Government Actuary's Department

The Judicial Pension Scheme: Actuarial valuation as at 31 March 2012

Advice on assumptions

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Contents

1   Executive summary

This report contains our recommendations for the best estimate assumptions to be set by the Lord Chancellor for the 2012 valuation of the Judicial Pension Scheme.

1.1   HM Treasury's Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014 (as amended[1]) require that a valuation of the Judicial Pension Scheme is carried out as at 31 March 2012. The assumptions to be adopted for this valuation will be set by the Lord Chancellor, having obtained advice from the scheme actuary. The assumptions must be the Lord Chancellor's best estimates and not include margins for prudence or optimism.

1.2   This report sets out GAD's advice (as scheme actuary) to the Lord Chancellor on the actuarial assumptions to be adopted. The advice covers the main assumptions to be set by the Lord Chancellor and is summarised in Table 1. Assumptions may also be required in other areas and we will provide separate advice on additional assumptions as required.

1.3   We consider that recent experience generally provides the most reliable evidence when determining best estimates of future experience and have adopted this approach throughout this advice unless noted otherwise.

1.4   There is little recent experience available to determine some assumptions. In these cases we have recommended assumptions having regard to the assumptions adopted previously and other relevant data, as set out in Table 1.

1.5   The previous completed actuarial valuation of the Judicial Pension Scheme was carried out as at 31 March 2009. Some of the assumptions put forward in this report differ from those used for the 2009 valuation. The two most significant changes are:

> increased expected pensioner longevity and

> promotional salary scale

1.6   The following chapters and annexes provide more detail on the advice, supporting analysis and the financial impact of the assumptions on the results. They also contain important background information about the context of this advice and its limitations.

1.7   This report was provided to the Ministry of Justice in draft form, and was also circulated to the Judicial Pension Committee, in January 2014. It has been signed alongside the formal valuation report. No substantive changes have been made. The Lord Chancellor has already confirmed to GAD, having consulted with relevant

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[1] Amendments are the Public Service Pensions (Valuations and Employer Cost Cap) (Amendment) Directions 2014 and the Public Service Pensions (Valuations and Employer Cost Cap) (Amendment) (No 2) Directions 2014

stakeholders and having obtained HM Treasury consent, that the actuarial assumptions to be adopted for the valuation should be those set out in this report.

Table 1: Summary of recommended assumptions consistent with the 'best estimate' requirement

Assumption	Summary of recommended assumptions	Rationale for recommendation	Approximate impact on total contribution rate of change from 2009 valuation assumptions	
			Past service	**SCR (2015-2019)**
Pensioner baseline mortality[2]	Aligned to 80% of the standard S1NMA SAPS table[3] for males and 85% of the standard S1NFA SAPS table for females.[4]	In line with the experience of the NHS pension scheme, which has a high proportion of professional staff with characteristics likely to be comparable to the members of the Judicial Pension Scheme and has relatively low pensioner mortality rates in comparison to other possible comparators.	+1.2%	+0.5%

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[2] As directed by HMT, future improvements in mortality assumed to be in line with those underlying the most recent ONS principal population projections for the UK.

[3] SAPS tables are published by the Actuarial Profession and based on the experience of self-administered pension schemes over the period 2000 to 2006. The 'S1' series has separate standard tables based on experience of different classes of members. The S1NMA table is based on the experience of member retiring in normal health.

[4] Adjusted to take account of improvements in population mortality between 2002 (the base year for the tables) and 2012

Assumption	Summary of recommended assumptions	Rationale for recommendation	Approximate impact on total contribution rate of change from 2009 valuation assumptions	
			Past service	SCR (2015-2019)
Age retirement				
Members expecting benefits wholly or mainly from the existing schemes				
(those covered by protection or tapering):				
Protected in the 1993 section	Retirement age for members is 67 years.	In line with 2009-2012 experience	No change in assumption	No change in assumption
Protected in the 1981 section	Retirement age for members is 70 years.	In line with 2009-2012 experience	-0.4%	immaterial
New Scheme including members with service in existing scheme but no protection	(SPA + compulsory retirement age of 70)÷2, but 67 for those with SPA 65.	Broadly in line with 2009-2012 experience for those with SPA 65; recognises increasing NRA/ SPA and fixed compulsory retirement age of 70.	No past service	new assumption
Ill-health retirement	Nil	The experience of nine retirements over three years is not sufficient evidence to both demonstrate that the previous valuation assumption is materially inappropriate and on which to base an alternative credible assumption which would give a materially different valuation result.	No change in assumption	No change in assumption

