Government Actuary's Department

## Firefighters' Pension Schemes (Northern Ireland) (FPS (Northern Ireland))

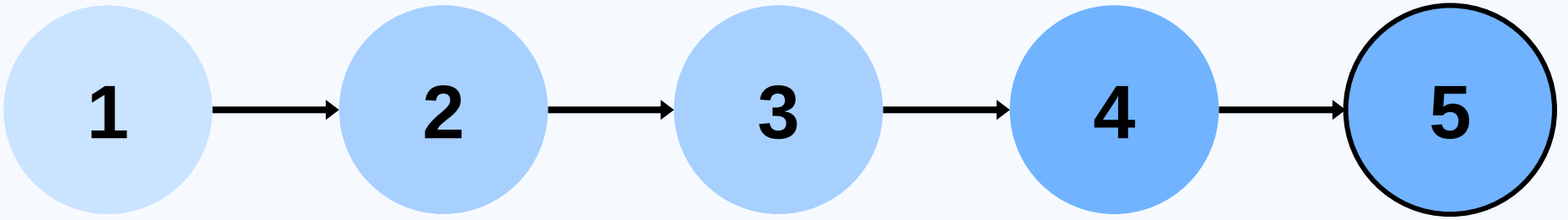
# Advice on assumptions

**Actuarial valuation as at 31 March 2020**

**Samantha Watts and Ken Starr**

**13 February 2024**

# Assumptions setting process




GAD analyse experience data and prepare an initial set of recommended 'scheme-set' assumptions.

GAD discuss recommended assumptions with Department of Health (Northern Ireland).

GAD discuss recommended assumptions with the Firefighters' Pension Scheme Advisory Board in Northern Ireland.

GAD present final recommended assumptions to the Department of Health (Northern Ireland).

**Current**

Department of Health (Northern Ireland) decides on the assumptions to be used in our calculations and informs GAD.

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

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.

The Department of Health (Northern Ireland) has ultimate responsibility for setting the 'scheme-set' assumptions covered in this report, after considering GAD's advice.

The Department of Health (Northern Ireland) has decided to adopt all of the recommended 'scheme-set' assumptions set out in this report.

# 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 | Lower costs |
| **Proportion commuted** | Average | Medium | Lower costs |
| **Retirement ages** | Average | Small | Lower costs |
| **Rates of leaving service** | Average | Large | Lower costs |
| **Promotional pay increases** | Average | None | No impact |
| **Rates of ill-health retirement** | Least | None | No impact |
| **Mortality before retirement** | Least | None | No impact |
| **Family statistics** | Least | None | No impact |

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 Northern Ireland Department of Finance. The impact of these ‘directed’ assumptions could be much greater than that of the impact of ‘scheme-set’ assumptions.

# Advice on assumptions

# Contents

## Part A: Background



**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 B: Recommendations



## Part C: Appendices

# Part A: Background

# Introduction

## Who is this report for?

This report is addressed to the Department of Health (Northern Ireland) ("the Department"). 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 Firefighters' Pension Scheme (Northern Ireland) as at 31 March 2020 as required.

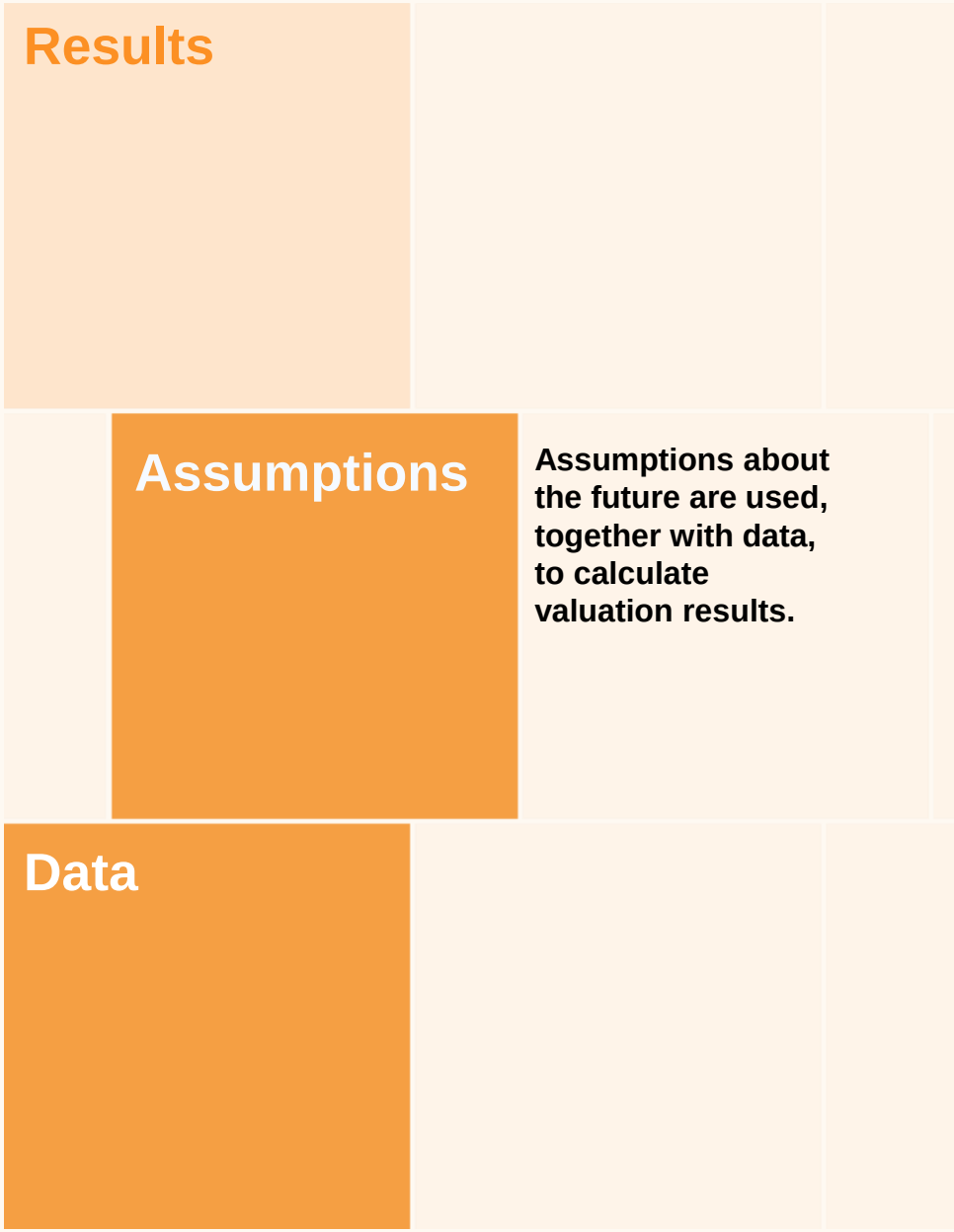
This report is intended to help the Department:

- 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 Firefighters' Pension Scheme (Northern Ireland) as at 31 March 2020, in accordance with Northern Ireland Department of Finance 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.



# 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.

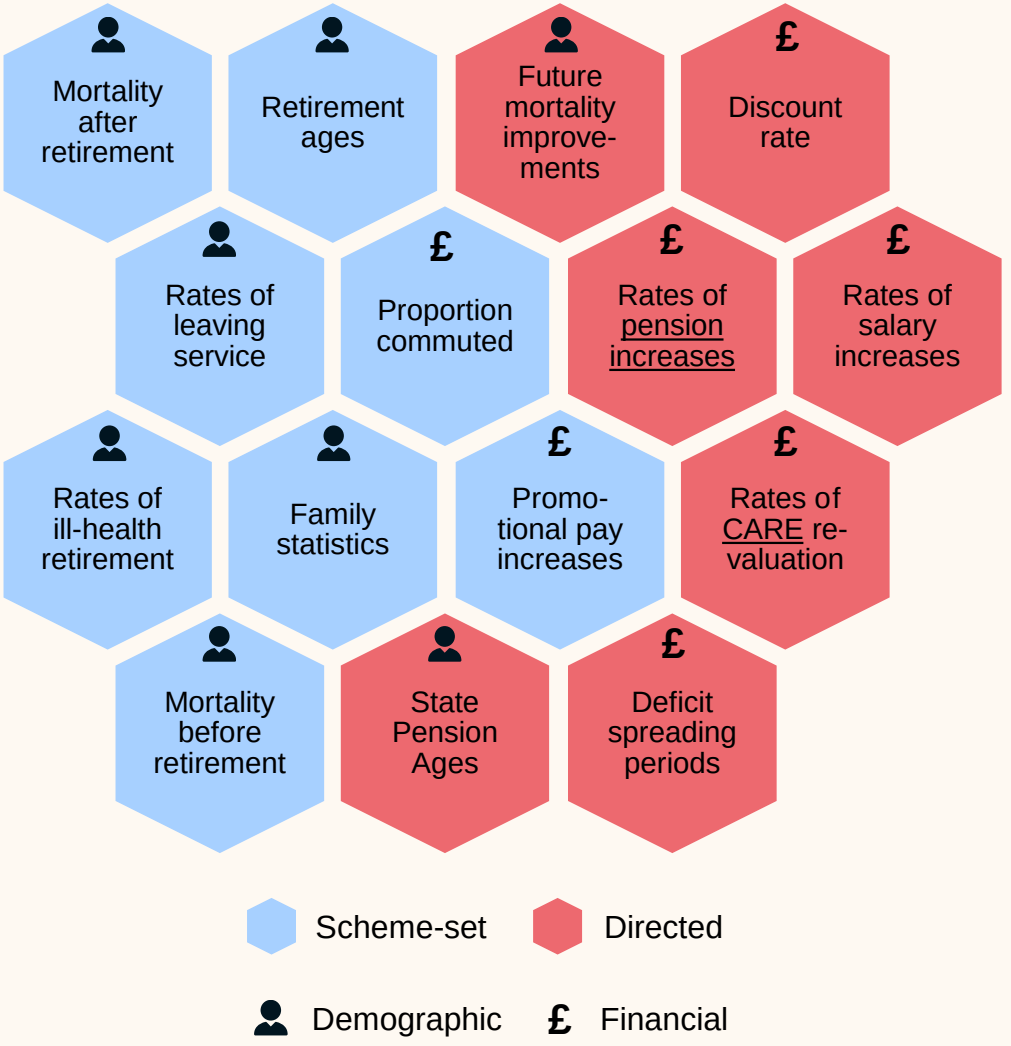
## Who is responsible for assumptions?

There are 2 parties responsible for setting assumptions:

- The Department of Health (Northern Ireland), who is responsible for setting 'scheme-set' assumptions (after taking actuarial advice). These are usually demographic assumptions.
- Northern Ireland Department of Finance, 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 C2.

Additional assumptions are also required to estimate the liability arising from the Matthews second options exercise. Details of assumptions can be found in Appendix C3. The Department is responsible for setting these assumptions.



# 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.

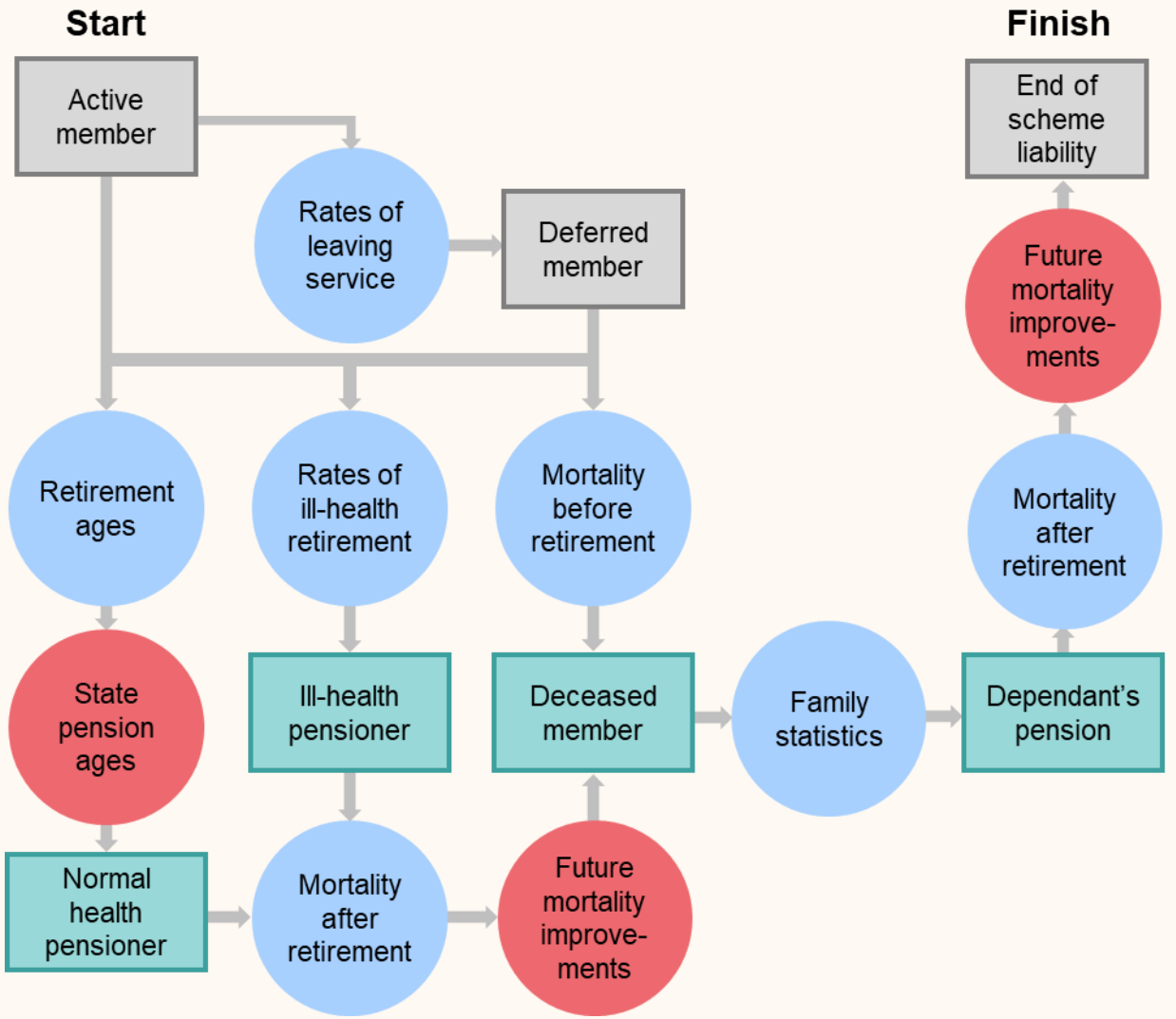
Most demographic assumptions are set by the scheme, rather than directed by Northern Ireland Department of Finance.

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:

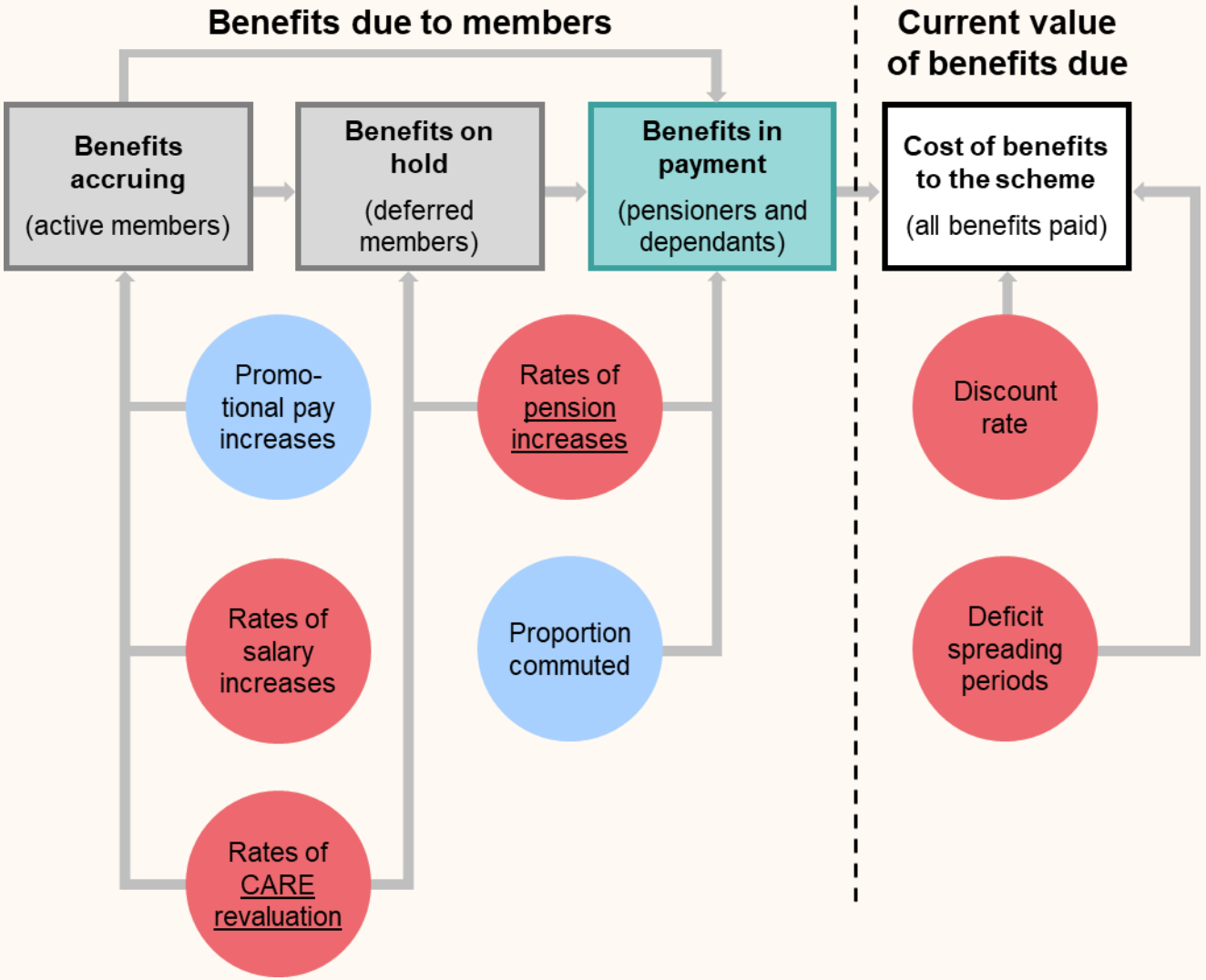
- promotional pay increases
- commutation proportions.

