-health at any given age.

Members are eligible for either tier 1, tier 2 or tier 3 ill-health benefits, depending on the severity of their illness, where Tier 3 is the most generous and covers the most severe illnesses.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Average	 Medium	 Large	 Lower costs

## Our recommendations and rationale

Overall, the numbers of ill-health retirements are significantly higher than expected for Other Ranks, although they are similar or slightly lower than expected for Officers.

Our experience up to 31 March 2020 misses the impact of COVID-19. Higher rates of ill-health retirement than expected for Other Ranks were observed in the data, with similar experience observed at the 2016 valuation. Therefore, we propose to update the ill health decrement rates for Other Ranks to allow for the scheme experience over the last two valuation cycles.

There has been a higher proportion of tier 1 retirements than previously assumed. Following discussions with the Ministry of Defence Assumptions Review Group, we recommend updating the 2016 valuation assumption for tier 1/2/3 proportions. We propose to update the assumed proportions in each tier to be 75%/15%/10% for tiers 1/2/3 respectively in line with the expectations of the Ministry of Defence Assumptions Review Group. This broadly reflects part way between the scheme experience over the period and the 2016 assumptions.

We would not expect the McCloud judgment to impact the number of ill-health retirements directly. However, the tier allocations could affect member choices. We would not expect this to have a material impact on future contribution rates as the legacy arrangements ceased on 1 April 2022.

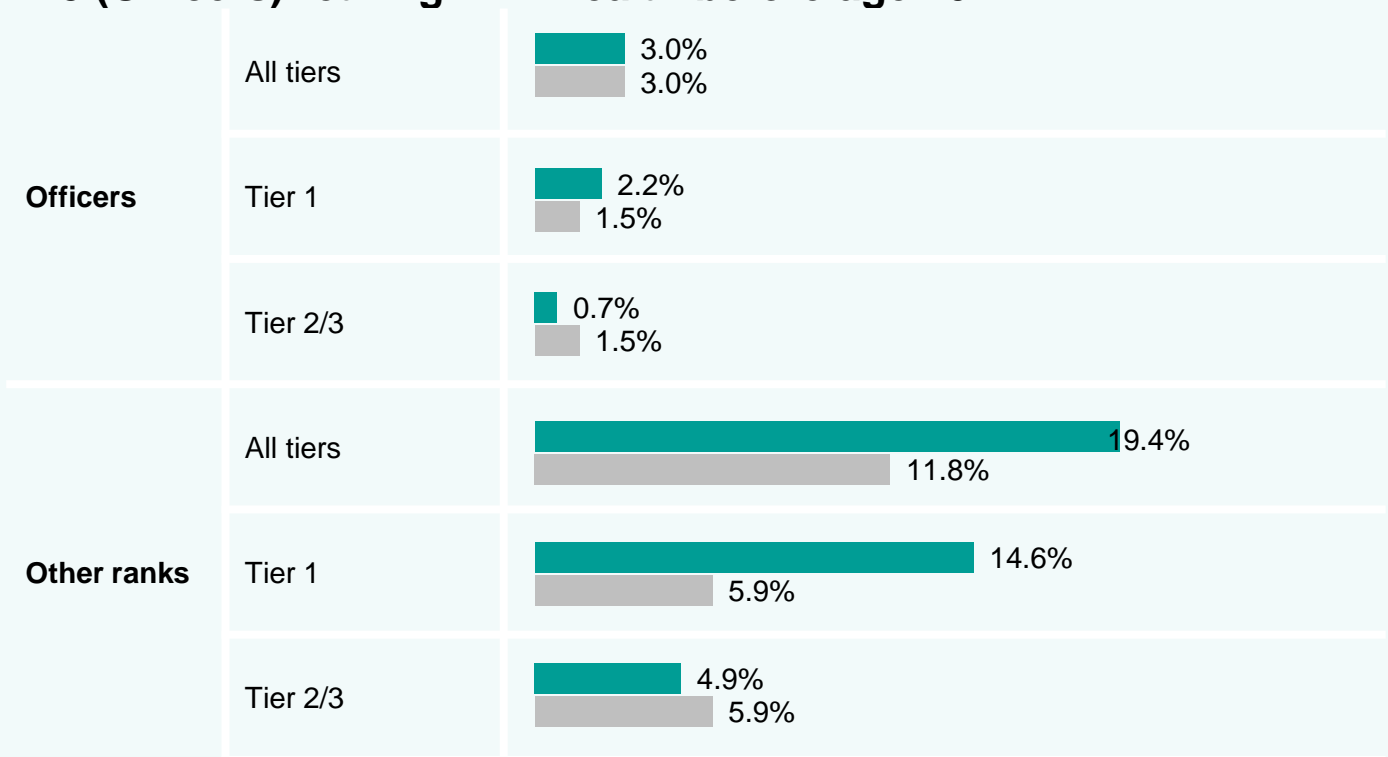
# Practical implications

## Likelihood of member now aged 20 (Other ranks) and now aged 25 (Officers) retiring in ill-health before age 40

The chart to the right shows the likelihood of members retiring in ill-health before retirement. For each category shown:

- The **top line** (■) shows the likelihood under the assumptions we recommend for the 2020 valuation.
- The **bottom line** (■) shows the likelihood under the assumptions adopted for the 2016 valuation.

The numbers shown assume that members either retire in ill health or remain in service until age 65. No allowance is made for the possibility of early retirement, leaving service, or death in service. These assumptions are covered in other sections.



In the chart, the sum of the parts may not sum to the total due to rounding.

The data source used in the analysis provides a split into tier 1 and tiers 2 and 3 combined. Other data suggests that of the tier 2/3 members, the tier 2 proportion is roughly two-thirds for Officers and three-quarters for Other Ranks, though this data was not robust enough to use in our analysis.

# Our approach

## Analysis

We have analysed the scheme's experience over the period 1 April 2016 to 31 March 2019.

As ill-health tiers do not apply in all schemes, there is a chance that experience might have been slightly different if members in scope for the McCloud remedy were in a different scheme to currently. We expect the overall impact of this to be immaterial and have made no allowance for this possibility.

## Setting recommended assumptions

Our general approach is:

- Identify groups of members we would expect to have different rates of ill-health retirement, for example by rank.
- Compare recent ill-health retirement experience against the 2016 assumptions.
- Where there is not enough scheme experience, we look at assumptions from other groups of members or other schemes which may have similar experience, adjusted to allow for any available information.
- Recommend that the assumption is updated only if evidence points to a material change to the valuation results.
- We typically only recommend a change to the assumed number of ill-health retirement, leaving the age profile of the existing assumption unaltered. We only recommend a change to the age profile if we see evidence of a material and non-temporary step change in membership outcomes.
- The last four years of experience may not accurately reflect the longer-term, so if we recommend a change we generally 'smooth out' any excess volatility by basing our recommendation on an equal allowance for recent experience and the 2016 valuations assumptions, which were in turn set using pre-2016 experience.
- The same approach applies to the proportions of ill-health retirements across the different severity tiers.

We have not included 2019-20 in our analysis as our review of the movement data showed a noticeable reduction in the volume of membership movements in this year, which might influence our analysis of the long term rates.