Assumption	Summary of recommended assumptions	Rationale for recommendation	Approximate impact on total contribution rate of change from 2009 valuation assumptions	
			Past service	SCR (2015-2019)
Withdrawal	Nil	The experience of six withdrawals over three years is not sufficient evidence to both demonstrate that the previous valuation assumption is materially inappropriate and on which to base an alternative credible assumption which would give a materially different valuation result.	No change in assumption	No change in assumption
Death before retirement	Sample rates at age 60: Male 0.0025 Female 0.0015	In line with the experience of the NHS Pension Scheme, which has a high proportion of professional staff with characteristics likely to be comparable to the members of the Judicial Pension Scheme but with a downwards adjustment of 20% to reflect a higher weighting towards non-professional staff in the NHSPS death in service analysis compared to the analysis of pensioner mortality.	+0.2%	-0.1%
Promotional salary scale	0.25% pa	In line with 2009-2012 experience	+0.5%	+0.6%

Assumption	Summary of recommended assumptions	Rationale for recommendation	Approximate impact on total contribution rate of change from 2009 valuation assumptions	
			Past service	**SCR (2015-2019)**
Commutation				
Existing scheme	Nil	Members receive a lump sum at retirement instead of commuting pension for cash.	No change in assumption	No change in assumption
New scheme	15% of pension commuted	Specified in Directions	No past service	New assumption
Family statistics				
Proportion married/partnered	90% (M), 80% (F) at retirement.	As adopted for 2009 valuation, and based on evidence shown in active data this still remains suitable.	+0.5%	immaterial
	For current pensioners, steadily reduced after normal retirement age, in line with the ONS analysis of proportions married	Reduction in line with ONS analysis of proportions married as observed in UK population.		
Age difference	Male member 3 years older than partner Female 2 years younger than partner	In line with the experience of large public sector schemes.		
Remarriage	No allowance	In line with experience Not a feature of the new 2015 scheme		

2   Introduction

> *This report contains our advice to the Lord Chancellor but will be of interest to other parties who should note the limitations.*

2.1   Under section 12 of the Public Service Pensions Act 2013 ('the 2013 Act'), scheme regulations must set an "employer cost cap". This is a rate, expressed as a percentage of pensionable earnings of members of the scheme, to be used for the purpose of measuring changes in the cost of the scheme. The employer cost cap is to be set in accordance with Treasury directions.

2.2   HM Treasury's Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014[5] (the HMT Directions) require that a valuation of the Judicial Pension Scheme ('the Scheme') is carried out as at 31 March 2012 for the purpose of setting the employer cost cap. The HMT Directions require that the valuation report includes the proposed employer cost cap [direction 50(g)]

2.3   MoJ set the employer contribution rate. We understand that MoJ's intention is for the contribution rate payable from 2015 to be equal to the employer contribution rate calculated in the 2012 valuation [direction 50(f)].

2.4   The HMT Directions require that the assumptions to be adopted for this valuation, except for those assumptions specified in the HMT Directions, will be set by the Lord Chancellor, having obtained advice from the scheme actuary [direction 19(a)]. They also require that the assumptions must be the Lord Chancellor's best estimates and not include margins for prudence or optimism [direction 19(c)].

2.5   GAD is the appointed scheme actuary to the JPS. This report is addressed to the Lord Chancellor and contains our formal advice on the appropriate assumptions to be adopted for the 2012 valuation, as required by the Directions. The purpose of this advice is to enable the Lord Chancellor to determine the required best estimate assumptions.