Member status: **no benefits payable**

Member status: **benefits payable**

**Scheme-set**

**Directed**



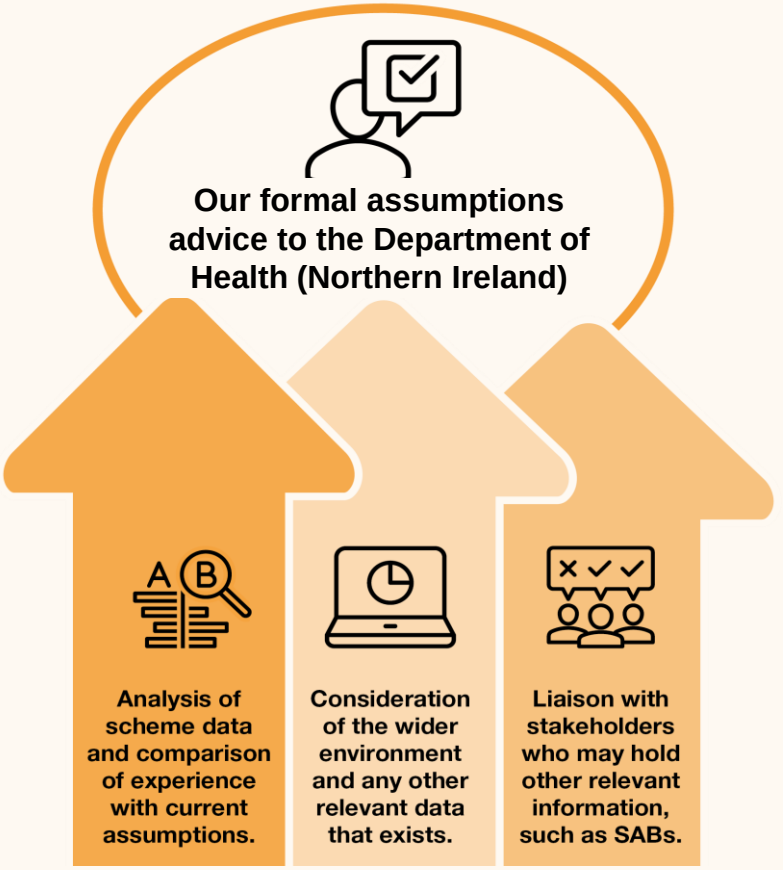
# Setting assumptions

## 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.

Schemes in Northern Ireland typically have smaller populations and more volatile experience compared to the larger schemes for members in England or Great Britain. In setting assumptions, we have considered the experience in the larger scheme of the same workforce.

The Department of Health (Northern Ireland) then decides on the 'scheme-set' assumptions to be adopted, after considering GAD's advice.




## What rules need to be followed?

Northern Ireland Department of Finance Directions specify that 'scheme-set' assumptions must be the Department of Health (Northern Ireland)'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 Results report dated 13 February 2024 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 Northern Ireland Department of Finance.

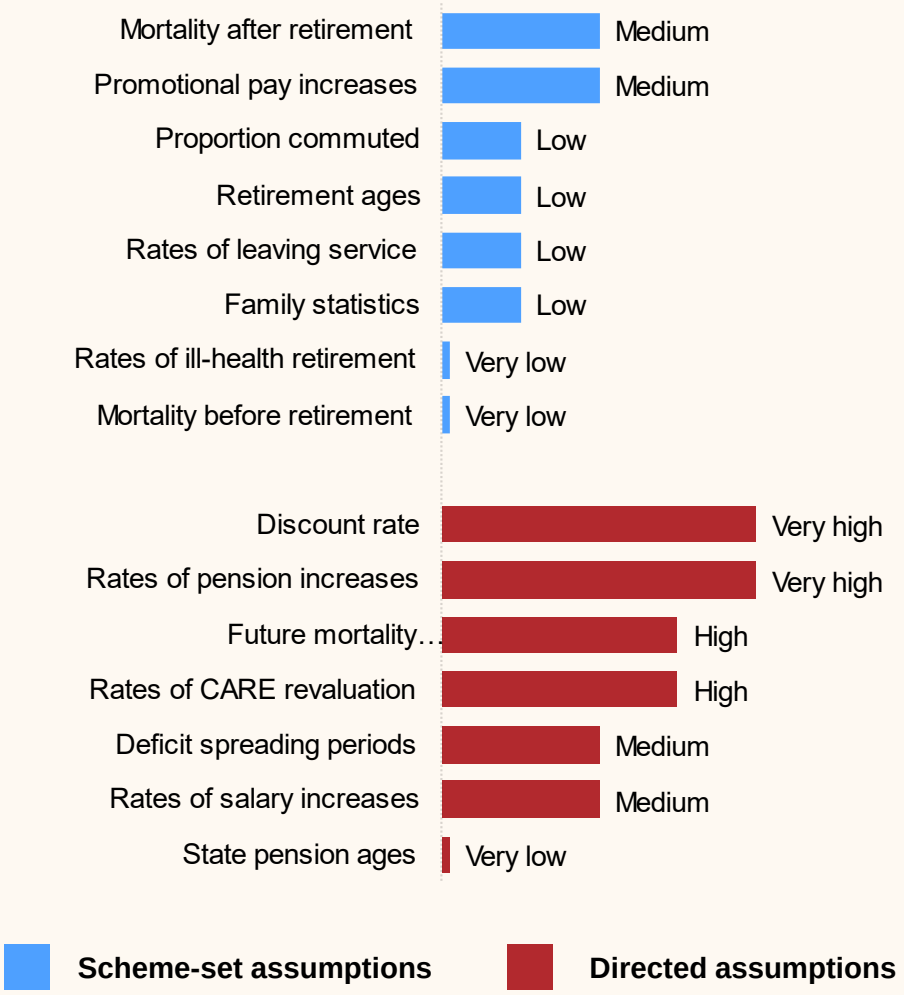
For example, the discount rate is shown as very highly significant compared to mortality before retirement. This means that even if the discount rate changes by a small amount, the impact on employer contribution rates could be very large compared to a fairly large change in mortality before retirement.

For context, the employer contribution rate is currently 34.1% of pensionable pay. In monetary terms, this was equivalent to employer contributions of £11.5 million in 2020-21.

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.

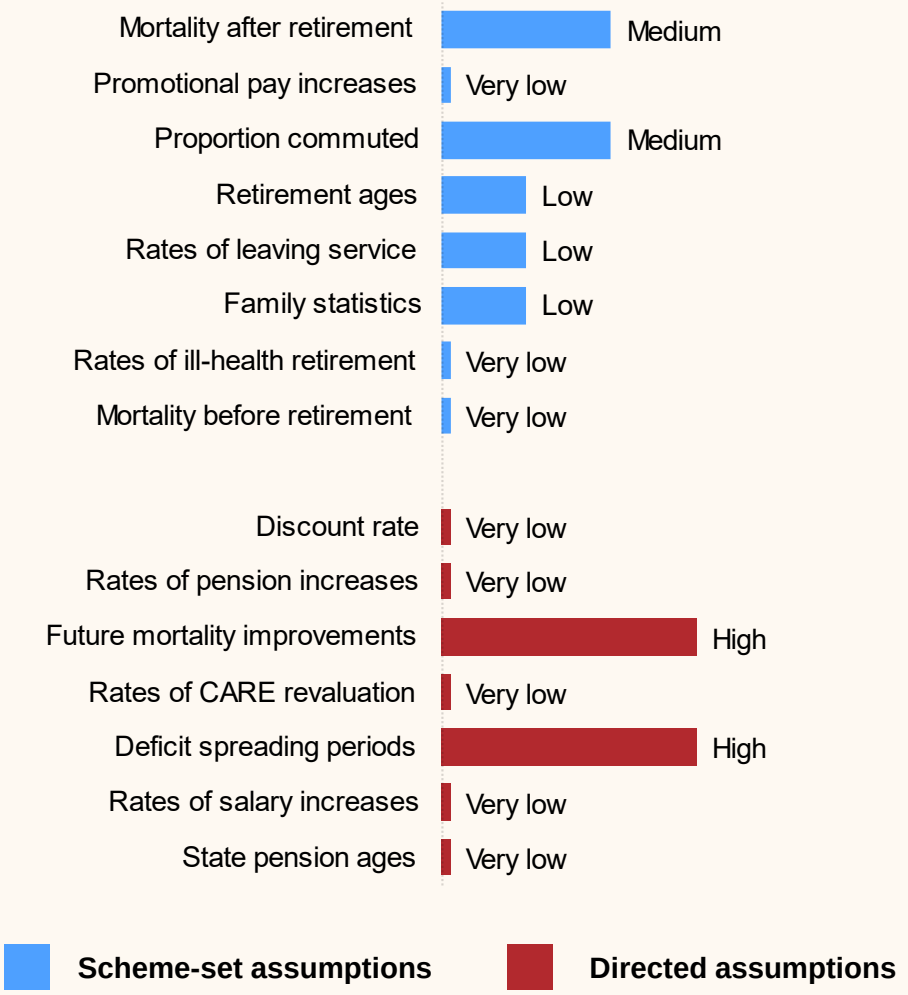
The main differences when compared to the significance of assumptions on the employer contribution rate are:

- 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. This excludes the effect of the economic check.

For context, the current target cost of the scheme is 18.3% 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**



# Limitations

## Data

In preparing this report, GAD has relied on data and other information supplied by Northern Ireland Fire and Rescue Service, as described in our report titled 'Membership data', dated 13 February 2024. 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 Department of Health (Northern Ireland). We are content for the Department 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 Department of Health (Northern Ireland), 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 | Lower costs |
| **Proportion commuted** | Average | Medium | Medium | Lower costs |
| **Retirement ages** | Average | Low | Small | Lower costs |
| **Rates of leaving service** | Average | Low | Large | Lower costs |
| **Promotional pay increases** | Average | High | None | No impact |
| **Rates of ill-health retirement** | Least | Low | None | No impact |
| **Mortality before retirement** | Least | Low | None | No impact |
| **Family statistics** | Least | Medium | None | No impact |

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 Northern Ireland Department of Finance. The impact of these 'directed' assumptions could be much greater than that of the impact of 'scheme-set' assumptions.

# 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 |
|---|---|---|---|---|
| **What does it show?** | The importance of this assumption on employer contribution rates (ECR) and the cost cap cost (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 employer contribution rates (ECR) and cost cap cost (CCC) of the scheme |
| **What is it based on?** | 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. |
| **What are the possible ratings?** | **Most**<br>An assumption that could plausibly impact the ECR **or** CCC by more than 1%.<br>**Average**<br>An assumption with an impact in between most and least.<br>**Least**<br>An assumption that could plausibly impact both the ECR **and** the CCC by less than 0.2%. | **High**<br>A current or previous lack of credible data, or large changes in member behaviour.<br>**Medium**<br>Volatility of experience or unreliability of data classified in between high and low.<br>**Low**<br>A large pool of credible data that doesn't tend to change much. | **Large**<br>An average change in assumption of over 25%.<br>**Medium**<br>An average change in assumption of between 10% and 25%.<br>**Small** or **None**<br>An average change in assumption of between 0% and 10%. | **Higher**<br>ECR and CCC likely to be higher.<br>**Lower**<br>ECR and CCC likely to be lower.<br>**Uncertain**<br>Likely impact on the ECR and CCC is still uncertain. For example, if assumptions for different categories move in different directions.<br>**No impact**<br>Likely to be no material impact on the ECR or CCC. |

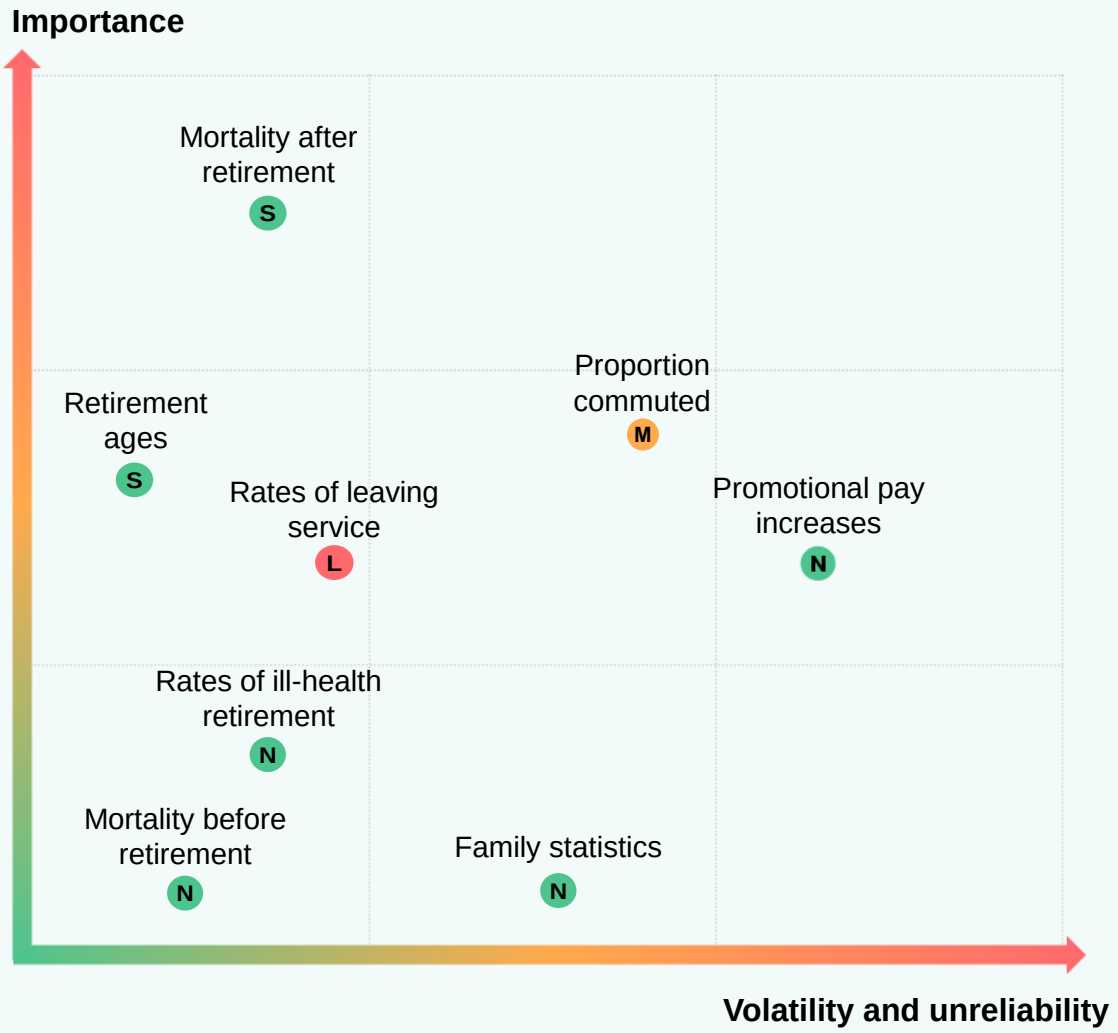
# Significance, volatility and size of changes

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 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 | Lower costs |

## Our recommendations and rationale

We recommend updating the baseline mortality assumption to be based on recent experience, with continued alignment to the assumption to be adopted for the 2020 valuation of the Firefighters' Pension Schemes in England ("FPS (England)"). We have carried out an analysis of the FPS (Northern Ireland) experience although there is only limited experience data available. This is consistent with the approach used for the 2016 valuation.