# Scheme experience: overall

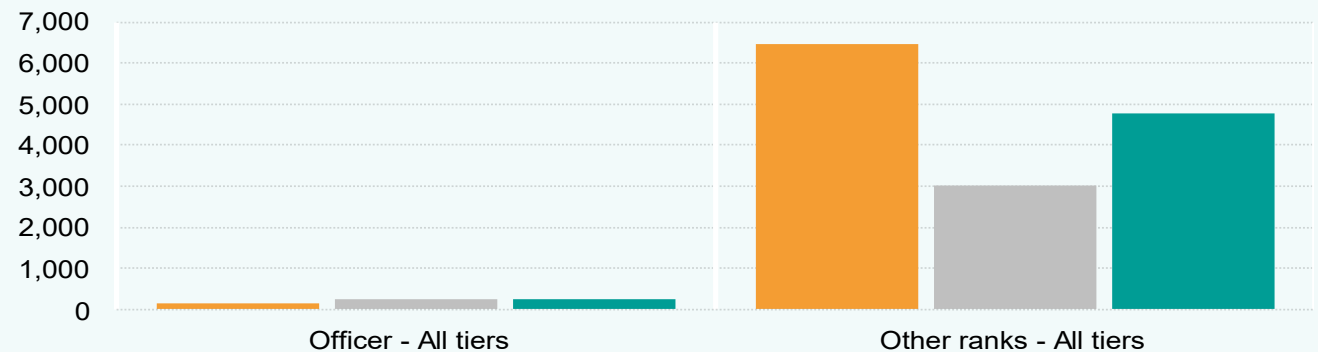
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

The chart to the right and those on the following pages compare:

- **actual experience** ( █ ) on the left – what has happened over the last 3 years.
- **2016 assumptions** ( █ ) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** ( █ ) on the right – what we would have expected to happen, had our recommended assumptions been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

Experience vs expectations: number of ill-health retirements



## Summary

Overall, the numbers of ill-health retirements are significantly higher than expected for Other Ranks, although they are similar or slightly lower than expected for Officers. We consider a combined male and female analysis as we have insufficient data to analyse female rates separately from males.

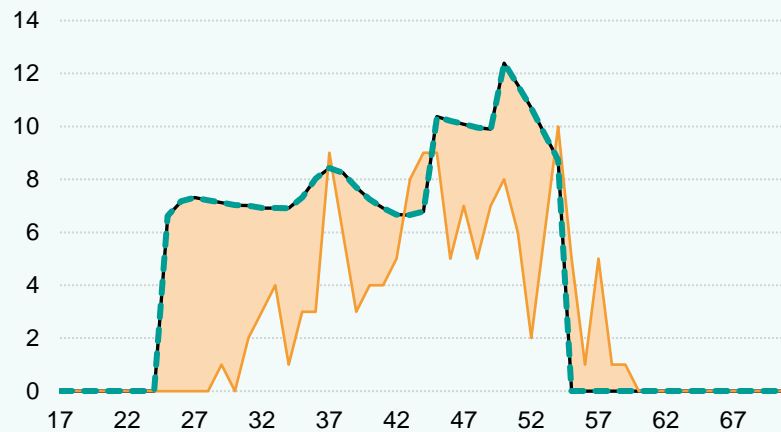
For Other Ranks this continues a trend that was identified as part of the previous valuation. We discussed our analysis with the Assumptions Review Group and their view is that ill-health retirements have been significantly higher (at least in part) due to the falling size of the active membership and they expect rates will decrease in the medium to longer term. We therefore propose updating the expected decrement for Other Ranks based upon an equal allowance for the previous assumptions and the rates over the last two intervalation periods; this equates to an overall multiplier of about 1.6 times.

The Assumptions Review Group noted the increase in mental health discharges, which are often tier 1 ill-health, and the administrators also confirmed that a very high proportion of ill-health retirements were tier 1. Therefore, we propose to update to the Assumptions Review Group's proposed rates, which allow for higher rates of tier 1 ill-health retirement.

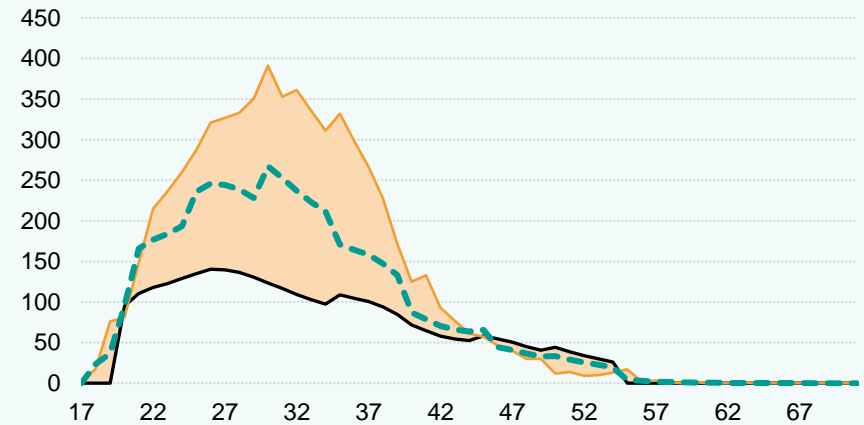
# Scheme experience: in detail

Number of ill-health retirements by age, split by category

Officers (All tiers)



Other ranks (All tiers)



**Key:** — 2016 assumptions    - - - 2020 recommendations    Experience (line) and difference from 2016 assumptions (shaded area)

# Scheme experience: in numbers

<b>Category</b>		<b>Experience</b> Number of ill-health retirements over 2016-2019	<b>2016 Expectations</b> Expected number of ill-health retirements under the 2016 assumptions	<b>2020 Expectations</b> Expected number of ill-health retirements under the 2020 assumptions
<b>Officers</b>	<b>All tiers</b>	143	248	248
	<b>Tier 1</b>	N/A	124	186
	<b>Tier 2/3</b>	N/A	124	62
<b>Other ranks</b>	<b>All tiers</b>	6,475	3,022	4,762
	<b>Tier 1</b>	N/A	1,511	3,572
	<b>Tier 2/3</b>	N/A	1,511	1,191

In the table, the sum of the parts may not sum to the total due to rounding.

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# Wider environment:

## McCloud judgment

We would not expect the McCloud judgment to impact the number of ill-health retirements directly. However, the tier allocations may affect member choices. We would not expect this to have a material impact on contribution rates.

In addition, this ceased to apply from 1 April 2022 when all members moved into the reformed scheme.

## Tier 1 age-related effect

At the 2016 valuation, we observed a different pattern for tier 1 ill-health retirements than for other ill-health retirements. This effect is also observed for this dataset.

The Other Ranks experience shows that members predominantly retire with tier 1 ill health benefits, particularly at younger ages, where almost all Other Ranks retiring on ill-health are tier 1 retirements. However, for Officers, members retire with different tiers of benefit across the age range.

We analysed the tier allocation based on two different approaches:

- Using the data for tier allocation in the movements data (this method is subject to uncertainty as not all records had the tier shown).

- Assuming that members on the list of ill-health retirements with tier 1 lump sum were all in tier 1, and that members on the list for ill-health retirements with pension were in tier 2 or 3. This may understate tier 1 retirements as some members who were allocated tier 1 may have been entitled to Early Departure Payments (EDP) and hence be recorded as a retirement with pension.

The analyses show a range of 77%-98% in tier 1 for Other Ranks and 64%-82% for Officers. Given the relatively small numbers of ill-health retirements this is based on, particularly for Officers, and given the uncertainty over the tier allocation for some ill-health retirements, we have not proposed a separation of the tier 1 ill-health decrement at this stage. We propose to adopt the Ministry of Defence Assumption Review Group's expected tier allocation of 75%/15%/10% for tiers 1/2/3, as this is closer to the experience observed than the 2016 assumptions of 50%/25%/25%.

We may want to wait until we have carried out another valuation to consider further experience data before considering further changes to the tier 1 ill-health decrement, including the potential introduction of an age-related effect.

## **B8. Mortality before retirement**



# Mortality before retirement

## What does this assumption represent?

Mortality assumptions are a series of probabilities which represent the likelihood of a member dying at any given age. Different assumptions usually apply to males and females.