2.6   The advice is provided in accordance with the HM Treasury Directions. Our advice might change if there are any subsequent changes to the directions. We may also revise this advice if material new evidence comes to light.

2.7   The advice also has regard to HMT's suggested approach[6] for setting assumptions in the absence of direct evidence.

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[5] This report has been prepared in accordance with the directions made on 2 June 2014 with subsequent amendments on 27 August 2014
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/318029/valuations_and_cost_cap_directions_final_020614.pdf

[6] Annex A of *Public service pensions: actuarial valuations and the employer cost cap mechanism* dated March 2014
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289366/public_service_pensions_actuarial_valuations_130314.pdf

2.8   The advice covers the main assumptions to be set by the MoJ. In particular, we consider eight sets of assumptions in this report:

> Pensioner mortality

> Age retirement from service

> Ill-health retirement from service

> Voluntary withdrawal from service

> Death before retirement

> Promotional pay progression

> Commutation of pension for cash at retirement

> Family statistics.

2.9   Assumptions may also be required in other areas, eg relating to the projection of the membership to 2015. We will provide separate advice on additional assumptions as required.

2.10 The Lord Chancellor is now asked to set the actuarial assumptions (listed in paragraph 2.8) to be adopted for the valuation as required by the Directions, consulting with HM Treasury as appropriate, and to confirm those assumptions to GAD. We would be happy to provide further analysis to the Lord Chancellor, if required.

2.11 The previous completed actuarial valuation of the Schemes was carried out as at 31 March 2009, and GAD's report on that valuation is dated 31 March 2010. We have analysed the experience of the scheme membership over the three-year period since the previous valuation, between 31 March 2009 and 31 March 2012, in order to inform the advice contained in this report.

2.12 MoJ, the Scheme's administrator, supplied data on the experience of the scheme membership over the three-year period to 31 March 2012, together with some additional information on experience falling outside of this period. We have used this data to analyse the Scheme's experience in order to develop our advice on the assumptions. Our report, *Judicial Pension Scheme: Actuarial Valuation as at 31 March 2012: Report on data used for experience analysis* dated *September 2014,* provides information about this data and should be read in conjunction with this advice. The report includes details of the checks carried out on the data and the amendments made to the data. In preparing our advice, we have relied upon the general completeness and accuracy of the data provided.

2.13 Further information on the data analysed and the results of that analysis are shown in in Annex B.

2.14 We consider that recent experience generally provides the most reliable evidence when determining best estimates of future experience and have adopted this approach throughout this advice unless noted otherwise. The Lord Chancellor should consider whether there is any reason why this approach would be inappropriate. We would be happy to revisit our advice to take account of any other evidence relevant to expected future experience of the Scheme membership.

2.15 There is little recent experience available to determine some assumptions. In these cases we have recommended assumptions having regard to the assumptions adopted previously and other relevant data, as set out in Annex A.

2.16 The report is also being made available to HMT and may be made available to other stakeholders as part of the process for granting their approval to the assumptions proposed by the Lord Chancellor.

2.17 We are content for the MoJ to release this report to third parties, provided that:

> 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.

2.18 Third parties whose interests may differ from those of the Lord Chancellor should be encouraged to seek their own actuarial advice where appropriate. Other than the Lord Chancellor, GAD has no liability to any person or third party for any act or omission taken, either in whole or in part, on the basis of this report.

3   General considerations

> *This chapter sets out a number of general considerations common to the setting of the different assumptions considered in this report.*

3.1   The key considerations taken into account in formulating the advice in this report are explained in this section.

HMT Directions

3.2   The advice in this report reflects the requirements of HMT Directions that assumptions should be set as the Lord Chancellors' 'best estimates' of future experience and should contain no margin for prudence or optimism. They should be set having regard to the:

> assumptions set for previous valuations

> analysis of demographic experience up to the valuation date, taken as experience over the three-year period up to the valuation date for the purposes of our advice

> historic long-term trends and emerging evidence which may illustrate long-term trends in the future

> relevant data from any other source (including relevant data that becomes available after the effective date).