We recommend adopting a single baseline mortality assumption for normal health, current and future ill health pensioners for both male and female members, assuming all members experience male mortality. We recommend adopting a single baseline mortality assumption for all dependants assuming all dependants experience female mortality.

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 experience in FPS (England) 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** is the assumption adopted for the 2016 valuation.
- The **second column** is the 2016 assumption, but updated to use a valuation date of 2020 and ONS-2020 improvements.
- The **third column** is the assumption we recommend for the 2020 valuation for FPS (Northern Ireland)
- The **fourth column** is the assumption we recommend for the 2020 valuation FPS (England).

The changes between the first and second columns show the impact of directed changes to future mortality improvements and the normal passage of time. The changes between the second and third 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

| | 2016 valuation assumption | 2016 assumption updated | 2020 valuation recommendation | 2020 valuation recommendation FPS (England) |
|---|---|---|---|---|
| **Current pensioners, age 55** | 86.6 | 85.6 | 85.5 | 85.5 |
| **Future pensioners, age 40** | 88.2 | 87.0 | 86.9 | 86.9 |

# Recommendations in detail

| | 2016 Assumptions | | | 2020 Recommendations | | |
|---|---|---|---|---|---|---|
| **Category** | **Standard table** | **Adjustment** | **Based on** | **Standard table** | **Adjustment** | **Based on** |
| **Normal health Pensioners** | S2NMA | 113% | Scheme experience in FPS (England) and wider analysis of mortality differentials experienced by national populations in Northern Ireland compared to England. | S3NMA_M | 109% | Scheme experience in FPS (England) and wider analysis of mortality differentials experienced by national populations in Northern Ireland compared to England. |
| **Current ill-health Pensioners** | | | | | | |
| **Future ill-health Pensioners** | | | | | | |
| **Dependants** | S2DFA | 100% | | S3DFA | 99% | |

These are the same assumptions as those recommended for the Firefighters' Pension Schemes (England).

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 1 April 2016 to 31 March 2020.

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 retirement experience to set the assumption for all current pensioners and female dependant experience to set the assumption for all dependants. There is insufficient data to carry out a credible analysis for female retirements and male dependants.

We have considered the corresponding analysis carried out for the FPS (England), being the larger data set of the same workforce, and assessed the likely difference between mortality for Northern Ireland relative to England and Wales.

# 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 on the following page compares:

- **actual experience** what has happened over the last 4 years.
- **2016 assumptions** what we thought would happen, based on the baseline mortality assumptions adopted for the 2016 valuation. Uses ONS-2020 mortality improvements.
- **2020 recommendations** 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.

## Considerations for setting assumption

For the 2016 valuation, the mortality assumptions were set to be the same as those adopted for the equivalent valuation of FPS (England).

On page 28 we consider a comparison of the Northern Ireland population mortality experience with that of England. This continues to show aggregate mortality rates are slightly higher for Northern Ireland. However, as for previous valuations, and supported by analysis of other public service pension scheme data, we consider the differences in geographic rates of mortality in retirement for healthy working individuals to be considerably lower than for the differences for the populations generally. For this reason we recommend aligning the mortality assumption to that adopted for the FPS (England).

Limited experience data is available for the FPS Northern Ireland, reflecting the smaller dataset. The results of this analysis is set out on the next page.

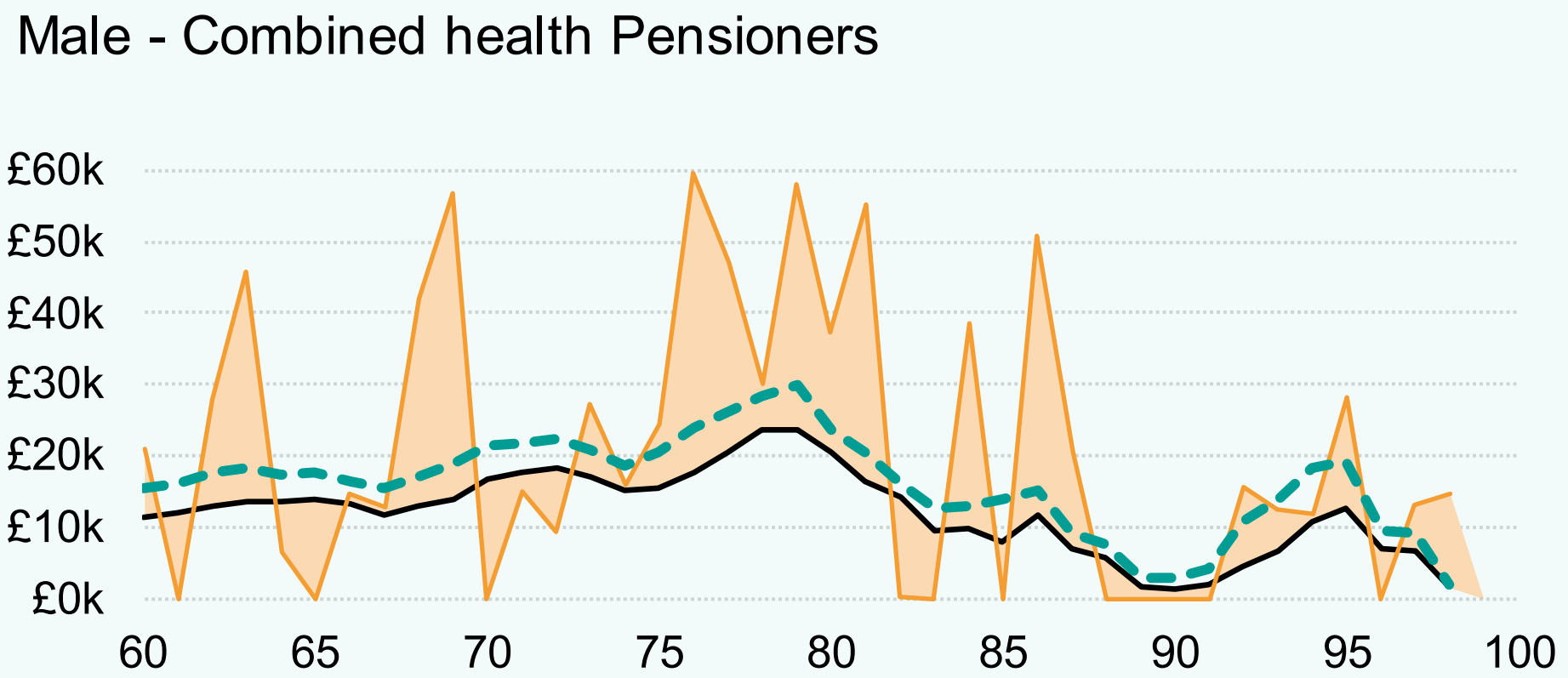
## Summary

The 2016 assumptions and the 2020 recommendations both lead to lower amounts of deaths than the baseline mortality experience. However, there is limited experience data for the FPS Northern Ireland. This can be seen through the distribution of deaths by age shown on the next page and the underlying experience data on page 26.

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**



# Scheme experience: in numbers

| Category | | **Experience** Actual pension ceasing due to death over 2016-2020 | **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** |
|---|---|---|---|---|---|---|
| **Combined health Pensioners** | **Male** | £0.98 m | £0.72 m | 136% | £0.73 m | 134% |
| **Dependants** | **Female** | N/A | N/A | N/A | N/A | N/A |
| **Corresponding figures for FPS (England)** | | | | | | |
| **Combined health Pensioners (FPS (England))** | **Male** | £34.2 m | £33.1 m | 103.5% | £33.3 m | 102.8% |
| **Dependants (FPS (England))** | **Female** | £7.0 m | £6.4 m | 108.9% | £6.7 m | 103.7% |

There was around £0.2m of pension ceasing due to death over 2016-2020 for female dependants, in respect of fewer than 30 deaths. This is insufficient to produce a robust analysis and therefore we have not included any output in the table above.

For the FPS (England), there was around £40,000 of pension ceasing due to death over 2016-2020 for female pensioners and around £9,000 for male dependants. These were 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.

# Comparison with England mortality

## Population mortality data

We have considered the most recent analysis of differences between aggregate population mortality rates in Northern Ireland compared to those for England.

The charts on this page show the ratios of Northern Irish population mortality rates to those for England over different time periods. These are taken from the ONS National Life Tables.

Northern Irish mortality rates are generally higher than England rates, though at some ages are lower. The differences have been relatively stable over time. The ratios generally converge as age increases.

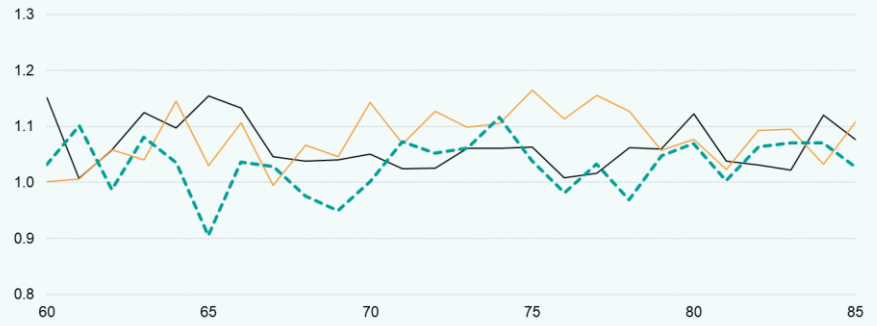
Similar differentials were observed for the 2012 and 2016 valuations. In the 2016 valuation, it was noted that the aggregate population mortality rates were slightly higher for Northern Ireland compared to England. We consider that it is reasonable to expect greater similarity in the mortality rates in retirement for healthy, working individuals across the geographical regions than for the population as a whole.

The 2016 valuation assumption was set as the same as the corresponding England assumption.

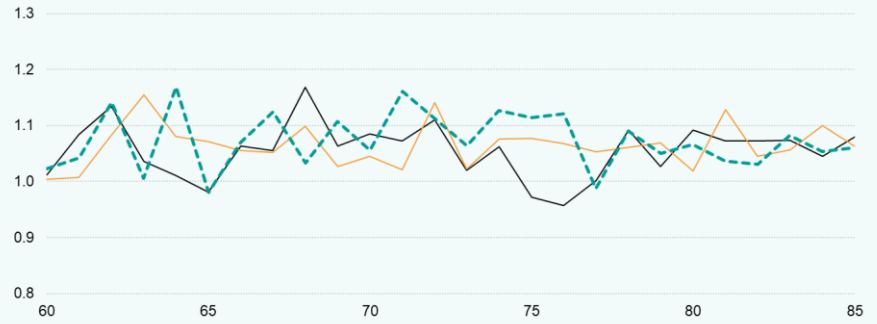
## Range of differences

From the updated comparison, a reasonable range for the excess of Northern Ireland mortality over that for England for determining the mortality after retirement assumptions is 0% to 3% for males and 0% to 5% for females. Together with the comparison of actual versus expected deaths based on the 2016 assumptions, this supports the retention of setting the assumptions the same as the FPS (England).

Ratio of Northern Ireland to England population mortality rates, males




Ratio of Northern Ireland to England population mortality rates, females




**Key:**

- **2018 - 2020**
- **2010 - 2012**
- **2000 - 2002**

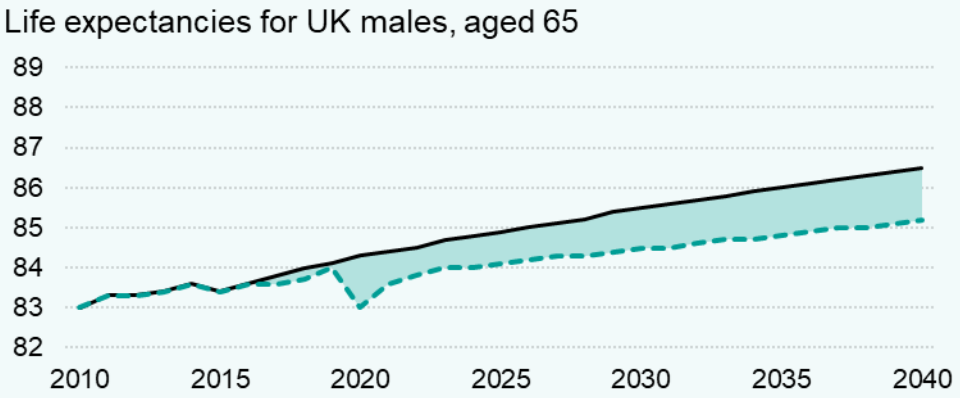
# Wider environment: COVID-19

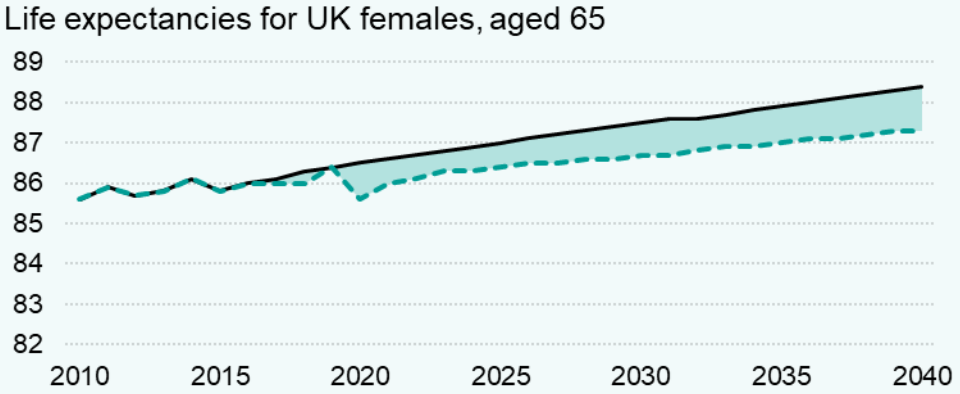
No explicit allowance has been made for the COVID-19 pandemic in our recommended assumptions for **baseline mortality rates**. Our recommendations are based on scheme experience up to 2020 so will only have included deaths from the very start of the pandemic. We do not expect these deaths to have had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




**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 | Medium | Lower costs |

## Our recommendations and rationale

**FPS 2007 Scheme, NFPS 2007 Scheme (Special), mixed FPS 2007/FPS 2015 Scheme and mixed NFPS 2007 (Special)/FPS 2015 Scheme**: We recommend retaining the assumed commutation proportion of 0% for all FPS 2007 Scheme / NFPS 2007 Scheme (Special) pension. The FPS 2007 Scheme has cost neutral factors compared to the valuation assumptions and the NFPS 2007 Scheme (Special) has commutation factors set as the FPS 2007 Scheme factors as at 2015. Special retained members still make up a very small proportion of the active and deferred populations at the 2020 valuation, therefore, we expect there to be little impact on the cost from the difference between 2015 and 2023 factors. However, we recommend assuming 25% commutation for benefits pertaining to the Matthews second option exercise.

There are too few FPS 2015 Scheme retirements to set an assumption based on experience. Therefore, we have considered the average experience from other large public service schemes (CS GB, NHS EW, TPS EW and LGPS EW), which showed higher commutation proportions since 2016.

**Mixed FPS 2007/FPS 2015 Scheme and mixed NFPS 2007 (Special)/FPS 2015 Scheme**: We recommend increasing the proportion commuted from 8.75% to 12% of their FPS 2015 Scheme pension. This is based on 60% of the average experience from other large public service schemes.

**Mixed NFPS 2007/FPS 2015 Scheme, NFPS 2007 Scheme and FPS 2015 Scheme**: We recommend increasing the proportion commuted from 17.5% to 20% of pension. This is based on the average experience from other large public service schemes.