Mortality after retirement assumptions are used after members are assumed to retire and these are covered in Part B2.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Least	 Low	 None	 No impact

## Our recommendations and rationale

Deaths before retirement have been reasonably close to the 2016 assumptions, so we recommend no changes to the current assumptions.

The analysed experience runs to 31 March 2020, and as such misses most of the impact of COVID-19. There is anecdotal evidence that COVID-19 has increased the number of deaths before retirement. However, we have made no allowance for this, as it is unlikely to have any material impact on the valuation results.

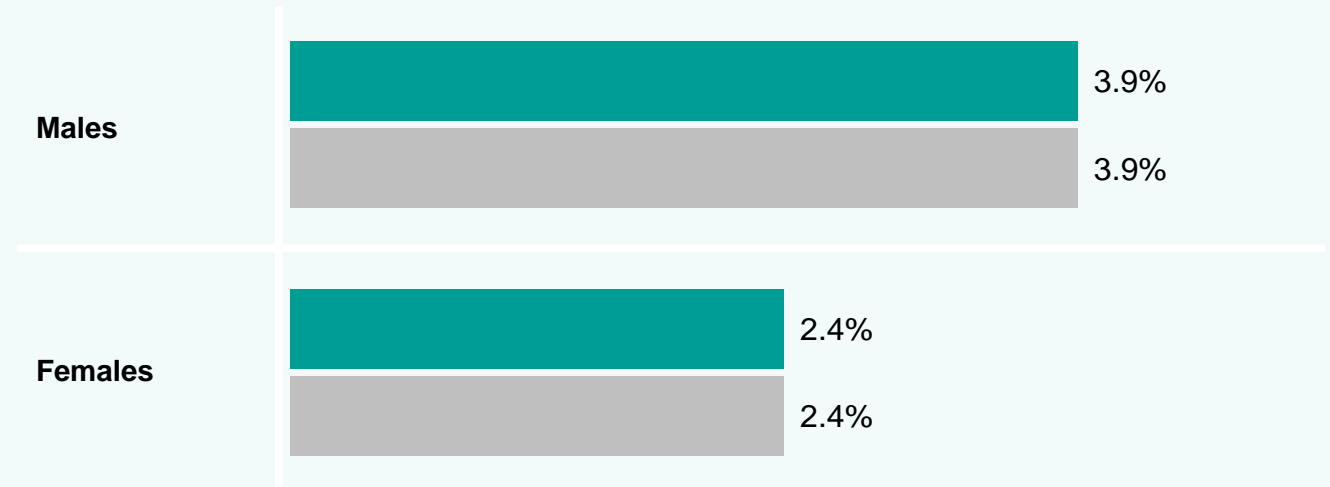
# Practical implications

The chart to the right shows the likelihood of dying before retirement. For each category shown:

- The **top line** (■) shows the likelihood under the assumptions we recommend for the 2020 valuation.
- The **bottom line** (■) shows the likelihood under the assumptions adopted for the 2016 valuation.

The numbers shown assume that members either die or remain in service until age 55. No allowance is made for the possibility of early retirement, leaving service, or ill-health retirement. These assumptions are covered in other sections.

## Likelihood of member now aged 30 dying in service before age 55



# Our approach

## Analysis

We have analysed the scheme's pre-retirement mortality experience over the period 1 April 2016 to 31 March 2019.

## Setting recommended assumptions

Our general approach is:

- Identify groups of members we would expect to have different rates of death before retirement, for example by gender.
- Compare recent pre-retirement death experience against the 2016 assumptions.
- Where there is not enough scheme experience, we look at assumptions from other groups of members or other schemes which may have similar experience, adjusted to allow for any available information.
- Recommend that the assumption is updated only if evidence points to a material change to the valuation results.
- We typically only recommend a change to the assumed number of pre-retirement deaths, leaving the age profile of the existing assumption unaltered. We only recommend a change to the age profile if we see evidence of a material and non-temporary step change in membership outcomes.
- The last four years of experience may not accurately reflect the longer-term, so if we recommend a change we generally 'smooth out' any excess volatility by basing our recommendation on an equal allowance for recent experience and the 2016 valuations assumptions, which were in turn set using pre-2016 experience.




We have not included 2019-20 in our analysis as our review of the movement data showed a noticeable reduction in the volume of membership movements in this year, which might influence our analysis of the long term rates.



# Scheme experience: overall

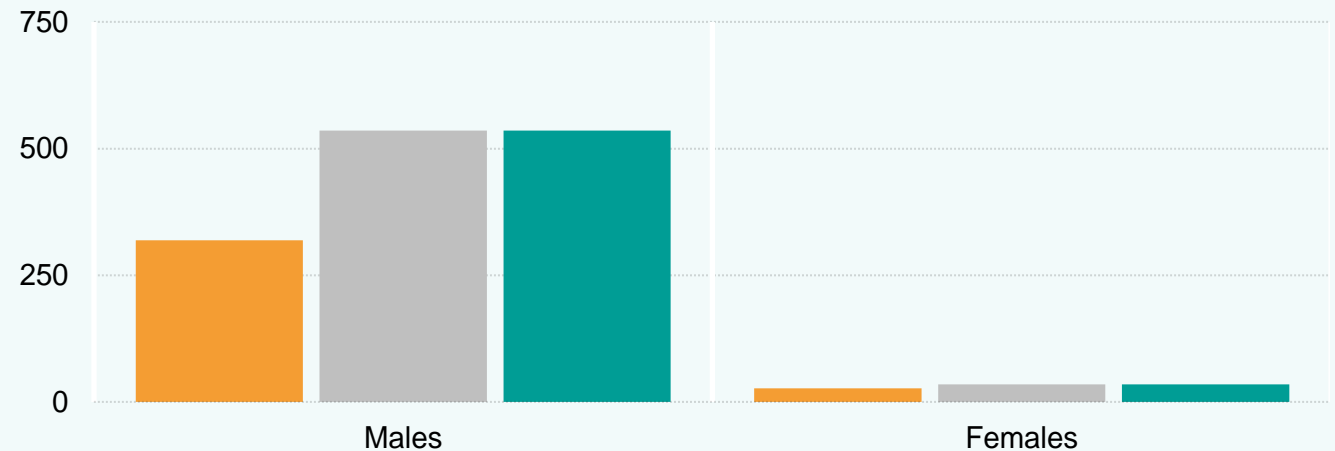
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

The chart to the right and those on the following pages compare:

- **actual experience** (  ) on the left – what has happened over the last 3 years.
- **2016 assumptions** (  ) in the middle– what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** (  ) on the right – what we would have expected to happen, had our recommended assumptions been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

## Experience vs expectations: number of deaths before retirement



## Summary

The charts above show that there have been fewer pre-retirement deaths compared to the 2016 assumptions.

The charts on the next page show that the age profile of the recent deaths broadly match the 2016 assumptions, with average ages of death of around 40.

# Scheme experience: in detail

Deaths before retirements by age, split by category



# Scheme experience: in numbers

<b>Category</b>	<b>Experience</b> Number of deaths in service over 2016-2019	<b>2016 Expectations</b> Expected number of deaths in service under the 2016 assumptions	<b>2020 Expectations</b> Expected number of deaths in service under the 2020 assumptions
<b>Males</b>	319	536	536
<b>Females</b>	27	35	35

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

## **B9. Family statistics**



# Family statistics

## What does this assumption represent?

The term ‘family statistics’ covers several assumptions, including:




- the probability that an eligible partner exists
- the average age of that partner, compared to the member.