Setting assumptions where there is insufficient evidence

3.3   Since all the reformed public service schemes have certain characteristics for which there is no, or insufficient, direct evidence on which to base assumptions, HMT issued a document setting out the approach that schemes should take when setting these assumptions.

Different populations

3.4   The HMT Directions require the 2012 valuation to cover the existing 1981 and 1993 schemes, and the new 2015 scheme to be established under the 2013 Act. This means the 2012 valuation needs to consider assumptions appropriate to both the existing scheme and the new scheme. It also needs to cover the assessment of the employer contribution rate payable over the period 2015 to 2019 and the employer cost cap. Setting the employer contribution rate requires assumptions about anticipated member behaviour and characteristics during 2015 to 2019 as well as assumptions about member behaviour and characteristics in the longer term.

3.5   From 2015 there will be three distinct groups of members.

> Those with full protection and thus remaining in their existing scheme to retirement. The introduction of the 2015 scheme is not expected to have any impact on this group's behaviours

> New members to the 2015 scheme. These members' behaviours are expected to be influenced only by the provisions of the new scheme

> Members with service in both the existing and 2015 schemes (including members with tapered protection). Over time, as the proportion of 2015 scheme service increases, the behaviours are expected to become increasingly influenced by the provisions of that scheme.

Relative importance of assumptions

3.6   The HMT Directions require the employer contribution rate and employer cost cap to be determined to the nearest 0.1% of pensionable payroll. This is a required level of accuracy for a particular calculation based on a particular set of assumptions. In each of the remaining chapters in this report we conclude by providing an approximate indication of the impact of the change being recommended to the assumptions[7] on each of:

> **'past service' –** This is the indicative impact on the employer contribution rate of any surplus or deficit as at 2012 created by moving from the 2009 valuation assumption to the proposed 2012 valuation assumption (assuming that the surplus or deficit will be expressed as an employer contribution rate payable over 15 years). This impact is on employer contribution rates only and does not impact on the cost cap mechanism

> **'SCR (2015-19)' –** This is the indicative impact on the employer contribution rate over the years 2015 to 2019 of adopting the proposed 2012 valuation assumption as opposed to the 2009 valuation assumption.

3.7   The figures have been calculated using approximate methods and should be used as a guide to the broad magnitude of the impact of the change being considered. Furthermore the impacts of different changes are not independent so the impact of multiple changes will not necessarily be the sum of the individual impacts. Changes are considered immaterial if their expected impact on the contribution rate is less than 0.05%.

3.8   Where relevant we also indicate in each of the following chapters the relative importance of each set of assumptions to each of the groups of members identified in paragraph 3.5.

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[7] In many cases we show the impact of the recommended assumptions relative to those of the 2009 valuation of the scheme. Further details of the assumptions recommended for the 2009 valuation of the scheme are contained in the report *Judicial Pension Scheme: Preliminary Note on Method and Assumptions for the Actuarial Valuation as at 31 March 2009* dated February 2009 and the report *Judicial Pension Scheme Valuation as at 31 March 2009* dated 31 March 2010.

Cost cap assumptions

3.9   The HMT directions require the calculation of a proposed employer cost cap using the assumptions adopted for the 2012 valuation, but adjusted as though no members have any benefits accrued in the 1981 or 1993 schemes, and no members have any transitional protection (direction 53).

3.10   Under this requirement, the assumptions used to determine the proposed employer cost cap will be those applicable to new entrants to the 2015 scheme.

3.11   The assumptions adopted for the 2012 valuation are of particular importance as they will be used to set both the employer cost cap (direction 53) and the prior value of the cost cap fund (direction 30), both of which will be used to measure changes in the cost of the scheme.

3.12   If experience differs from the assumptions adopted to calculate the employer cost cap and prior value of the cost cap fund, then this will feed into the measurement of changes in cost of the scheme. The relative significance of assumptions in relation to the cost cap mechanism is discussed in each section.