# Practical implications

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

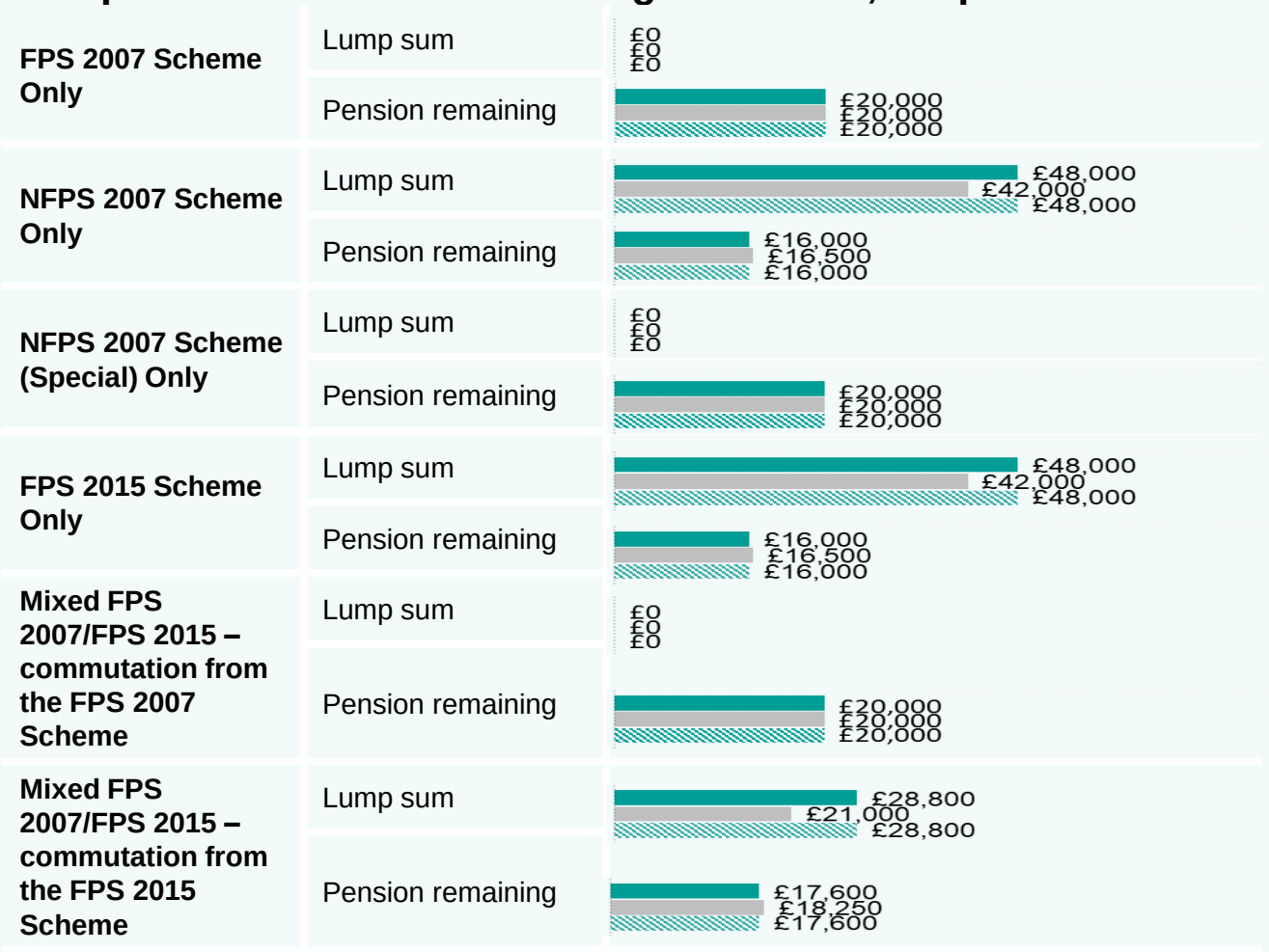
Members choose whether to commute based on their own individual circumstances. For example, their:

- 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 **middle line** ( ) shows the impact of the assumptions adopted for the 2016 valuation.
- The **bottom line** ( ) shows the impact of the assumptions we recommend for the FPS (England) valuation.

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




* For benefits expected to be purchased through the Matthews second option exercise we propose assuming 25% commutation. This reflects that the difference between the fixed 2015 commutation rates and cost neutral terms would lead to a material difference in the liability calculation for this group of members.

# Practical implications

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

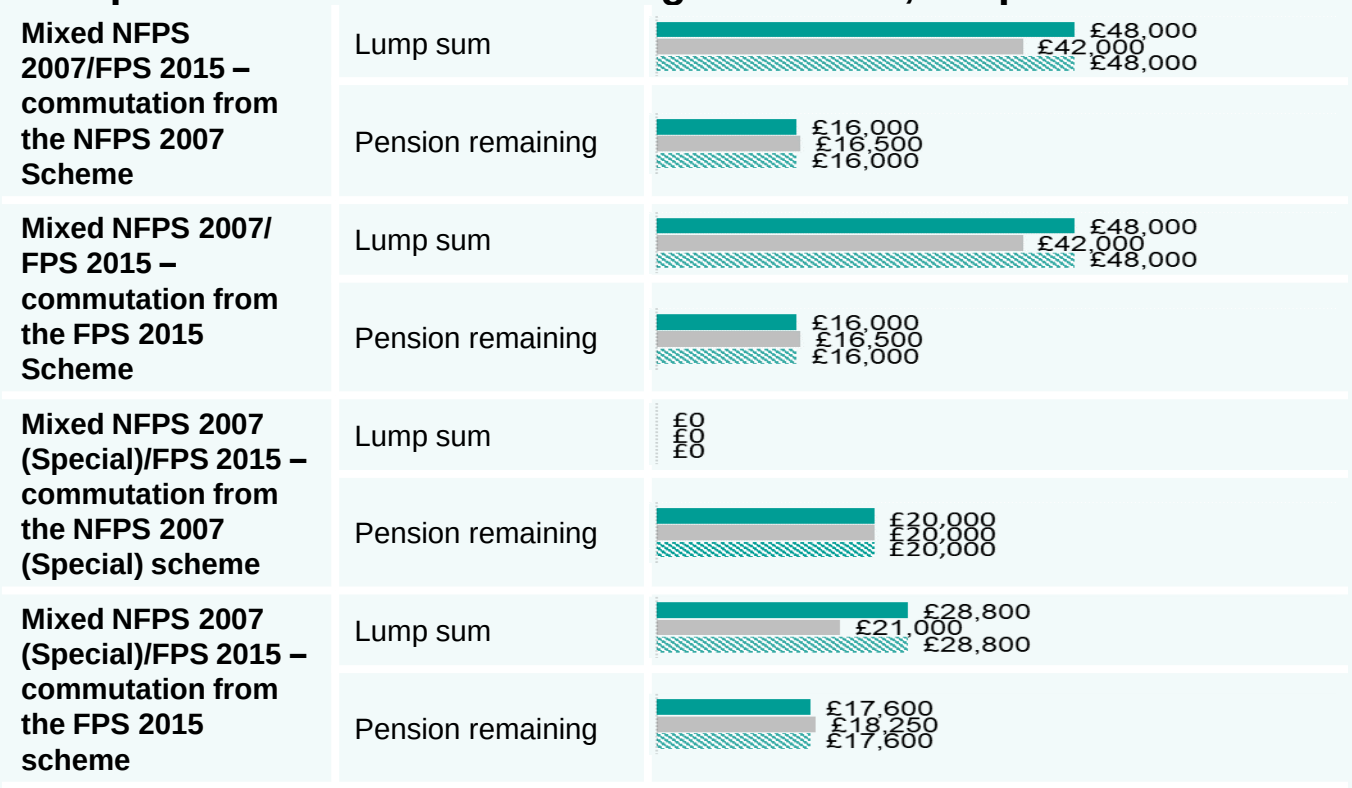
Members choose whether to commute based on their own individual circumstances. For example, their:

- 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 **middle line** ( ) shows the impact of the assumptions adopted for the 2016 valuation.
- The **bottom line** ( ) shows the impact of the assumptions we recommend for the FPS (England) valuation.

## Lump sum for a member starting with a £20,000 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. Due to cost neutrality, we have not carried out any analysis of commutation experience from these schemes.
- For commutation from the FPS 2015 Scheme for the two categories, mixed FPS 2007/FPS 2015 and the mixed NFPS 2007 (Special)/FPS 2015, we need to consider what proportion are likely to commute their pension from the FPS 2015 Scheme. This is impacted by the fact that the FPS 2015 commutation terms are less generous than those in the FPS 2007 scheme or NFPS 2007 (Special). The analysis that was carried out to inform this proportion is set out on the wider environment page.

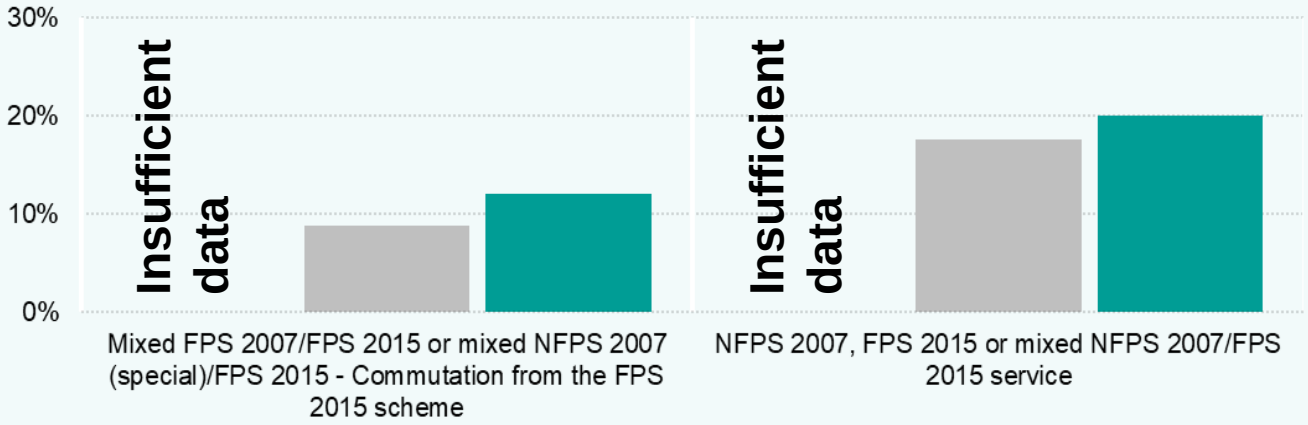
# Scheme experience: overall

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 are too few NFPS 2007 and FPS 2015 scheme retirements to carry out any robust analyses for the FPS (Northern Ireland) or for the FPS (England). For the FPS (England), the proposed assumptions are to be based on the average experience from large public service pension schemes. We recommend adopting a consistent approach for the FPS (Northern Ireland).

For members with mixed service in FPS 2007/FPS 2015 Scheme and NFPS 2007 (Special)/FPS 2015 Scheme, we based the FPS 2015 scheme commutation assumption on 60% of the average experience from the large public service schemes. Details on the rationale are on page 37 and 38. For members with mixed NPFS 2007/FPS 2015 Scheme or only FPS 2015 Scheme, we based the FPS 2015 scheme commutation assumption on the average experience from the large public service schemes.

# Scheme experience: in numbers

| Category | Scheme Pension Commuted From | 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 |
|---|---|---|---|---|---|---|
| **FPS 2007 Scheme Only** | **FPS 2007** | N/A | N/A | N/A | 0% | 0% |
| **NFPS 2007 Scheme Only** | **NFPS 2007** | N/A | N/A | N/A | 17.5% (*) | 20% |
| **NFPS 2007 Scheme (Special)** | **NFPS 2007 (Special)** | N/A | N/A | N/A | 0% | 0% |
| **FPS 2015 Scheme Only** | **FPS 2015** | N/A | N/A | N/A | 17.5% (*) | 20% |
| **Mixed FPS 2007/FPS 2015** | **FPS 2007** | N/A | N/A | N/A | 0% | 0% |
| | **FPS 2015** | N/A | N/A | N/A | 8.75% | 12% |
| **Mixed NFPS 2007/FPS 2015** | **NFPS 2007** | N/A | N/A | N/A | 17.5% (*) | 20% |
| | **FPS 2015** | N/A | N/A | N/A | 17.5% (*) | 20% |
| **Mixed NFPS 2007 (Special)/FPS 2015** | **NFPS 2007 (Special)** | N/A | N/A | N/A | 0% | 0% |
| | **FPS 2015** | N/A | N/A | N/A | 8.75% | 12% |
| **Other large public service schemes (**)** | **N/A** | £255m | £50m | 19.6% | 17.5% (*) | 20% |

The 2016 expectation and 2020 expectation figures for the FPS (England) are the same as those shown in the table above for the FPS (Northern Ireland).
*This assumption was previously directed by the Department of Finance 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.
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Full details of our 2020 recommendations are set out in a separate document that will be published alongside this report.

# FPS 2007/FPS 2015 and NFPS 2007 (Special)/FPS 2015 Mixed service: Approach

## 2016 Valuation Analysis

For the 2016 valuation, it was assumed members with both FPS 2007 and FPS 2015 Scheme benefits:

•commute 0% of their FPS 2007 Scheme pension for cash.

•commute 8.75% of their FPS 2015 Scheme pension for cash.

For the 2016 valuation, it was assumed members with both NFPS 2007 (Special) and FPS 2015 Scheme benefits:

•commute 0% of their NFPS 2007 Scheme (Special) pension for cash.

•commute 8.75% of their FPS 2015 Scheme pension for cash.

The terms available in the FPS 2007 Scheme and NFPS 2007 Scheme (Special) offer a significantly greater lump sum than would be available under the commutation terms of 12:1 offered in the FPS 2015 Scheme. We would expect this to act as a disincentive to commute pension in the FPS 2015 Scheme, especially for those members with significant amounts of service in the legacy schemes. As such, we would not expect that these members will commute significant amounts of their pension from the FPS 2015 Scheme.

However, there was some evidence (in respect of FPS (England) to suggest that a number of members of the 1992 Scheme commute pension above the HMRC tax limits. This tax charge can happen because members can commute 25% of pension (generally) and the commutation factors are higher than 20 at some ages. This suggests that members will commute additional pension even when the effective terms (after tax) of that additional commutation are much less favourable than for the bulk of the pension they can commute.

It was therefore recommended that members with FPS 2007 and FPS 2015 Scheme benefits and members with NFPS 2007 (Special) and FPS 2015 Scheme benefits should be assumed to commute 8.75% of their FPS 2015 Scheme pension, which was half of the 2016 valuation assumption for new entrants to the FPS 2015 Scheme (i.e. 17.5%).

# FPS 2007/FPS 2015 and NFPS 2007 (Special)/FPS 2015 Mixed service: Approach

## 2020 Valuation Analysis

**FPS (England) Analysis**

We have analysed retirements over 2016 to 2020 for FPS (England) 1992 Scheme members. This analysis showed that around 70% of members incurred a tax charge when commuting pension for cash.

We recognise that there is some uncertainty over the application of this approach to the commutation assumption. In addition, this proportion may also change over time, particularly as an increasingly significant tranche of benefit will come from the 2015 scheme. However, members do not always make rational financial decisions when it comes to the lump sum. For example, many take the maximum lump sum regardless of the terms.

Therefore, to reflect the data analysis, but also the uncertainty in this approach, we recommend updating the assumption in relation to the amount of 2015 pension members with 1992 and 2015 scheme benefits commute for cash, for FPS (England). We recommend assuming such members commute 60% (from 50%) of the assumption for new entrants to the 2015 Scheme. This makes broadly equal allowance for recent experience and the 2016 valuation assumptions.

This leads to the recommended assumption that these members will commute 12% of their pension (i.e. 60% of the assumption for new entrants to the 2015 Scheme, which is now 20%).

**FPS (Northern Ireland) Recommendation**

We were not able to carry out any analysis for FPS (Northern Ireland) due to incomplete data.

We have therefore considered the FPS (England) analysis as the larger dataset from the same workforce and on the basis that there is no reason to believe commutation experience in the FPS (Northern Ireland) should be significantly different to that in the FPS (England), we recommend adopting the same proportion as the FPS (England), which is that these members will commute 12% of their pension i.e. 60% of the assumption for new entrants to the FPS 2015 Scheme, which is now 20%.

# 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 |
|---|---|---|---|
| Average | Low | Small | Lower Costs |

## Our recommendations and rationale

**FPS 2007 Scheme:** For the 2016 valuation, separate expected retirement rates applied to members who were transitionally protected (including taper protected) and those who were unprotected.

- For the Protected members, we recommend no changes to the existing retirement rates selected for the 2016 valuation, as these were closely aligned with recent scheme experience.
- For unprotected members, our expectation is that the McCloud judgment will result in these members exchanging up to 7 years' service from the 2015 scheme to earlier NPA legacy arrangements. Therefore, we recommend assuming **all** unprotected FPS 2007 Scheme members retire in line with the protected member assumptions from the 2016 valuation.

**NFPS 2007 Scheme and NFPS 2007 Scheme (Special):** Due to insufficient experience data, it is not possible to carry out robust scheme experience analysis against this assumption. We have no reason to believe the existing assumption is no longer appropriate, and so we recommend no change to this assumption.

**FPS 2015 Scheme:** Due to insufficient experience data, it is not yet possible to test the suitability of the FPS 2015 scheme assumption. We have no reason to believe the existing assumption is no longer appropriate, and so we recommend no change to the existing assumption.