The assumptions are used to estimate the likelihood of a dependant’s pension coming into payment when a member dies, and how long that pension will be paid.

For existing pensioners, we consider the likelihood of members having an eligible partner on 31 March 2020. For future pensioners, we consider the likelihood of members having an eligible partner at retirement, or earlier death.

Mortality assumptions apply independently to the member and assumed partner.

## Summary statistics

Relative importance of assumption	Volatility of experience and unreliability of data	Size of recommended change	Impact of recommended changes on scheme costs
 Least	 Medium	 Small	 Lower costs

## Our recommendations and rationale

For male Other Ranks, we recommend reducing both the current pensioner and future pensioner proportion married and married/partnered tables of assumptions by 5% at retirement. This is due to recent experience being lower than the 2016 proportion married assumption for male Other Ranks and reducing the assumptions by 5% at retirement would lead to a material impact on the employer contribution rate. We recommend retaining all other proportion married and married/partnered assumptions, as any change to align with experience would not have a material impact on the employer contribution rate.

For the proportion married/partnered assumptions, we considered the differential in the ONS married and married/partnered assumptions to inform our recommendation, and this supported the current married/partnered assumptions remaining aligned to the proportion married assumptions.

For the age difference assumptions, no scheme data was available to carry out an analysis. We recommend no change to the 2016 assumptions.

For the minor assumptions such as minor dependants’ pensions, dependants’ gender and remarriage, we recommend no change to the 2016 assumptions.

# Practical implications

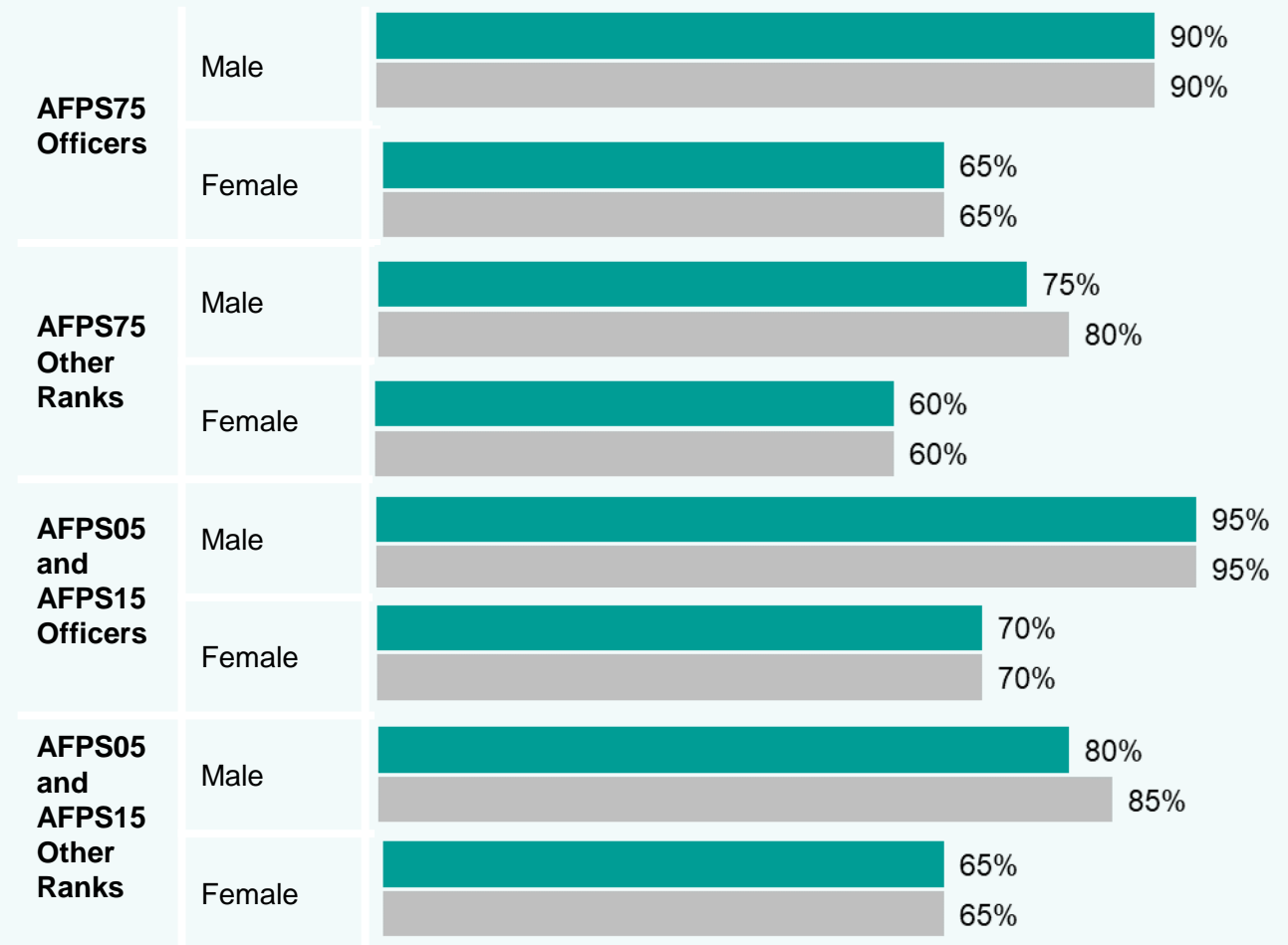
The chart to the right shows the likelihood that an eligible partner exists at time of retirement. The likelihood of a partner existing at death depends on:

- Assumptions about the existence of an eligible partner and that partner’s age (discussed in this section)
- Assumptions about the member and partner’s mortality (discussed in the mortality after retirement section).

For each category shown:

- The **top line** (■) shows the likelihood under the assumptions we recommend for the 2020 valuation.
- The **bottom line** (■) shows the likelihood under the assumptions adopted for the 2016 valuation.

**Likelihood of an eligible partner existing at time of retirement, for normal health pensioner who retired at age 40 (other rank) or at age 45 (officer) at the valuation date**



# Our approach

## Analysis

We have analysed the scheme's experience over the period 1 April 2016 to 31 March 2020. Our analysis is based on the active data as at 31 March 2020 using the marital status indicator to identify those that are married. Our analysis includes members from all schemes (AFPS75, AFPS05 and AFPS15) and focuses on the age range 40 to 65, where broadly members are expected to retire.

Our analysis has been carried out on an 'lives' basis reflecting data available.

## Setting recommended assumptions

Our general approach is:

- Identify groups of members we would expect to have different family statistics, for example by gender, rank and by section of the scheme, where there are differences in eligibility.
- Compare recent proportion married for members against the 2016 assumptions.
- Where there is not enough scheme experience, we look at assumptions from national statistics, other groups of members or other schemes which may have similar experience, adjusted to allow for any available information.
- Recommend that the assumption is updated only if evidence points to a material change to the valuation results.
- Recommend that the proportion married/partnered assumption remains aligned to the proportion married assumption in the absence of any experience data or evidence that would justify changing the proportion married/partnered assumption.
- We typically only recommend a change to the overall assumed proportion married or married/partnered, leaving the age profile of the existing assumption unaltered. We only recommend a change to the age difference if we see evidence of a material and non-temporary step change in membership behavior.
- The last four years of experience may not accurately reflect the longer-term, so if we recommend a change we generally 'smooth out' any excess volatility by basing our recommendation on an equal allowance for recent experience and the 2016 valuations assumptions, which were in turn set using pre-2016 experience.

# Scheme experience: overall

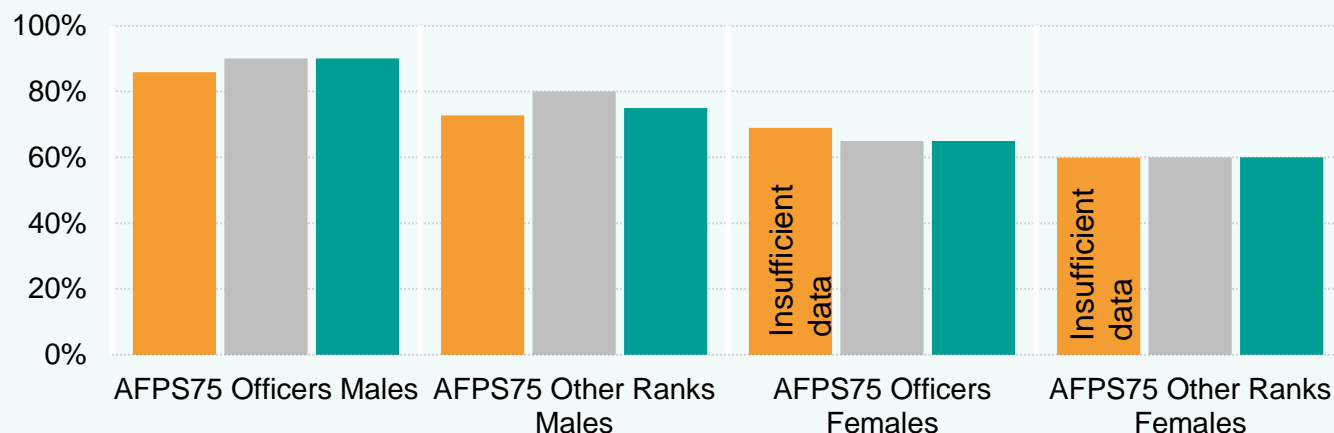
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

The chart to the right and those on the following pages compare:

- **actual experience** (orange) on the left – what has happened over the last 4 years.
- **2016 assumptions** (grey) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** (teal) on the right – what we would have expected to happen, had our recommended assumptions been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

## Experience vs expectations: proportion married at retirement



## Summary

The scheme experience for male Officers has seen a similar proportion married in recent years compared to the 2016 assumptions. For male Other Ranks there has been a lower proportion married in recent years compared to the 2016 assumptions. Due to the low number of female active members, there is insufficient data to place significant reliance on the analysis for female Officer and female Other Ranks.

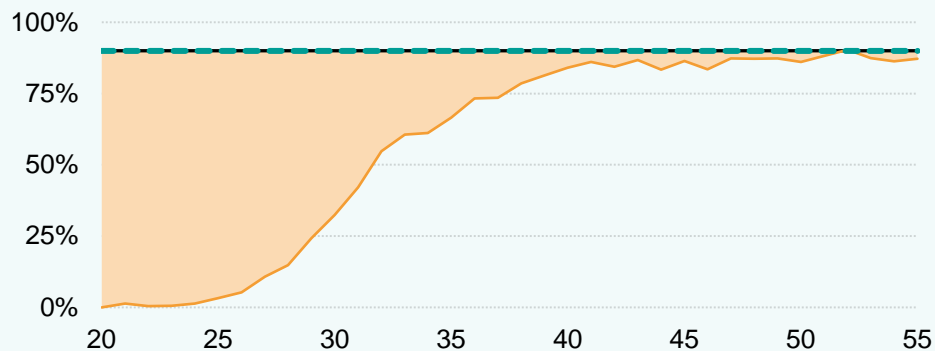
There is insufficient data to test the impact on the AFPS05 and AFPS15 proportion married/partnered assumption, due to the low number of active AFPS05 and AFPS15 members with partnered benefits. However, ONS married and married/partnered statistics were considered when informing whether the married/partnered assumption remained appropriate.



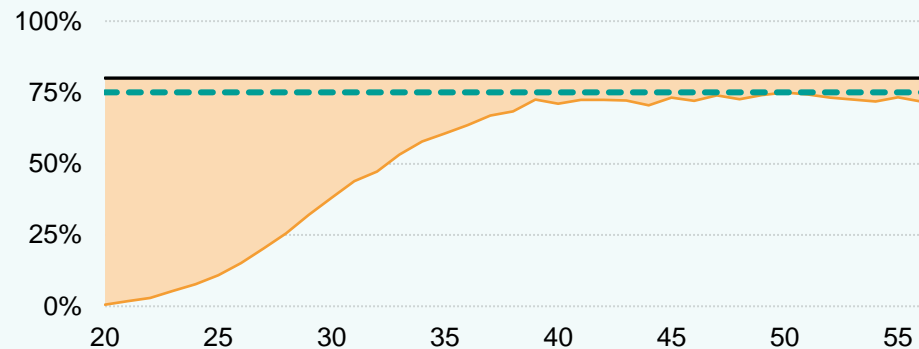
# Scheme experience: in detail

Proportion married at retirement by age, split by category

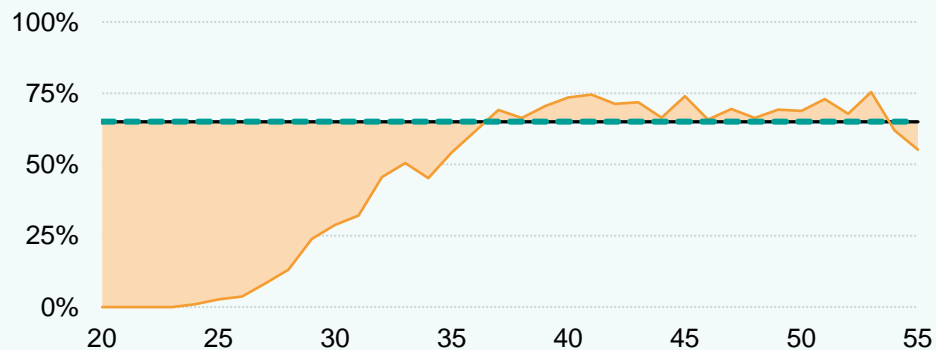
AFPS75 Officers Males



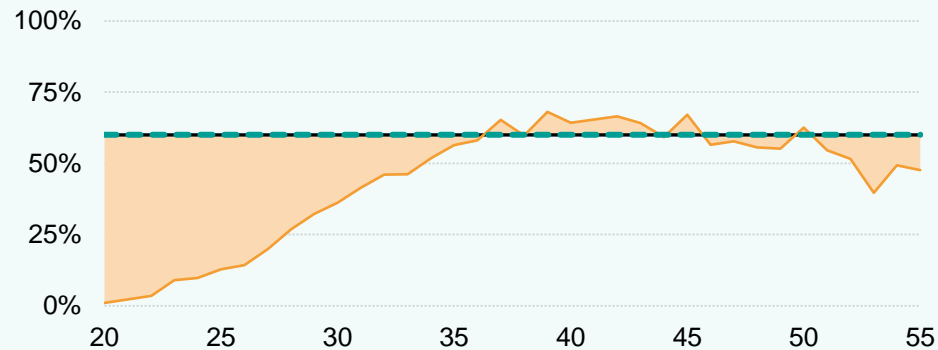
AFPS75 Other Ranks Males



AFPS75 Officers Females



AFPS75 Other Ranks Females



**Key:** — 2016 assumptions    - - - 2020 recommendations    Experience (line) and difference from 2016 assumptions (shaded area)

# Scheme experience: in numbers

Proportion married or married/partnered at retirement, by age and category

Category		Experience Number of active member records (includes AFPS75, AFPS05 and AFPS15)	Experience Actual number of active member records with an eligible partner as a proportion of total number of active records	2016 Expectations Expected proportion married or married/partnered at retirement under the 2016 recommendations	2020 Expectations Expected proportion married or married/partnered at retirement under the 2020 recommendations
AFPS75 Officers	Males	16,647	86%	90%	90%
	Females	2,237	69%	65%	65%
AFPS75 Other Ranks	Males	32,610	73%	80%	75%
	Females	3,288	60%	60%	60%
AFPS05/ AFPS15 Officers	Males	N/A	N/A	95%	95%
	Females	N/A	N/A	70%	70%
AFPS05/AFPS15 Other Ranks	Males	N/A	N/A	85%	80%
	Females	N/A	N/A	65%	65%

N/A: there was no experience data analysed due to insufficient data.