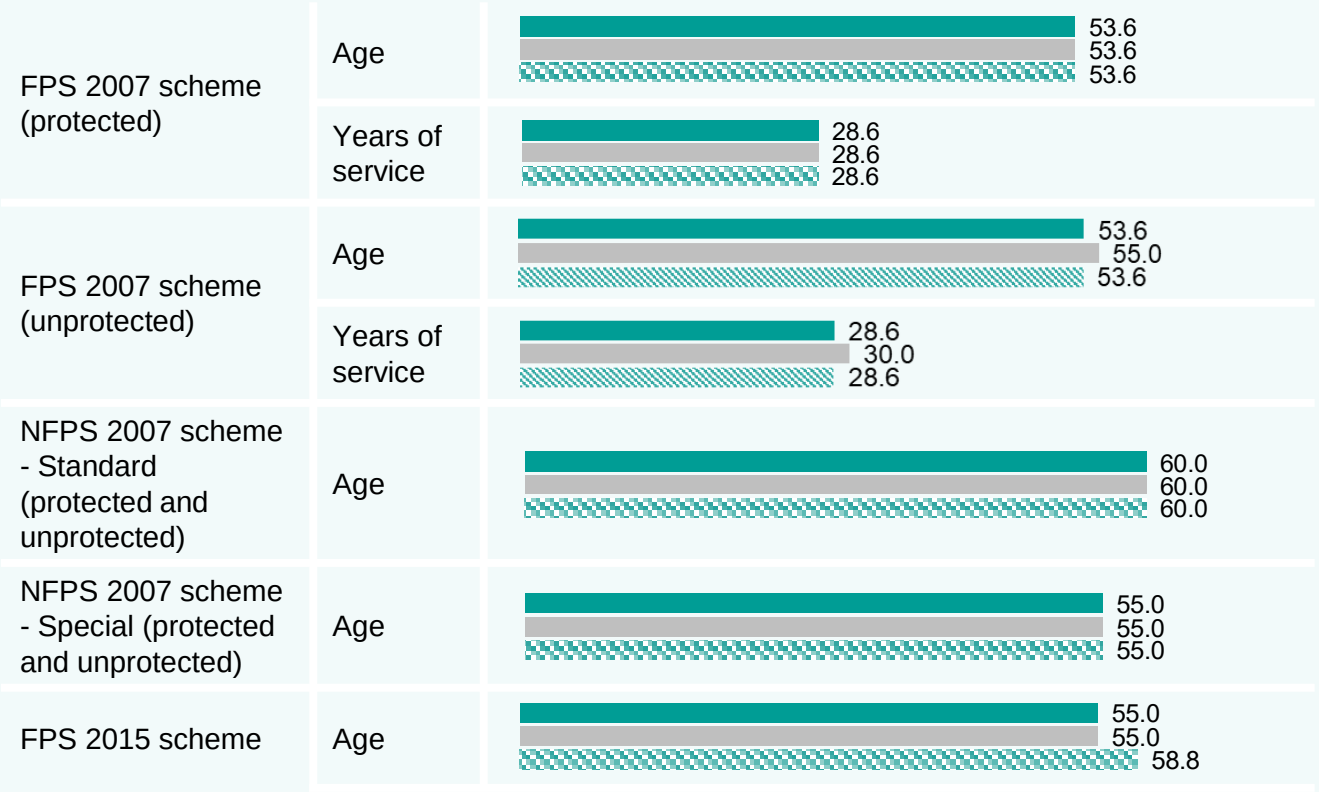
# Practical implications

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 **middle line** ( ) shows the impact of the assumptions adopted for the 2016 valuation.
- The **bottom line** ( ) shows the impact of the assumptions we recommend for the FPS (England) 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 / years of service *




* The Years of service bars represent the numbers of years between joining and retirement (the number of years a member has worked).

# Our approach

## Analysis

We have analysed the scheme's retirement experience over the period 1 April 2016 to 31 March 2020.

This analysis is based on active members of the scheme. Deferred members are not analysed and 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 gender 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.

Due to the larger dataset, we have also considered the corresponding analysis carried out for the FPS (England) and assessed the likely difference between experience for Northern Ireland relative to England.

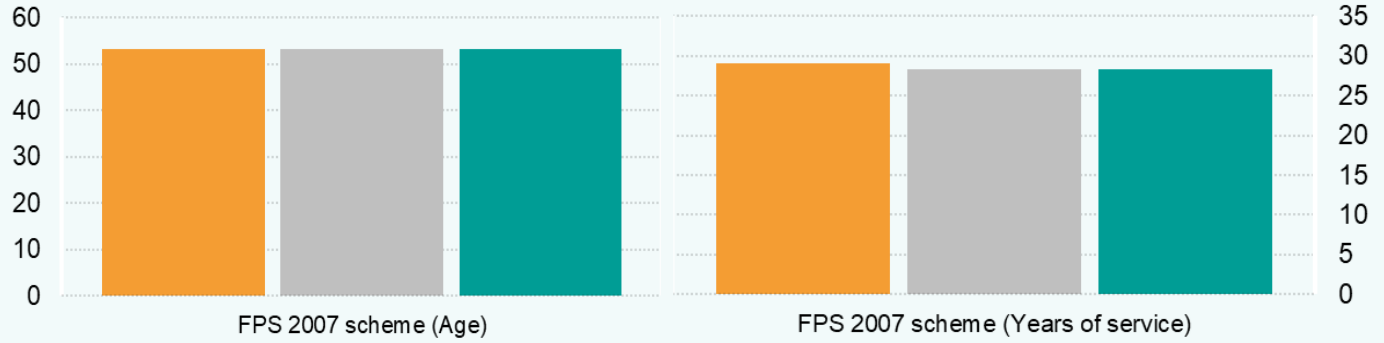
# Scheme experience: overall

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: average retirement ages




## Summary

The average age and service of recent retirements from the FPS 2007 Scheme are close to the 2016 assumptions, as shown above.

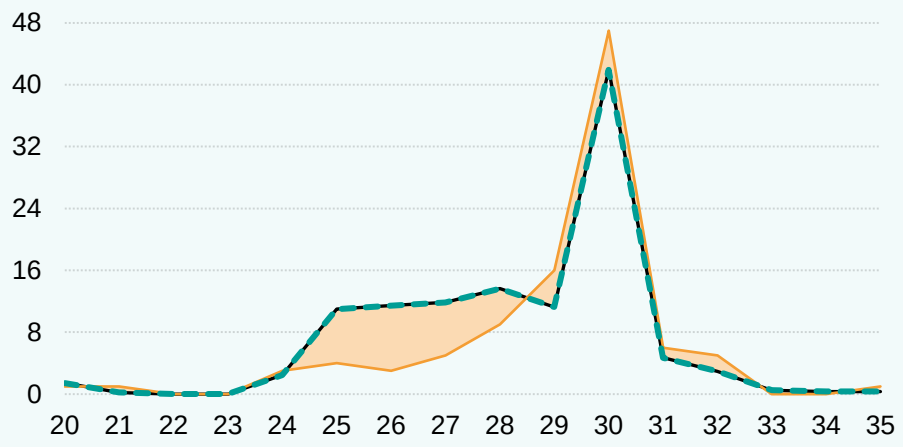
The number of retirements for Protected and Tapered members in the FPS 2007 Scheme at each age is reasonably close to the 2016 assumptions, as shown on the graph on the right hand side of the next page. Although the number of retirements at service periods below 30 has been lower than expected (as shown on the graph on the left hand side of the next page), experience has shown that average service at retirement for retirements over 2016 to 2020 has only been slightly higher than the previous assumption (29.0 compared to 28.3 – see page 45). However, given the limited data and the magnitude of the difference we propose that the existing assumption is retained.

There is insufficient information to test the impact on the NFPS 2007 / NFPS 2007 (Special) / FPS 2015 scheme and the unprotected FPS 2007 scheme members, in isolation. Though, as we set out in our recommendations, we expect the unprotected members behaviour to more closely mirror the protected members retirement patterns due to the McCloud judgment.

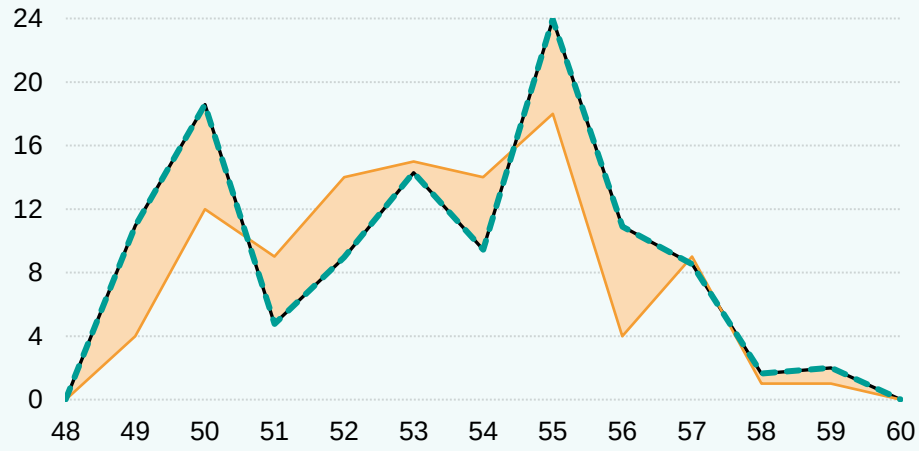
# Scheme experience: in detail

**Number of retirements by age and service, for members with accrued pension in the specified scheme**

FPS 2007 scheme males (Years of service)




FPS 2007 scheme males (Age)




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

# Scheme experience: in numbers

| Category | | **Data** Number of retirements over 2016-2020 | **Experience** Average service / age at retirement for retirements over 2016-2020 | **2016 Expectations** Expected average service / age at retirement under the 2016 assumptions | **2020 Expectations** Expected average service / age at retirement under the 2020 assumptions |
|---|---|---|---|---|---|
| **FPS 2007 Scheme (protected / tapered / unprotected with 16 years' service or more at 31 March 2012)** | **Years of service** | 101 | 29.0 | 28.3 | 28.3 |
| | **Age** | 101 | 53.2 | 53.2 | 53.2 |
| **FPS 2007 Scheme (unprotected with less than 16 years' service at 31 March 2012)** | **Years of service** | N/A | N/A | 30.0 | 28.6 |
| | **Age** | N/A | N/A | 55.0 | 53.6 |
| **NFPS 2007 Scheme - Standard (protected and unprotected) *** | **Age** | N/A | N/A | 60.0 | 60.0 |
| **NFPS 2007 Scheme - Special (protected and unprotected) *** | **Age** | N/A | N/A | 55.0 | 55.0 |
| **FPS 2015 Scheme *** | **Age** | N/A | N/A | 55.0 | 55.0 |

* There was insufficient data to produce a robust analysis of retirements from the NFPS 2007 scheme, NFPS 2007 scheme (Special) or the FPS 2015 Scheme

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

# Scheme experience: in numbers (FPS (England))

The table shows the corresponding figures for the FPS (England). This shows the larger dataset available.

| Category | | **Data** Number of retirements over 2016-2020 | **Experience** Average service / age at retirement for retirements over 2016-2020 | **2016 Expectations** Expected average service / age at retirement under the 2016 assumptions | **2020 Expectations** Expected average service / age at retirement under the 2020 assumptions |
|---|---|---|---|---|---|
| **1992 scheme (protected / tapered / unprotected with 16 years' service or more at 31 March 2012)** | Years of service | 3,588 | 28.6 | 29.1 | 29.1 |
| | Age | 3,588 | 52.6 | 52.7 | 52.7 |
| **1992 scheme (unprotected with less than 16 years' service at 31 March 2012)** | Years of service | N/A | N/A | 30.0 | 29.1 |
| | Age | N/A | N/A | 55.0 | 52.7 |
| **2006 scheme - Standard (protected and unprotected) *** | Age | N/A | N/A | 60.0 | 60.0 |
| **2006 scheme - Special (protected and unprotected) *** | Age | N/A | N/A | 55.0 | 55.0 |
| **2015 scheme *** | Age | N/A | N/A | 58.8 | 58.8 |

* There was insufficient data to produce a robust analysis of retirements from the 2006 scheme, 2006 scheme (Special) or the 2015 scheme

# Wider environment:

## McCloud judgment

The McCloud judgment could result in many members exchanging up to 7 years' service from the FPS 2015 scheme to the FPS 2007/NPFS 2007 schemes.

The additional service in the FPS 2007 Scheme 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.

To allow for the potential impact of this on member behaviour, we have aligned the retirement decrements of the unprotected FPS 2007 members with less than 16 years' FPS 2007 scheme service with those of protected/tapered/unprotected with at least 16 years' FPS 2007 Scheme service members.

As the majority of NFPS 2007 Scheme members are unprotected, and potential service built up shorter, there was no distinction between protected and unprotected members in the 2016 valuation assumptions. There is insufficient data on NFPS 2007 Scheme retirements to analyse the suitability of this assumption and therefore, we propose maintaining the existing retirement rates.

## Normal Minimum Pension Age

The Finance Act 2022 sets out that the minimum age at which most pension scheme 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, the normal minimum pension age for firefighters is not affected by this change, so we have made no allowance for this.

# 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 |
|---|---|---|---|
| Average | Low | Large | Lower costs |

## Our recommendations and rationale

There was too little data available to undertake a robust analysis in Northern Ireland. The data set is very small and we have considered the aggregate Northern Ireland experience with reference to the more extensive experience in the FPS (England).

**FPS 2007 Scheme, NFPS 2007 scheme regular, NFPS 2007 scheme (Special) and FPS 2015 scheme regular**: The same assumption was use for all of the above members at the 2016 valuation. This was 75% of that for FPS (England).

Experience in FPS (England) shows that withdrawals of regular firefighters over 2016 to 2020 were significantly higher than previously assumed at all ages. This continued a trend that was identified at the previous valuation in 2016. At that time, the 2012-2016 experience was considered to be unusual and unlikely to continue in the long-term. The 2016-2020 withdrawal experience for regular firefighters now shows increases versus 2012-2016 experience. We propose to update the withdrawal assumptions for regular members in FPS (England), increasing by a multiple of 4. This increase is based upon the experience over the 8-year period from 2012 to 2020 from when the higher rates were observed.

Overall experience data for FPS (Northern Ireland) does not support the 75% of England approach once the English rates have been increased. We propose to increase the withdrawal rates for regular members to twice the Northern Ireland 2016 rates. This reflects that we did not see any material increase in aggregate rates for FPS (Northern Ireland) during the 2012-16 period and that the increase seen in 2016-2020 is less marked in Northern Ireland than England.

**NFPS 2007 scheme and FPS 2015 scheme – standard retained members**: We recommend using the assumptions adopted for the 2016 valuation again for the 2020 valuation. For FPS (England), the withdrawal data for the “on-call” firefighters in the entire workforce was considered. This showed that rates have remained relatively stable in recent years. We have no reason to expect that experience in Northern Ireland would differ, and so, we recommend the assumption is unchanged for FPS (Northern Ireland) too.

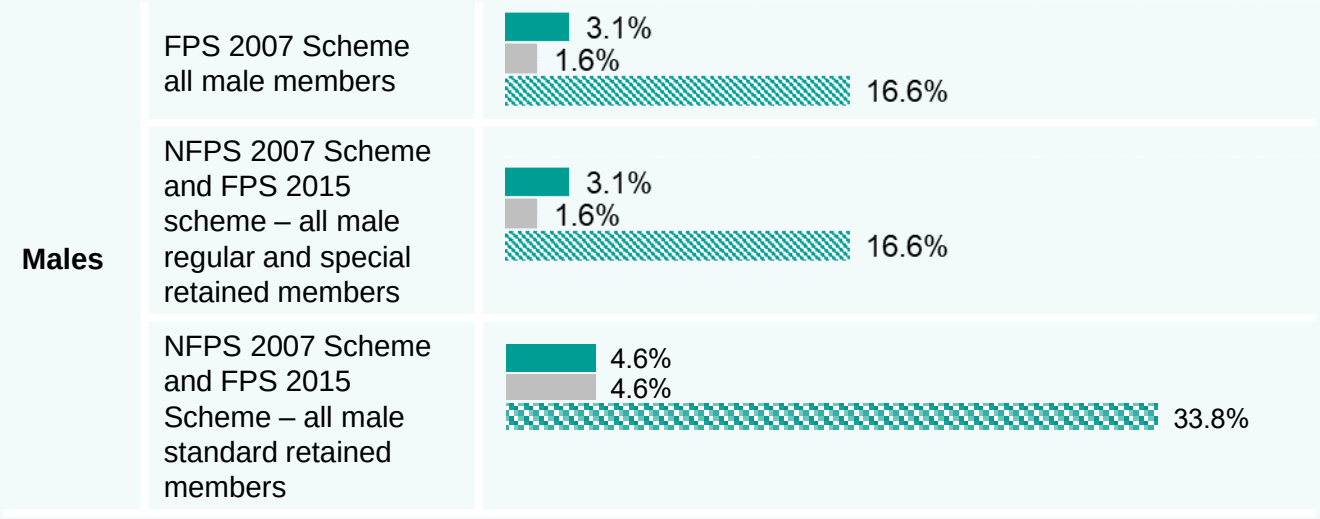
# Practical implications

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

- The **top line** shows the impact of the assumptions we recommend for the 2020 valuation ( ).
- The **middle line** ( ) shows the impact of the assumptions adopted for the 2016 valuation.
- The **bottom line** ( ) shows the impact of the assumptions we recommend for the Firefighters' Pension Schemes (England) valuation.

The numbers shown assume that members either leave service or remain in service until age 55. 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 55 for member now aged 45



# Our approach

## Analysis

We have analysed the scheme's experience over the period 1 April 2016 to 31 March 2020.