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# Scheme experience: overall

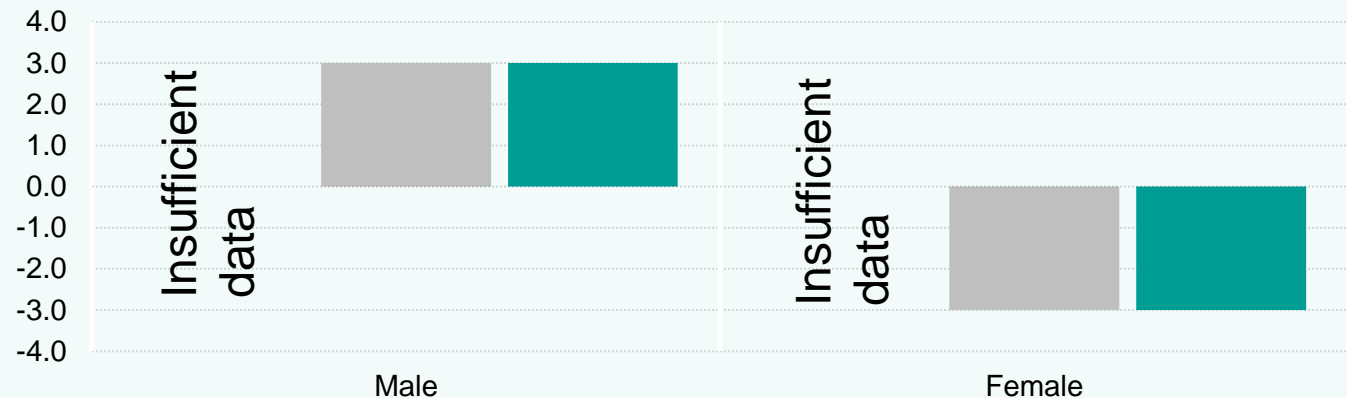
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

The chart to the right and those on the following pages compare:

- **actual experience** ( █ ) on the left – what has happened over the last 4 years.
- **2016 assumptions** ( █ ) in the middle – what we thought would happen, based on the assumptions adopted for the 2016 valuation.
- **2020 recommendations** ( █ ) on the right – what we would have expected to happen, had our recommended assumptions been adopted for the 2016 valuation.

It should be noted that experience can be a very volatile measure for groups with small amounts of data, which then impacts the reliance we place on it.

## Experience vs expectations: age difference at death



## Summary

We were unable to analyse this assumption due no data being available on age differences between members and their spouse or partner. We do not expect these assumptions to have a material effect on the valuation and recommended that the 2016 assumptions are retained.

ONS statistics broadly support the existing age difference assumptions

# Scheme experience: in numbers

Age difference between member and spouse or partner, by age and category

<b>Category</b>	<b>Experience</b> Number of member deaths over 2016-2020	<b>Experience</b> Average age difference between member and eligible spouse or partner at date of death	<b>2016 Expectations</b> Expected age difference between member and eligible partner or spouse under the 2016 assumptions	<b>2020 Expectations</b> Expected age difference between member and eligible partner or spouse under the 2020 assumptions
<b>Males</b>	N/A	N/A	3	3
<b>Females</b>	N/A	N/A	-3	-3

N/A - There was no experience data to produce an analysis of the age difference between the member and spouse or partner.

Details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# Wider environment and other assumptions

## Walker & Goodwin

The Goodwin legal challenge was brought against The Department for Education (DfE) in respect of survivor's benefits provided in the Teachers' Pension Scheme. The Goodwin challenge follows on from the Walker case (which ruled in 2017 that to treat same-sex spouses/civil partners less favourably than their opposite-sex equivalents constituted unlawful discrimination). TPS provided survivor's benefits to male widowers of female members based on service from 6 April 1988, whereas same-sex partners of male members were provided benefits based on service from 1 April 1972 (or 6 April 1978 if the marriage was after the last day of pensionable service). Some other public service schemes have similar provisions and we previously identified that this could have a material effect for those schemes.

The Government announced in July 2020 that it had concluded that changes are required to the Teachers' Pension Scheme (England & Wales) to address this discrimination. The government believes this difference in treatment will also need to be remedied in other UK public service pension schemes with similar provisions.

The Goodwin case also affects AFPS. However, because we do not rely on analysis of female records due to insufficient data, this does not impact the analysis carried out for AFPS.

## Minor dependants' pensions

No allowance has been taken for short term dependants' pensions or childrens' pensions (other than those already in payment), on grounds of immateriality.

## Dependants' gender

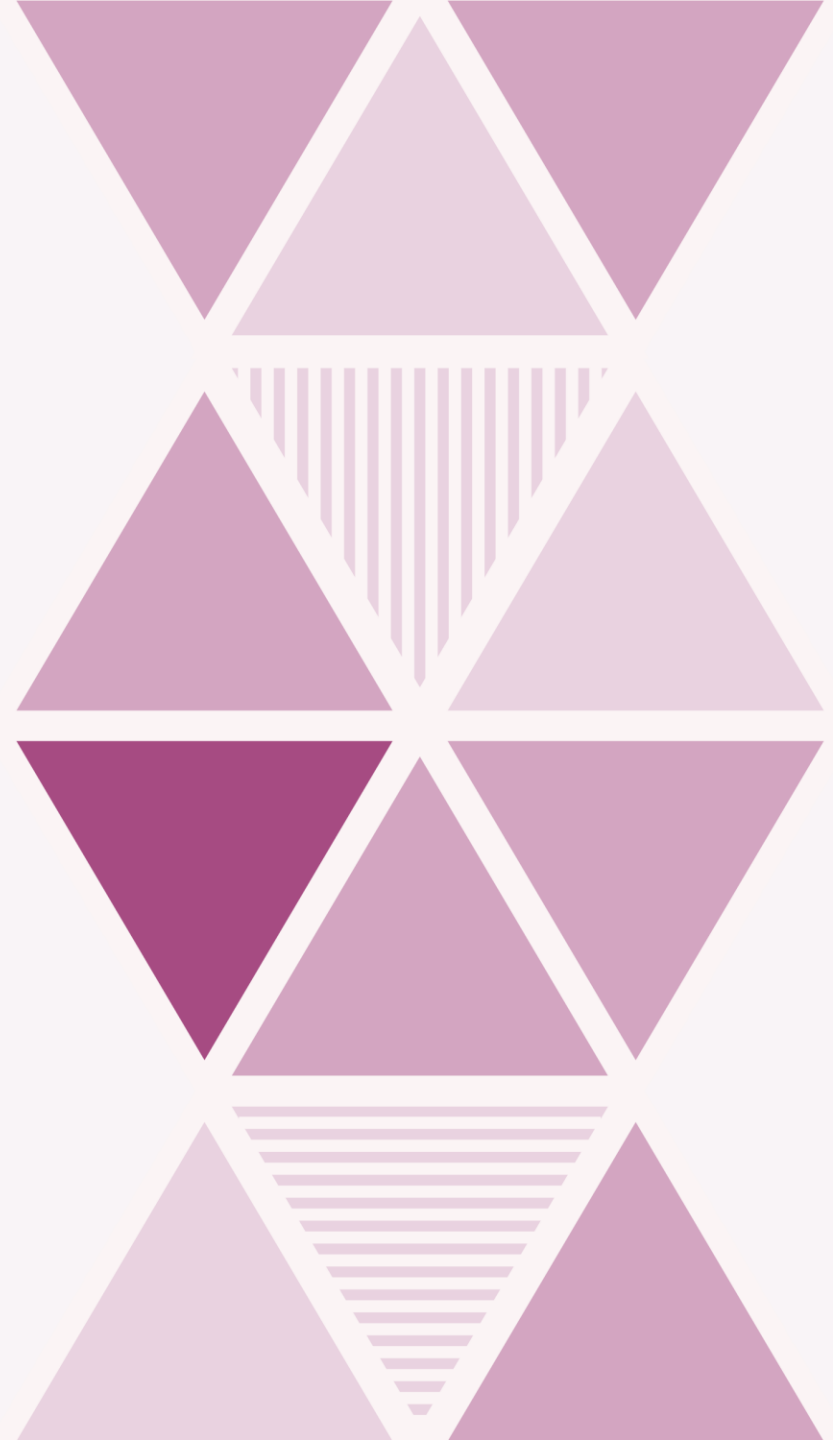
All dependants are assumed to be the opposite sex of the member, on the grounds of materiality.

## Remarriage

No allowance is made for remarriage on the grounds of materiality.

In each case, the approach is the same as that adopted for the 2016 valuation.

# Part C: Appendices

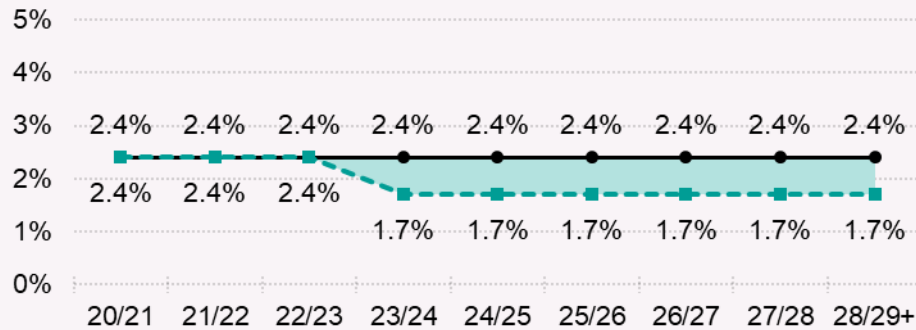


# C1. Directed assumptions 1

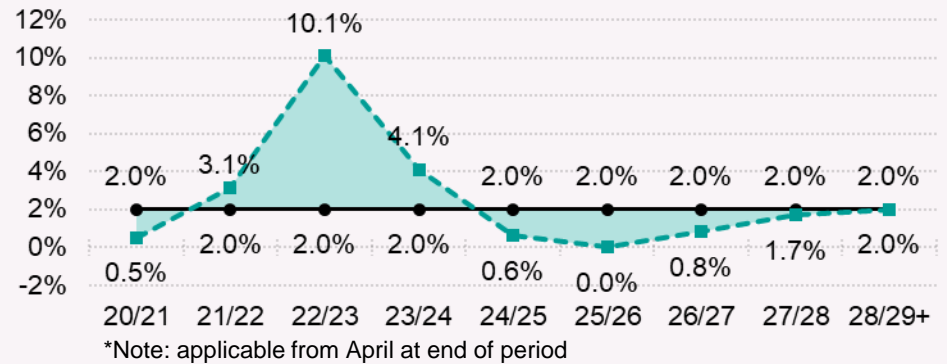
## Annual financial assumptions

Taken from Directions dated 30 August 2023.

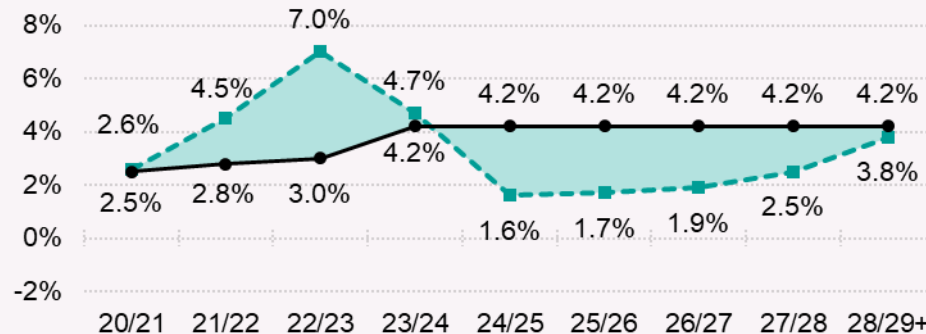
Discount rate, net of assumed pension increases



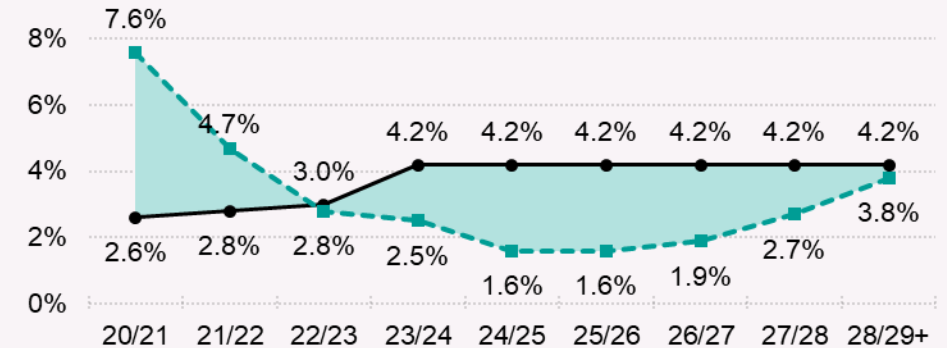
Rates of pension increases



Rates of CARE revaluation



Rates of salary increases



\*Note: applicable from April at end of period. Allows for corrected CARE revaluations for 2020/21 and 2021/22.

**Key:** —●— 2016 assumptions      - - - ■ - - - 2020 assumptions (dotted line) and difference from 2016 assumptions (shaded area)

# C1. Directed assumptions 2

## Other directed assumptions

Taken from [Directions](#) dated 30 August 2023.

Assumption name	2016 assumption	2020 assumption
Deficit spreading periods	15 years	15 years
Future mortality improvements	In line with 2016-based ONS projections	In line with 2020-based ONS projections
State Pension ages	As legislated for in the Pensions Act 1995, Pensions Act 2007, Pensions Act 2011 and Pensions Act 2014	As legislated for in the Pensions Act 1995, Pensions Act 2007, Pensions Act 2011 and Pensions Act 2014



## C2. Other minor assumptions 1

### Active membership projections

Direction 12 requires the actuary to use the 'projected unit methodology' to calculate the valuation results. The valuation results require the calculation of the cost of benefit accrual over periods after the effective date (31 March 2020). This implicitly requires the actuary to estimate the membership to future dates in order to determine the valuation results.

Members of the legacy sections ceased to accrue benefits in these sections at 31 March 2022 and future accrual for all members is in the reformed section from 1 April 2022.

The expected cost of accruing benefits over periods after the effective date have been determined by assuming an overall stable population (age and pay profile) to the end of implementation period.