We have excluded all leavers who rejoined within 5 years from our analysis because after rejoining these members are treated as if they had never left the scheme.

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 gender 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.

Due to the larger dataset, we have also considered the corresponding analysis carried out for the FPS (England) and assessed the likely difference between experience for Northern Ireland relative to England.

# Scheme experience: overall

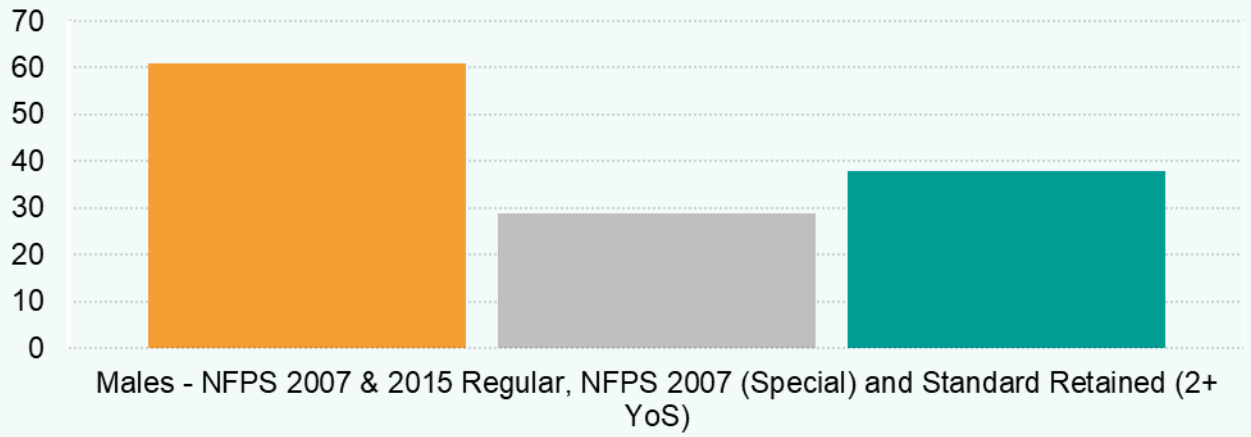
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

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: number of leavers




## Summary

It was not possible to separate the movement data for NFPS 2007 scheme members between regular and retained members. The chart above shows the combined experience of NFPS 2007 and FPS 2015 regular and retained firefighters with more than 2 years service. This shows an increase in observed withdrawals compared to the 2016 assumptions. Observations from other schemes show a general increase in withdrawals, indicative of a wider long-term trend across the public sector. In Northern Ireland this increase has been less significant and has only arisen in the last 4 years for firefighters.

For FPS (England), the recommendation is to increase the withdrawal assumption by a multiple of four for regular (and special retained) members. This is in line with the scheme experience over last 2 valuation cycles (i.e. from 2012 to 2020). The recommendation is to leave the assumption for standard retained members unchanged.

For FPS (Northern Ireland) we recommend increasing the withdrawal rates for regular (and special retained) members by a multiple of 2. This follows the approach in England but takes account of the pattern for Northern Ireland (that withdrawals aligned well with the 2016 assumption in 2012-2016 but increased in 2016-2020). We recommend keeping the 2016 assumption for standard retained members.

# Scheme experience: in numbers (FPS (Northern Ireland))

| Category | | **Experience** Number of leavers over 2016-2020 | **2016 Expectations** Expected number of leavers under the 2016 assumptions | **2020 Expectations** Expected number of leavers under the 2020 assumptions |
|---|---|---|---|---|
| **Males** | **FPS 2007 Scheme** | N/A | N/A | N/A |
| | **Males – NFPS 2007 & 2015 Regular, NFPS 2007 (Special) and Standard Retained (2+ YoS)** | 61 | 29 | 38 |

There were 11 recorded withdrawals from the FPS 2007 scheme between 2016-2020. It would not be possible to carry out a robust analysis of FPS 2007 Scheme experience with such a small number of withdrawals.

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

# Scheme experience: in numbers (FPS (England))

The table shows the corresponding figures for the FPS (England). This shows the larger dataset available.

| | **Experience** Number of leavers over 2012-2020 | **2016 Expectations** Expected number of leavers under the 2016 assumptions | **2020 Expectations** Expected number of leavers under the 2020 assumptions |
|---|---|---|---|
| 1992 scheme - all male members | 1,876 | 485 | 1,941 |
| All other members | 4,673 | n/a | n/a |

It is not possible to separate the movement data for 2006 scheme members between regular and retained members. It is therefore not possible to show actual number of leavers for 2006 scheme and 2015 scheme all male regular and special retained members separately from 2006 scheme and 2015 scheme standard retained members . We show the actual number of leavers in the experience data for all other leavers for reference only.

# 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 | None | No impact |

## Our recommendations and rationale

We recommend that the promotional pay increases assumptions adopted for the 2016 valuation are retained for the 2020 valuation.

The analysis shows a lot of 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 and size of the active membership profile.

Adjusting the assumptions for recent experience 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 age 55 of a member currently aged 40 and paid £30,000 a year, where the regular firefighter has 15 years' service.

For each category shown:

- The **top line** shows the impact of the assumptions we recommend for the 2020 valuation ( ).
- The **middle line** ( ) shows the impact of the assumptions adopted for the 2016 valuation.
- The **bottom line** ( ) shows the impact of the assumptions we recommend for the FPS (England) 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 age 55 for a member now aged 40, with 15 years' service and paid £30,000**

# Our approach

## Analysis

We have analysed the scheme's salary growth experience 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 workforce patterns* in the past, and we continue to examine whether differences exist for workforce patterns.
- 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 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.

* regular / retained members

Due to the larger dataset, we have also considered the corresponding analysis carried out for the FPS (England).

# Scheme experience: overall

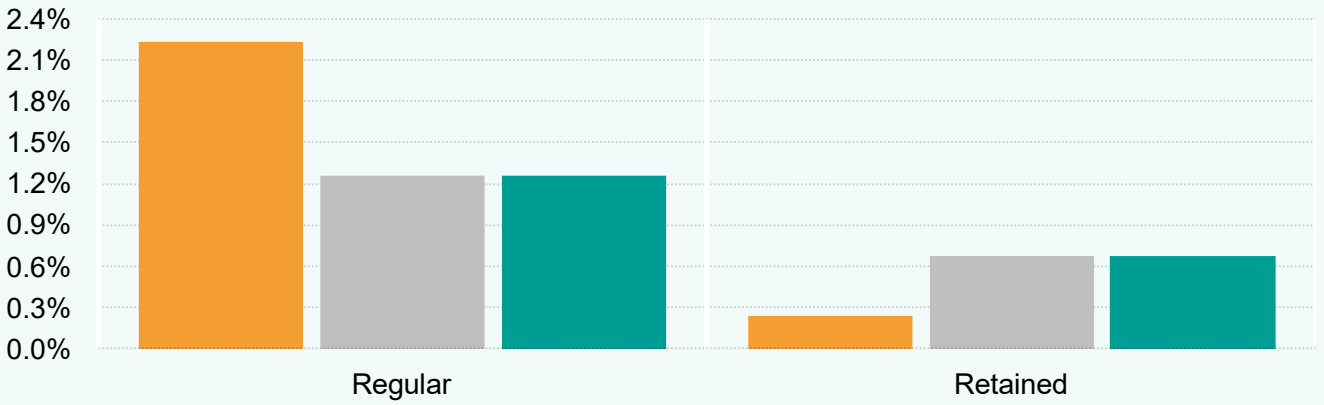
Experience versus expectations show how accurate the assumptions have been in the past and can help inform setting future assumptions.

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

- **actual experience** ( ) on the left.
- **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: average annual increases from age 45 to 65**




## Summary

Overall, regular firefighters have experienced higher promotional pay increases than expected, based on the 2016 assumptions, while retained firefighters have experienced lower than expected promotional pay increases.

The analysis shows a lot of volatility in the experience (as highlighted in the charts on the next page). This is not unexpected as the analysis is affected by the shape and size of the active membership profile. It was not possible to prepare an annual increase analysis due complications from additional retained membership records.

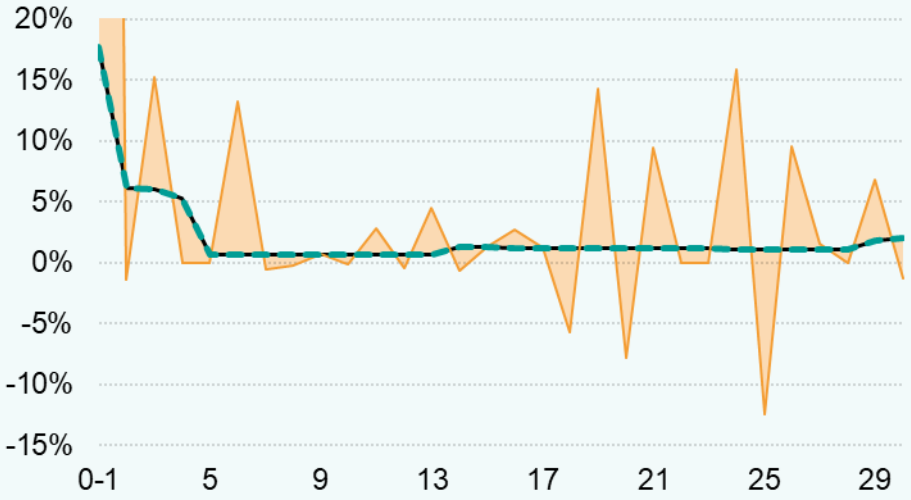
The promotional pay assumption is becoming less important to the calculation of the employer cost with the move from final salary accrual to CARE accrual.

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

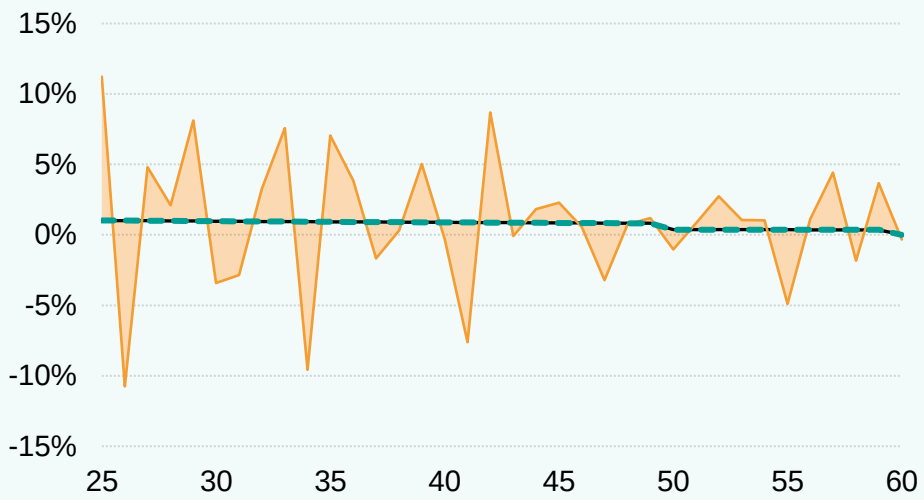
# Scheme experience: in detail

**Annual promotional pay increases by service (regular) / age (retained)**

Regular - Years of service




Retained - Age




**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 |
|---|---|---|---|---|
| **Regular** | £23 m | 2.2% | 1.3% | 1.3% |
| **Retained** | £24 m | 0.2% | 0.7% | 0.7% |
| **Regular (FPS (England))** | £600 m | 1.8% | 1.3% | 1.3% |
| **Retained (FPS (England))** | £200 m | 0.1% | 0.7% | 0.7% |

The Experience and Expectations figures shown in the table above show the annual promotional pay increases to age 55 for a member now aged 40. Different rates would apply for different current age and retirement age combinations.

The table shows the corresponding figures for the FPS (England). This shows the larger dataset available.

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 upper-tier or lower-tier ill-health benefits, depending on the severity of their illness.

## 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

**Ill-Health Incidence**: We were not able to carry out an experience analysis for this assumption for the FPS (Northern Ireland). In the absence of this experience data, we have considered the FPS (England) analysis, where no change was recommended.

For the 2016 valuation, the assumption for the ill-health retirement rates was 3 times that of FPS (England). We have no reason to believe the difference in ill-health retirement rates in the FPS (Northern Ireland) would have changed relative to those in FPS (England) and so, we also recommend no change to the existing assumption for the FPS (Northern Ireland).

**Split between ill-health tiers**: We were not able to carry out an experience analysis for this assumption for the FPS (Northern Ireland). In the absence of this experience data, we have considered the FPS (England) analysis. Although it was noted there has been a lower proportion of upper tier ill-health retirements than previously assumed, there was some concerns over the credibility of this analysis. As such, no change was recommended for the FPS (England), where the current assumed split for higher / lower tiers is 40:60.

For the 2016 valuation, the assumed split for higher / lower tiers for the FPS (Northern Ireland) was lower than that adopted for the FPS (England) at 20:80. As there is insufficient data to analyse, and given the low materiality of this assumption to future contribution rates, it is not unreasonable to maintain the existing tier split for the FPS (Northern Ireland).

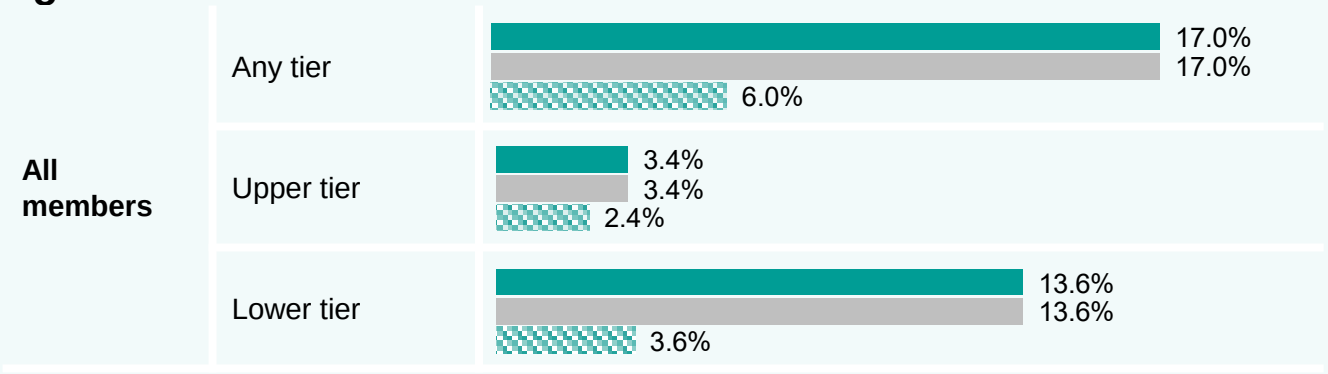
# Practical implications

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

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

**Likelihood of member now aged 40 retiring in ill-health before age 55**



# Our approach

## Analysis

We have analysed the scheme's experience over the period 1 April 2016 to 31 March 2020.

As ill-health criteria sometimes differ between 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 gender.
- 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.

Due to the larger dataset, we have also considered the corresponding analysis carried out for the FPS (England) and assessed the likely difference between experience for Northern Ireland relative to England.

# Scheme experience: overall

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

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.

## Considerations for setting assumption

For the 2016 valuation, the assumed incidence of ill-health retirements in FPS (Northern Ireland) was three times those set for FPS (England). No change was recommended to the ill-health incidence rates in FPS (England), on the grounds that it was unlikely to have a material impact. We have no reason to believe the difference in ill-health retirement rates in the FPS (Northern Ireland) would have changed relative to those in FPS (England) and so, we also recommend no change to the existing assumption for the FPS (Northern Ireland).

For FPS (England), it was recommended that the upper-tier proportion was unchanged for the 2020 valuation. We recommend no change for FPS (Northern Ireland), as there is no evidence to suggest the current assumption is inappropriate.

## Summary of FPS (England) experience

There have been fewer ill-health retirements over 2016-2020 compared to the expected number of ill-health retirements based on the 2016 assumptions. However, adjusting the assumption for recent experience would not make a material change to the valuation results, so we recommended that the 2016 valuation assumptions were retained.

As the available data ends at 31 March 2020, it misses most of the impact of COVID-19. There is anecdotal evidence that COVID-19 has increased the number of ill-health retirements, which supported retaining the current assumption despite pre-pandemic evidence.

We separately considered the ill-health tiers. For the 2016 valuation, 40% of members were assumed to retire with upper-tier benefits when leaving due to ill-health. Our analysis identified that around 26% of actual retirements were with upper-tier benefits. Updating for this difference would not be expected to have a material effect on the contribution rate, so we propose to maintain the current assumption.

# Scheme experience: in numbers (FPS (England))

The table shows the corresponding figures for the FPS (England). This shows the larger dataset available.

| Category | | **Experience** Number of ill-health retirements over 2016-2020 | **2016 Expectations** Expected number of ill-health retirements under the 2016 assumptions | **2020 Expectations** Expected number of ill-health retirements under the 2020 assumptions |
|---|---|---|---|---|
| **All members** | **Any tier** | 306 | 341 | 341 |
| | **Upper tier** | 81 (26%) | 137 (40%) | 137 (40%) |
| | **Lower tier** | 225 (74%) | 205 (60%) | 205 (60%) |

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

# Wider environment: McCloud

## McCloud judgment

We would not expect the McCloud judgment to impact the number of ill-health retirements directly. However, the tests for the eligibility of members to receive ill-health benefits can differ between the legacy and reformed schemes.

Therefore, there may be an increased rate of ill-health retirement for in scope members, who may be reassessed under different rules. 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.

# 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 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

We were not able to carry out a robust experience analysis for this assumption on the FPS (Northern Ireland).

In the absence of this experience data, we have therefore considered the FPS (England) analysis, being the larger data set of the same workforce, and assessed the likely difference between experience for FPS (Northern Ireland) relative to FPS (England).

For FPS (England), actual death before retirement experience was slightly lower than that expected at most ages. We recommended no changes to the current assumptions as this difference was not material to the valuation results. In addition, it was noted that the analysed experience runs to 31 March 2020, and as such misses most of the impact of COVID-19. It is accepted that COVID-19 increased the number of deaths before retirement.

We recommend continuing to align the assumption for FPS (Northern Ireland) with that of FPS (England). There is no evidence to suggest the existing assumption is inappropriate.

# Practical implications

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

- The **top line** shows the impact of the assumptions we recommend for the 2020 valuation ( ).
- The **middle line** ( ) shows the impact of the assumptions adopted for the 2016 valuation.
- The **bottom line** ( ) shows the impact of the assumptions we recommend for the FPS (England) 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 40 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 2020.

## 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.

Due to the larger dataset, we have also considered the corresponding analysis carried out for the FPS (England) and assessed the likely difference between experience for Northern Ireland relative to England.

# Scheme experience: overall

## Considerations for setting assumption

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

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.

There were 19 deaths before retirement over the 2016 to 2020 inter-valuation period in the FPS (Northern Ireland). This is insufficient data to provide a robust analysis. We have therefore referred to the experience in FPS (England).

## Considerations for setting assumption

For the 2016 valuation, the pre-retirement mortality assumptions were the same as those adopted for the equivalent valuation of FPS (England).

Although we recommend a shorter life expectancy for post-retirement mortality, the rates of mortality before retirement are lower and therefore less material to the employer contribution rate. We have no reason to believe that the mortality before retirement experience between firefighters in Northern Ireland and England would differ to a material extent.

The mortality before retirement experience over 2016-2020 in FPS (England) was slightly lower than assumed for the 2016 valuation. No change was made to the pre-retirement mortality assumption for the 2020 valuation of FPS (England). On the basis of no evidence to support a change, we recommend no change to the FPS (Northern Ireland) assumption for the 2020 valuation.

## Summary of FPS (England) experience

There have been fewer pre-retirement deaths compared to the 2016 valuation assumption.

The age profile of the recent deaths broadly match the 2016 assumptions.

The difference between the experience and the 2016 assumed number of deaths is not material to the contribution rate.

The analysed experience runs to 31 March 2020, and as such misses most of the impact of COVID-19. It is accepted that COVID-19 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.

# Scheme experience: in numbers (FPS (England))

| Category | **Experience** Number of deaths in service over 2016-2020 | **2016 Expectations** Expected number of deaths in service under the 2016 assumptions | **2020 Expectations** Expected number of deaths in service under the 2020 assumptions |
|---|---|---|---|
| **All members** | 49 | 60 | 60 |

The table shows the figures for the FPS (England). This shows the larger dataset available.

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 | None | No impact |

## Our recommendations and rationale

**Proportion Married/Partnered**: For the proportion married assumptions (applicable to FPS 2007 scheme members) and the proportion married/partnered assumptions (applicable to NFPS 2007 scheme and FPS 2015 scheme members), there was insufficient experience data available in relation to the FPS (Northern Ireland) to produce a robust analysis

We therefore considered the experience analysis of the larger dataset of the FPS (England) which also considered the ONS married and married/partnered assumptions in informing the recommendation. The conclusion reached was that there was no evidence to support updating the existing assumption. We have no reason to believe family circumstances in the FPS (Northern Ireland) would differ to that in the FPS (England), and so, we also recommend no change to the existing proportions married/partnered assumption for the FPS (Northern Ireland).

**Age difference assumptions**: We recommend retaining the existing assumption that males are assumed to be three years older than females. There was insufficient experience data available in relation to the FPS (Northern Ireland) to test the suitability of this assumption. Therefore, we have considered the FPS (England) analysis which showed experience was broadly in line with the current 2016 valuation assumptions.

**Other assumptions**: For other minor assumptions such as minor dependants' pensions, dependants' gender and remarriage, we recommend no change to the existing assumptions.

# Practical implications

The chart to the right shows the likelihood that an eligible partner exists when a member dies. The likelihoods shown depend 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 impact of the assumptions we recommend for the 2020 valuation ( ).
- The **middle line** ( ) shows the impact of the assumptions adopted for the 2016 valuation.
- The **bottom line** ( ) shows the impact of the assumptions we recommend for the FPS (England) valuation.

**Likelihood of an eligible partner existing at time of death*, for normal health pensioner who retires at age 55**


*Expected age at death for normal health male pensioners currently aged 55 is 86, using the life expectancy assumptions we recommend for the 2020 valuation.

# Our approach

## Analysis

We have insufficient data to carry out a credible analysis using the scheme's own data. We have considered the experience analysis carried out on the FPS (England) over the period 1 April 2016 to 31 March 2020.

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, 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.

We have also considered the analysis carried out for the FPS (England) and assessed the likely difference between experience for Northern Ireland relative to England.

# Scheme experience: overall

## Considerations for setting assumption

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

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.

For the 2016 valuation, the assumption was the same as the proportions married and proportions married/partnered table for the FPS (England).

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## Summary: Proportion Married

There was insufficient data to carry out a robust analysis of the proportion married and proportion married/partnered assumption using the FPS (Northern Ireland)'s own data.

Therefore, in the absence of their own scheme analysis, we have considered the FPS (England) analysis being the larger dataset of the same workforce. For the FPS (England), the proportion married and proportion married/partnered experience analysis was summarised as follows:

- For males in the 1992 scheme, a similar proportion married has been seen in recent years (62%) compared to the 2016 assumption (62%). However, as this analysis only covers 18 out of 45 FRSs (around 34% of members), this limits the credibility of the data analysis. There is insufficient information to carry out any analysis for females.

- There is insufficient information to test the impact on the 2006 scheme and 2015 scheme proportion married/partnered assumption, due to low rates of deaths. However, ONS married and married/partnered statistics were considered when informing whether the married/partnered assumption remained appropriate. The ONS data supported no change to the gap between the married and married/partnered assumption.

No change was made to the proportion married and married/partnered assumptions for the FPS (England).

On the basis that there is no reason to believe family circumstances in the FPS (Northern Ireland) should be significantly different to that in the FPS (England), we recommend no change to the FPS (Northern Ireland) proportion married and married/partnered assumption.

The following page "Scheme experience: in numbers (FPS (England))" sets out the figures for the analysis carried out for the FPS (England).

# Scheme experience: in numbers (FPS (England))

**Proportion married or married/partnered at death, split by category**

The table shows the figures for the FPS (England). This shows the larger dataset available.

| Category | | **Experience** Number of member deaths over 2016-2020 | **Experience** Actual number of dependant's pension coming into payment over 2016-2020, as a percentage of how many could have come into payment if every member who died had an eligible dependant | **2016 Expectations** Expected proportion married or partnered at death under the 2016 recommendations | **2020 Expectations** Expected proportion married or partnered at death under the 2020 recommendations |
|---|---|---|---|---|---|
| **Male** | **1992 scheme (*)** | 835 | 62% | 62% | 62% |
| | **2006 scheme, 2006 scheme (Special) and 2015 scheme (**)** | N/A | N/A | 80% | 80% |

(*) there was 1 female death, which is insufficient data to analyse. This is not included in the table above.

(**) There were 23 male member deaths over 2016-2020 from the 2006 scheme and 2015 scheme which is insufficient data to produce a robust analysis. Therefore, the output included in the table above is for information only.

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

# Scheme experience: overall

## Considerations for setting assumption

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

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.

For the 2016 valuation, the assumption was the same as the age difference assumption for the FPS (England).

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## Summary: Age difference

There was insufficient data to carry out a robust analysis of the age difference assumption using the schemes' own data.

Therefore, in the absence of their own scheme analysis, we have considered the FPS (England) analysis being the larger dataset of the same workforce. For the FPS (England), the age difference experience analysis was summarised as follows:

- For males the actual average age difference between member and spouse at death has been a slightly larger differential in recent years compared to the 2016 assumption. However, the data set underlying the analysis is relatively small and therefore the experience data is not likely to be credible for justifying any change to the assumption.

No change was made to the age difference assumptions for the FPS (England).

On the basis that there is no reason to believe family circumstances in the FPS (Northern Ireland) should be significantly different to that in the FPS (England), we recommend no change to the FPS (Northern Ireland) age difference assumption.

The page "Scheme experience: in numbers (FPS (England))" sets out the figures for the analysis carried out for the FPS (England).

# Scheme experience: in numbers (FPS (England))

**Age difference between member and spouse or partner**

| Category (*) | **Experience** Number of member deaths over 2016-2020 | **Experience** Average age difference between member and eligible spouse or partner at date of death (***) | **2016 Expectations** Expected age difference between member and eligible partner or spouse under the 2016 assumptions | **2020 Expectations** Expected age difference between member and eligible partner or spouse under the 2020 assumptions |
|---|---|---|---|---|
| **Males (**)** | 540 | 3.6 | 3 | 3 |

(*) there were no female deaths that resulted in a dependant pension.

(**) There was insufficient data to produce a robust analysis and therefore, the output included in the table above is for information only .

(***) The average age difference is weighted by total deaths resulting in an adult dependant pension.

The table shows the figures for the FPS (England). This shows the larger dataset available.

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 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 (E&W) 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.

However, we understand that Goodwin does not affect the Fire scheme so no adjustment is required to the analysis.

## 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.

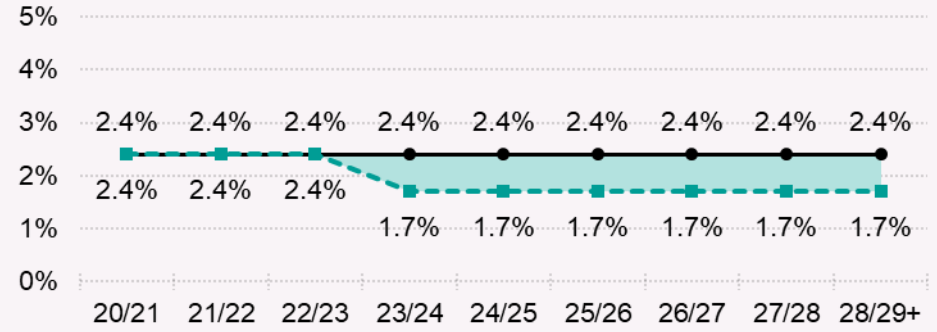
# Part C: Appendices

# C1. Directed assumptions 1

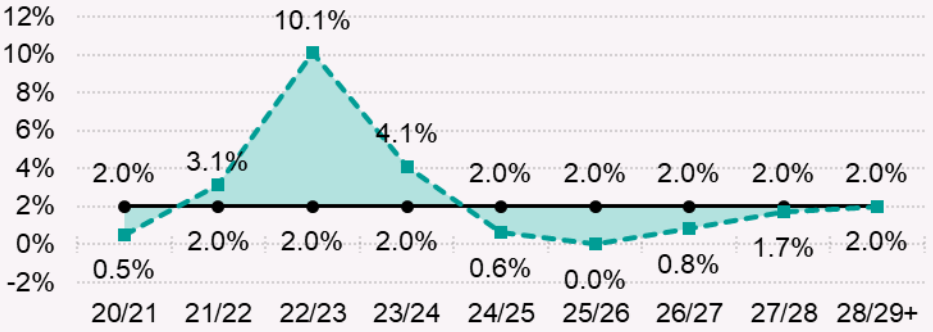
## Annual financial assumptions

Taken from Directions dated 30 August 2023.

Discount rate, net of assumed pension increases

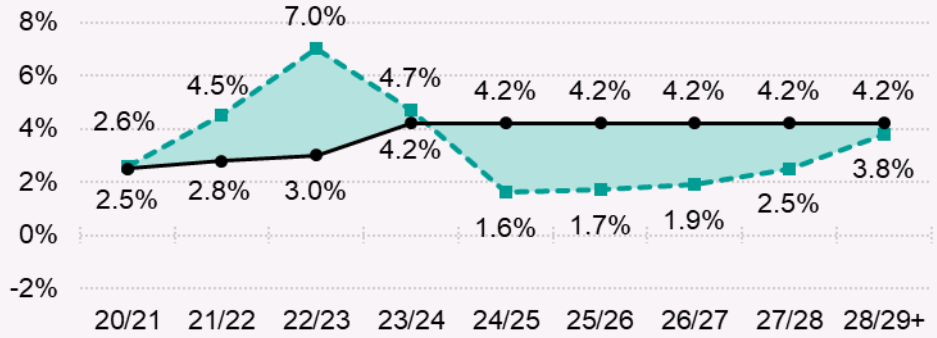



Rates of pension increases



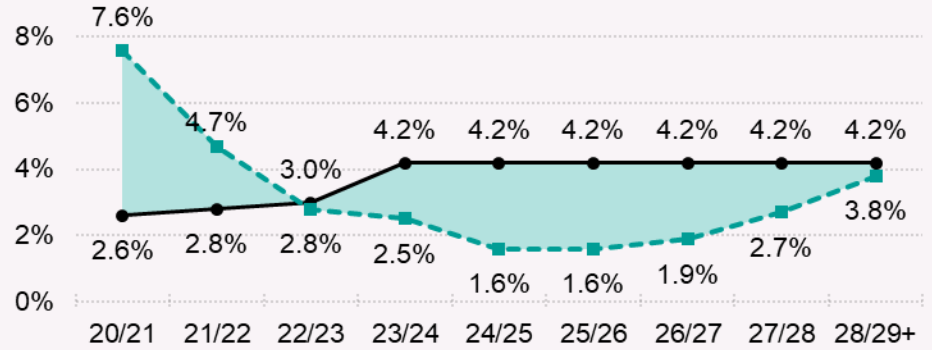

*Note: applicable from April at end of period

Rates of CARE revaluation




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

Rates of salary increases




**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 3 October 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 (Northern Ireland) Order 1995, Pensions Act 2007, Pensions Act 2011 and Pensions Act 2014 | As legislated for in the Pensions (Northern Ireland) Order 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 has 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 due to late retirement.
- 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 previous protection status (ie protected, tapered or unprotected), section/scheme (ie FPS 2007, NFPS 2007, 2015 Scheme and NFPS 2007 (Special)), age, State Pension age and service.)

## 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

a) Starting salary at 2024: 2020 valuation payroll figure with adjustments in line with figures provided by NIFRS up to 2024 to reflect known salary increases / workforce changes. The 5% pay increase payable in July 2023 is excluded for consistency with the other financial assumptions.

b) Valuation assumptions, assuming a stable workforce size, thereafter up to 2038-39

## Member contribution yield over implementation period

The average member contribution yield assumed to apply over the implementation period is 13.2% of pensionable pay. This is the target member contribution yield for the scheme.

# 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.

In determining which benefits members will choose, we have taken account of the member's pension after commutation (valuing £1 pa pension as £20) and lump sum (both commuted lump sum and any automatic lump sum).

The chosen benefit structure is then valued using the valuation assumptions (ie pensions are not valued using the 20:1 factor in the final results and explicit allowance is made for contingent survivor pensions).

# C3. Matthews second options exercise

## 2020 valuation allowance

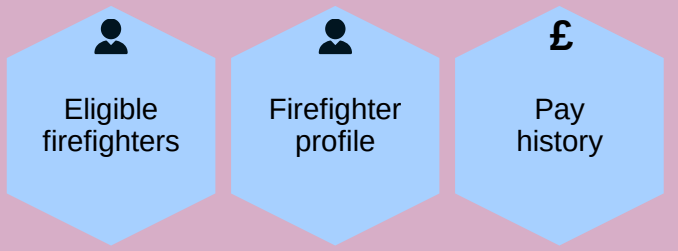
In November 2018, a ruling on the legal case involving part time judges ("O'Brien v MoJ") had a direct impact on the equivalent case for retained firefighters ("Matthews"). The Firefighters' Pension Schemes (Amendment) Regulations (Northern Ireland) 2023 defines the scope and mechanics of remedy. An options exercise, ("Matthews second option exercise" or "M2") to enable eligible firefighters in Northern Ireland to elect to buy historic service, commenced on 31 October 2023 and has potential to substantially increase scheme liabilities.