The approach incorporates the following assumptions:

- Members with past service in the legacy sections are assumed to retire in line with recent experience. This provides for some legacy section members to remain in active service in the reformed scheme beyond 2022.
- The overall profile of the membership in terms of average age and pay distribution is assumed to remain constant over the period.
- The overall active membership will be in receipt of pensionable pay for each relevant year equal to that assumed for forecasting purposes.
- The State Pension age in the projected populations is assumed to be determined by the implied dates of birth and so the State Pension age mix changes over time despite the assumed stable population. This allows for the membership accruing benefits to change over the implementation period.
- Mortality is assumed to be projected forward to the relevant year of use in all cases.

## C2. Other minor assumptions 2

### **Grouping of individual active member records**

Individual active members have been grouped together for the purposes of calculating liabilities. This grouping is necessary to accommodate the volume of data within our valuation system. The approach taken to grouping the data has been tested to ensure it does not result in any distortion of the valuation results. The groupings are made for each section/scheme (i.e. AFPS75, AFPS05 or AFPS15), previous protection status (i.e. protected or unprotected) and based on the following criteria.

- Age: age nearest
- Service: duration (years nearest)

### **Payroll projection**

For the purposes of spreading any past service surplus or deficit, the future payroll estimates are assumed to be projected forward (only) in line with projections provided for the OBR Spring 2023 return to 2027-28, with subsequent payroll figures assuming a stable workforce size and using valuation assumptions.

## C2. Other minor assumptions 3

### McCloud calculation approach

The outcome of the remedy required to address the McCloud judgement is twofold:

- When benefits become payable, eligible members can select to receive them from either the reformed or legacy sections for the period 1 April 2015 to 31 March 2022.
- All active members still in the legacy scheme were transferred to the reformed scheme from 1 April 2022.

Members are likely to choose the option that provides them with the highest benefits. This impact was also allowed for in the 2016 cost cap valuation and we have followed the same approach for the 2020 valuation.

To allow for the McCloud remedy in our calculation methodology we have valued the 'better' benefits for groups of members when comparing benefits in their reformed and legacy sections. Benefits are valued in each contingency (eg retirement or death), at each future date and for each eligible individual, using the same demographic assumptions (eg retirement ages) for both the reformed and legacy section calculations.

The member's deferred choice is assessed as described below and then the chosen benefit structure is valued using the valuation assumptions (i.e. pensions are not valued using the age-related member only factors in the final results; explicit allowance is made for contingent survivor pensions).

In determining which benefits members are assumed to choose, we considered the value of the pre-2015 and post-2015 benefits as at future projected dates of leaving service. The test is carried out as at leaving service because benefits may crystallise then if the member is entitled to Early Departure Payments (EDP) benefits, even if the member doesn't have the right to take an immediate pension on leaving.

At each projected date of leaving service, the member is assumed to choose whichever of the pre-2015 and post-2015 benefits gives a higher value as at the date of leaving, based on valuing the following benefits as appropriate:

- Member retirement pension after commutation (either immediate or deferred pension), valued using an age-related member only factor.
- Member retirement lump sum (both commuted lump sum and any automatic lump sum)
- EDP income, valued using an age-related EDP factor
- EDP lump sum.

This is a simplified approach to deferred choice which does not allow for all of the complexities of the benefits. We are satisfied that taking a more accurate approach would have an immaterial impact on the overall results.

## C3. Glossary 1

<b>CARE</b>	CARE stands for Career Average Revalued Earnings and refers to a methodology whereby earnings over a member's working lifetime in the scheme are used in the calculation of their benefits in the reformed scheme.
<b>CARE revaluation</b>	The rate at which the CARE pension is revalued each year a member is an active member.
<b>Cost cap cost (CCC)</b>	<p>A measure of the cost of benefits being provided from the reformed scheme, which is then compared to a 'target cost'. The AFPS target cost is set at 34.6% of pay.</p> <p>If the results of the valuation show that the cost cap cost is more than 3% of pensionable pay away from the target cost, and the cost of the scheme still results in a breach once the impact of the economic check is taken into account, changes must be made to the reformed scheme (e.g., to the benefits provided) to bring the cost cap cost back to the target cost.</p>
<b>Directions</b>	A document published by HM Treasury and referred to in Public Service Pensions Act 2013, which sets out the process and requirements for carrying out valuations, including the results which need to be disclosed. Directions were first published in 2014 and have been amended several times since then.
<b>Employer contribution rates (ECR)</b>	<p>The percentage of scheme members' pensionable salaries which employers are required to pay in order to:</p> <ul style="list-style-type: none"> <li>• meet the costs of benefits currently being built up by active members</li> <li>• make good any shortfall in the notional amounts set aside to cover benefits already built up.</li> </ul> <p>The result is heavily dependent on assumptions about future financial conditions and membership changes.</p>

## C3. Glossary 2

<b>McCloud</b>	McCloud refers to a legal judgment made in December 2018. The England and Wales Court of Appeal judgment upheld claims of age discrimination brought by some firefighters and members of the judiciary against 'transitional protection' rules. These rules determined the date on which some members would move between reformed and legacy sections of the scheme.
<b>Normal pension age</b>	<p>The age at which a member in normal health is entitled to unreduced benefits. This age varies in different scheme sections:</p> <ul style="list-style-type: none"> <li>• AFPS05 and AFPS75: Age 55 from active service, with AFPS75 members allowed to take unreduced benefits earlier than age 55 if they have 16 years' service (Officers) or 22 years' service (Other Ranks). Normal pension age is age 65 from deferred status (age 60 for service in AFPS75 prior to April 2006)</li> <li>• AFPS15: Age 60 from active service, State Pension Age from deferred status.</li> <li>• Where members leave AFPS05 or AFPS15 before their active normal pension age but over age 40, they may qualify for Early Departure Payments (EDP) if they have sufficient service. EDP is paid for the period until deferred normal pension age.</li> </ul>
<b>Pension increase</b>	Public service pensions are increased under the provisions of the Pensions (Increase) Act 1971 and Section 59 of the Social Security Pensions Act 1975.
<b>Professional actuarial requirements</b>	<p>The professional requirements that we have complied with when completing this actuarial valuation include:</p> <ol style="list-style-type: none"> <li>1. Technical Actuarial Standards: TAS 100 and TAS 300, issued by the Financial Reporting Council (FRC)</li> <li>2. The Actuaries' Code, issued by the Institute and Faculty of Actuaries (IFoA)</li> <li>3. The Civil Service Code.</li> </ol> <p>GAD is also accredited under the IFoA's Quality Assurance Scheme. More details can be found in our terms of reference.</p>

## C3. Glossary 3

<b>Reformed and legacy sections</b>	<p>The reformed section of the scheme is the section that was set up in line with the Public Service Pensions Act 2013, and which came into force on 1 April 2015. All non-reformed sections are known as legacy sections. This terminology is used in the McCloud judgment.</p>
<b>Scheme Advisory Board</b>	<p>The Board set up in line with section 7 of the Public Service Pensions Act 2013, with responsibility for providing advice on potential changes to the scheme.</p> <p>Scheme Advisory Board is commonly shortened to ‘SAB’.</p>
<b>Standard table</b>	<p>The standard tables used for the mortality after retirement assumption are the SAPS tables. These are published by the Continuous Mortality Investigation (CMI) and based on the experience of defined benefit self-administered pension schemes. The ‘S2’ series are based on experience over the period 2004 to 2011. The S3 series of tables were published by CMI in December 2018 and these updated mortality tables cover experience between 2009 and 2016.</p> <p>The S3 series include tables for pensioners retiring in normal health (S3NXA), in ill health (S3IXA) and all pensioners (S3PXA), as well as for dependants (S3DXA). The tables are also split into “Heavy”, “Middle”, “Light” and “Very Light” subsets according to pension amount, as well as a table covering all amounts. The “Very Light” tables reflect the highest pension amounts.</p>