Department of Finance Directions require that all relevant liabilities are included within the valuation. M2 liabilities are considered to be relevant. The outcomes of the options exercise are not yet known. So, assumptions are needed to make an allowance in the scheme liabilities for the benefits that will be purchased. These assumptions will be 'scheme set' assumptions decided upon by the Department.

There is uncertainty over the exact eligible population and service available under the exercise although this has been bolstered by NIFRS sharing the individual data ("M1 data") used at the first Matthews Options exercise in 2014-2015 ("M1"). However, as the exercise is a very different offer to individuals from that in the prior exercise, there is very limited evidence to estimate take-up rates ahead of the exercise.

## Required additional assumptions

### Available evidence




Our advice is structured similarly to the main assumptions.

### Limited evidence


Our advice illustrates that there is a range of potential best estimate assumptions. We suggest assumption setting options for the Department to discuss with stakeholders.

Scheme set  Directed

Demographic  £ Financial

# C3. Matthews assumptions: Highlights

| Scheme-set assumptions | Assumption information | |
|---|---|---|
| | Importance relative to scheme-set assumptions | Volatility of experience and unreliability of data |
| **Eligible firefighters** | Most | Medium |
| **Employment periods** | Most | Medium |
| **Pay History** | Most | Medium |
| **Take-up rate** | Most | High |

The inclusion of M2 in the 2020 valuation will increase employer contribution rates.

Costs are directly proportional to the number of members assumed to be eligible, the proportion of reference pay assumed and the take-up rate. The longer the assumed employment periods, the higher the cost.

As the options exercise will only affect legacy scheme service, the cost cap mechanism is not impacted by the inclusion of M2.

This table is an addendum to the 'summary statistics' on page 17. It provides an overview of the new M2 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 for the inclusion of M2.

Since valuation results have not yet been calculated these assessments are indicative, rather than precise. More information on the approach used can be found on the 'Interpretation of summary statistics' on page 18.

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

# C3. Matthews assumptions: Eligible firefighters

## What does this assumption represent?

The group in scope for M2 will include a mixture of current and former retained firefighters.

An assumed total of those eligible is needed to estimate liabilities. M1 data shared by NIFRS provides information about this population.

## Summary statistics

| Relative importance of assumption | Volatility of experience and unreliability of data |
|---|---|
| High | Medium |

## Our recommendation:

Total no. eligible

830

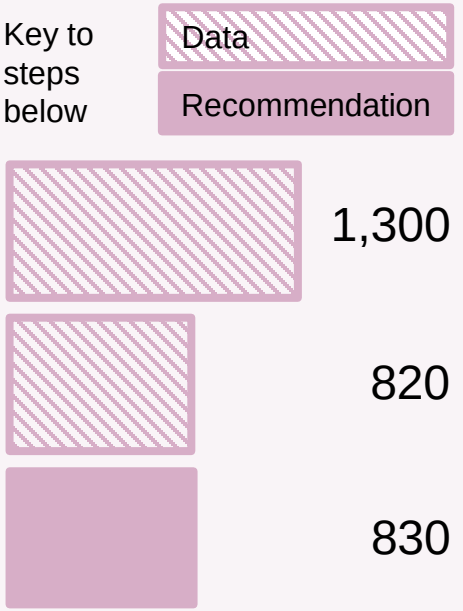
## Setting the assumption

Our recommendation is based on the available data about the eligible population:

The **M1 data shared by NIFRS** includes details of all individuals who were eligible to make a choice in M1 (this information was compiled in 2014-2015 at the time of the first exercise).

Of these individuals, those with **employment before 1 July 2000** are the main group eligible for M2. Firefighters eligible for M1 who were not given an opportunity to participate in M1 are also eligible. (However, we understand that there are very few such individuals.)

We uprated the data to allow for those firefighters employed in the period 7 April 2000 – 30 June 2000, but not after, who are not included in M1 data. We then make a reduction to allow for **mortality** between 2014 (the date of M1) and 2020 (the valuation date).




**The final number of eligible members may be higher or lower than our recommendation.**

# C3. Matthews assumptions: Firefighter profile

## What does this assumption represent?

Eligible firefighters will be able to purchase service in the scheme from the date that they commenced employment. An assumed pattern of employment dates, and associated ages, is needed to estimate liabilities.

## Summary statistics

| Relative importance of assumption | Volatility of experience and unreliability of data |
|---|---|
| High | Medium |

## Our recommendation:

Estimate the pattern of employment and birth dates for eligible population from the M1 data

## Setting the assumption

Firefighters eligible for M2 in Northern Ireland are predominantly individuals included in the M1 data, with employment start dates before 1 July 2000. Other groups eligible for M2 in Northern Ireland contain relatively few individuals. Those firefighters employed in the period 7 April 2000 to 30 June 2000, but not after, are not included in the M1 data. As retained firefighters leaving service in a 3-month period, we expect this group to be relatively small. NIFRS estimate that there is not a significant number of individuals who did not receive a reasonable opportunity to participate in M1 and are eligible for M2.

Therefore, the subset of the M1 data we have considered represents a large share of the eligible population for M2. By merging the larger and more detailed “Still in post” subset of the data with information from the valuation membership data, we were able to analyse patterns of birth dates, employment, and existing scheme membership. We have also used the “Leavers” data to understand the lower M1 take up rates for other firefighters not in active employment at M1 and check that employment periods were not materially different.

Combining these “Still in post” and “Leavers” analyses forms a robust basis for estimating the periods of service which firefighters will have an option to purchase under M2, together with the age patterns needed to estimate the scheme liabilities expected to arise.

# C3. Matthews assumptions: Pay History

## What does this assumption represent?

Retained firefighters work on an on-call basis. The service that they will be able to purchase depends on their actual earnings in each year of employment as a proportion of the relevant full-time reference pay.

Further, firefighters who purchase service under M2 will need to pay contributions based on associated historic actual pay.

The LGA and Fire Brigade Union (FBU) have collected and shared national pay agreements setting full-time reference pay from 1962 onwards.

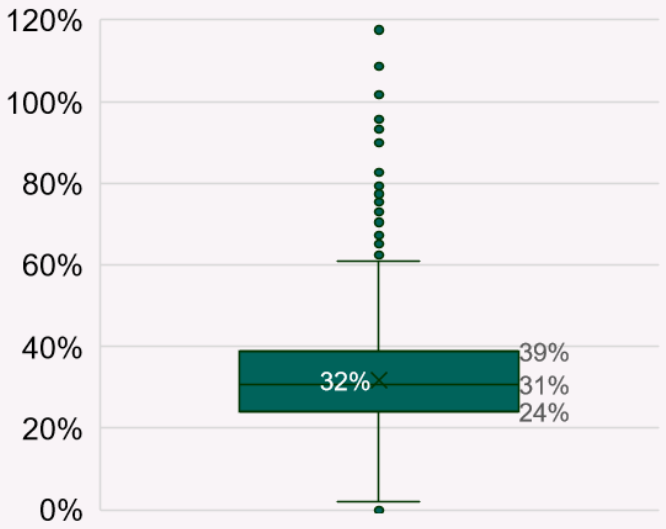
Where pre-2000 actual pay is not known, the remedy regulations allow local experience to be applied, with a default assumption of 25% of reference pay where no such local experience exists.

**We assume that all eligible members received pay at 30% of reference pay.**

## Summary statistics

| Relative importance of assumption | Volatility of experience and unreliability of data |
|---|---|
| High | Medium |

Pay ratios for M1 data firefighters employed before 1 July 2000




## Our recommendation:

Ratio of earnings

30%

## Setting the assumption

NIFRS holds very limited information on actual pay for years prior to 2000. Firefighters are expected to be unable to provide evidence of pay over this period in many cases.

Analysis of the post-2000 pay ratios of firefighters in the M1 data (see left) suggests that actual pay was around 30% of reference pay, on average.

Following discussions with practitioners, it is expected that local stations will use the flexibility set out in the regulations to agree to assume a missing pay assumption considered appropriate for their region. Our analysis and practitioners' expectations are that this will result in use of 30% of reference pay being used on average.

# C3. Matthews assumptions: Take-up rate

## What does this assumption represent?

The take-up rate represents the proportion of eligible firefighters expect to take-up the option to purchase service under the exercise.

Firefighters' decisions will be framed by their personal circumstances and there are good reasons to expect different groups to behave differently:

- Firefighters who took up M1 have already expressed a preference for buying historic service benefits.
- Those who have reached pension age at the point of making their M2 choice can use immediate access to lump sum benefits bought to pay contributions owed.
- Those below pension age must fund contributions from savings or income until reaching retirement.
- Other groups may be relevant: e.g whether they are scheme members or are current firefighters

## Summary statistics

| Relative importance of assumption | Volatility of experience and unreliability of data |
|---|---|
| High | High |

## The Department's decision:

Broadly 80% take-up rate overall

## The Department's decision and rationale

**Opted for M1:** Take-up rate 100%.

This group have previously purchased service and are therefore viewed as highly likely to do so again. DOHNI judge that, while not all will be traceable or choose to engage, the scope for cases to be processed late after March 2025 does not support setting a take-up level assumption for this group lower than 100%.

**Other Age ≥ 55:** Take-up rate 60%, **Other Age < 55:** Take-up rate 50%.

Improved communications efforts and the open-ended exercise window are factors which may boost take-up. Demand to increase incomes due to inflation may increase demand for the over age 55 group, conversely these pressures may reduce take-up for the under age 55 group. The Department judge that other issues such as traceability and capacity to engage mean that on balance it is appropriate to set a take-up level assumption for these groups that is consistent with the previous Matthews remedy exercise experience (for those with employment start dates prior to 1 July 2000).

# C3. Matthews assumptions: Take-up rate

## Available experience

No direct evidence on firefighters' choices under M2 is available yet. The table below shows available information on the take-up from M1.

*Table 1: M1 take-up rates*

| Description | M1 take-up |
|---|---|
| 1) M1 opt-ins as a percentage of option letters sent | 50% |
| 2) The share of M1 data that matches valuation data for Special scheme. | 44% |
| 3) (2) limited to those eligible for M2, i.e. employed before 1 July 2000. | 54% |
| 4) (3) limited to those active at M1 | 63% |

## Analysis

We have analysed the M1 data for those with employment before July 2000:

A) The pattern of M1 choices by whether firefighters were above or below age 55 at 2014 (NPA for NFPS 2007 Scheme (Special)). This analysis only considers those who were active at M1, as other M1 data did not include the date of birth data needed.

*Table 2: M1 take-up age dependency*

| Age group | M1 take-up |
|---|---|
| Age at 2014 >= 55 | 70% |
| Age at 2014 < 55 | 62% |

Those above age 55 had immediate access to benefits at M1, with contributions owed less than the lump sum payable. The take-up rate was higher for this group versus those below age 55.

B) The change in the split of firefighters above or below age 55 at M2 compared with at M1.

Considering the 50% of members that elected for M1 separately, 30% of those eligible at M2 will be age 55 or over (versus 74% for M1).

*Table 3: age distribution at each exercise*

| | 31/03/2014 (M1 proxy) | 31/03/2024 (M2 proxy) |
|---|---|---|
| Opted for M1 | - | 50% |
| Other Age >= 55 | 74% | 30% |
| Other Age < 55 | 26% | 20% |

# C3. Matthews assumptions: Take-up rate

## Applying M1 experience

| Eligible subgroup | Approx. % M2 eligible | Assumed Take-up |
|---|---|---|
| Opted for M1 | 50% | 100% |
| Other Age >= 55 | 30% | 60% |
| Other Age < 55 | 20% | 50% |
| Overall | 100% | ~80% |

The M2 take-up assumption 1 above relies solely on information from the first exercise and assumes that:

- All members who took up M1 have expressed a preference to buy benefits and are highly likely to buy M2 benefits.
- The proportions of other firefighters buying M2 benefits will vary by whether age is above or below 55 at 2024 similarly to under M1 by whether age was above or below 55 at 2014.
- M1 take-up rate was ~10% higher for actives (see Table 1) so when applied across all eligible for M2, the take-up rates shown in Table 2 should be reduced by 10%.

- The M2 exercise is a substantially different offer to eligible firefighters from the prior M1 exercise. This is primarily due to the longer periods of historic service that can be bought.
- Almost a decade has passed since the first exercise, and eligible individuals will be older and for many their personal circumstances may have changed significantly.
- Plans to improve to the coordination of M2 and member communications versus M1 are well developed, but it is hard to judge the level of impact they may have.
- Wider economic circumstances will differ during M2 compared to M1 and may affect the decisions taken by individual groups of members differently.
- The regulations permit elections for benefits to be made indefinitely. This open-ended exercise window may enable more eligible firefighters to take-up the M2 option in comparison to the M1 option.
- The Department judge that other issues such as traceability and capacity to engage mean that on balance it is appropriate to set a take-up level assumption for these groups that is consistent with the previous Matthews remedy exercise experience (for those with employment start dates prior to 1 July 2000).

# C4. Glossary 1

| | |
|---|---|
| **CARE** | 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. |
| **CARE revaluation** | The rate at which the CARE pension is revalued each year a member is an active member. |
| **Cost cap cost (CCC)** | A way of measuring the cost of benefits being provided from the FPS 2015 Scheme, which is then compared to a 'target cost'. The FPS (Northern Ireland) target cost is set at 18.3% of pay.<br>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 FPS 2015 Scheme (e.g., to the benefits provided) to bring the cost cap cost back to the target cost. |
| **Directions** | A document published by Northern Ireland Department of Finance, The Public Service Pensions (Valuations and Employer Cost Cap) Directions (Northern Ireland) 2014 as amended, 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. |
| **Employer contribution rates (ECR)** | The percentage of scheme members' pensionable salaries which employers are required to pay in order to:<br>• meet the costs of benefits currently being built up by active members<br>• make good any shortfall in the notional amounts set aside to cover benefits already built up.<br>The result is heavily dependent on assumptions about future financial conditions and membership changes. |
| **Matthews** | The Matthews second option exercise (or "M2") is a programme to enable certain members to elect to buy historic service in the NFPS 2007 (Special) Scheme. M2 began on 31 October 2023 in accordance with The Firefighters' Pension Schemes (Amendment) Regulations (Northern Ireland) 2023. It arises because of a November 2018 ruling in a legal case involving part-time judges ("O'Brien v MoJ") that effectively broadened the scope of an earlier ruling in the equivalent case for retained firefighters ("Matthews") and which had previously led to the first Matthews options exercise. |

# C4. Glossary 2

| | |
|---|---|
| **McCloud** | 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. |
| **Normal pension age** | The age at which a member in normal health is entitled to unreduced benefits. This age varies between the schemes:<br>• **FPS 2007 Scheme**: Age 55 (or from age 50 after completion of 25 years of service); Deferred pension age is 60.<br>• **NFPS 2007 Scheme (Standard**): Age 60; Deferred pension age 65.<br>• **NFPS 2007 Scheme (Special):** Age 55; Deferred pension age 60.<br>• **FPS 2015 Scheme:** Age 55; Deferred pension age equal to State Pension Age (SPA) with a minimum of age 65. |
| **Pension increase** | Public service pensions are increased under the provisions of the Pensions (Increase) Act (Northern Ireland) 1971 and Section 59 of the Social Security Pensions (Northern Ireland) Order 1975. |
| **Professional actuarial requirements** | The professional requirements that we have complied with when completing this actuarial valuation include:<br>1. Technical Actuarial Standards: TAS 100 and TAS 300, issued by the Financial Reporting Council (FRC)<br>2. The Actuaries' Code, issued by the Institute and Faculty of Actuaries (IFoA)<br>3. The Civil Service Code.<br>GAD is also accredited under the IFoA's Quality Assurance Scheme. More details can be found in our terms of reference. |

# C4. Glossary 3

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| **Reformed and legacy sections** | The reformed section of the scheme is the section that was set up in line with the Public Service Pensions Act (Northern Ireland) 2014, 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. |
| **Regular Firefighter** | Regular firefighters are full-time firefighters. |
| **Retained Firefighter** | Retained firefighters do not work as a firefighter full-time but operate 'on-call' and respond to emergency calls via a pager from their home or place of work at any time of the day or night. |
| **Scheme Advisory Board** | The Board set up in line with section 7 of the Public Service Pensions Act (Northern Ireland) 2014, with responsibility for providing advice on potential changes to the scheme and other matters relating to the efficient administration and management of the scheme.<br><br>Scheme Advisory Board is commonly shortened to 'SAB'. |
| **Special member** | An amendment to the NFPS 2007 Scheme regulations made in April 2015 introduced a modified section of the NFPS 2007 Scheme for retained firefighters who were employed in Northern Ireland during the period 1 July 2000 to 5 April 2006 to provide them with access to a pension scheme (known as 'Special' members).<br><br>The modified section of the NFPS 2007 Scheme is called the NFPS 2007 Scheme (Special) in this report.<br><br>The New Firefighters' Pension Scheme (Amendment) Order (Northern Ireland) 2015 (legislation.gov.uk) |
| **Standard table** | 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.<br><br>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. |