4   Pensioner mortality

This chapter sets out our recommendation for the pensioner mortality assumptions, the rationale for those assumptions and their financial impact.

Proposed assumptions for 2012 valuation

4.1   The assumptions we recommend for baseline pensioner and dependant mortality for the 2012 valuation may be summarised as follows:

Table 4.1: Recommended mortality assumptions

Baseline mortality	Standard table[8]	Adjustment
Male	S1NMA	80%
Female	S1NFA	85%

4.2   As specified by HM Treasury, future improvements in mortality will be assumed to be in line with those underlying the most recent (i.e. 2012-based) ONS population projections.

Previous valuation assumptions

4.3   At previous valuations baseline mortality has similarly been based on adjusted standard tables with future improvements based on the then most recent ONS population projections.

Comparison of expected pensioner longevity

4.4   The table below gives a comparison of the resulting life expectancies[9] assumed and recommended for the 2009 and 2012 valuations.

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[8] SAPS tables are published by the Actuarial Profession and based on the experience of self-administered pension schemes over the period 2000 to 2006. The 'S1' series has separate standard tables based on experience of members retiring in normal health (S1NXA) and in ill health (S1IXA) and for dependants (S1DFA).

[9] Cohort life expectancies based on the ages shown as at the valuation date, ie allowing for future mortality improvement .

Table 4.2: Comparison of life expectancies (years)

	2009 valuation	2012 valuation
Current pensioners		
Male aged 65	23.6	25.1
Female aged 65	25.1	27.1
Male aged 76[10]	14.5	14.9
Female aged 76	15.7	16.6
Future pensioners – current age 45		
Male life expectancy from age 65	25.4	27.4
Female life expectancy from age 65	27.0	29.3
Male life expectancy from age 67[11]	23.7	25.4
Female life expectancy from age 67	25.2	27.3
Future pensioners – current age 60		
Male life expectancy from age 65	24.1	25.7
Female life expectancy from age 65	25.7	27.7
Male life expectancy from age 67	22.4	23.8
Female life expectancy from age 67	24.0	25.7

Use of the assumption

4.5 Pensioner mortality is a key valuation assumption and is a measure of how long members retiring in normal or ill health, or their dependants, expect to live and receive benefits.

Results of analysis

4.6 We have analysed the pensioner mortality experience over the three-year period from 1 April 2009 to 31 March 2012 on a 'lives' basis. A lives basis does not weight the experience by the size of each member's pension. Further information on the data analysed and the results of that analysis are shown in the report The Judicial Pension Scheme: Actuarial Valuation as at 31 March for the Analysis of Experience, dated September 2014.

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[10] At 31 March 2012 the average pensioner age was 76 years old
[11] At 31 March 2012 the average retirement age was 67 years old

4.7 The dates of birth for many of the pensioners who died were missing. We therefore used the pensioner data at 31 March 2012 and 31 March 2009 with the probability of death from the standard S1NA-10 tables to derive an expected death rate for the population of male former judges. We then compared this to the actual death rate.

4.8 The method we have used is very approximate and we would therefore not recommend using the results in isolation to form the basis of a mortality assumption. Also, since the data available relating to deaths is very limited this does not form a dataset which gives a credible result. We have therefore considered the mortality experience of larger public sector pension schemes with a large proportion of professional staff.

Wider evidence

4.9 We have considered the mortality assumption proposed by the Teachers Pension Scheme (TPS) and the NHS Pension Scheme (NHSPS) together with the ONS report *Age specific mortality rates by National Statistics socio-economic classification* published in February 2013[12]. There are seven socio economic classes in the National Statistics socio-economic classification. Judicial office holders all fall into class 1 "higher managerial and professional". Teachers all fall into class 2 "lower managerial and professional". NHS employees will fall into a range of classes including class 1 which includes medical practitioners.

4.10 The information in the ONS report is not sufficiently detailed to construct a mortality table for individuals in class 1. It is also an analysis of the number of deaths unweighted by size of pension and other mortality studies have shown that mortality rates weighted by pension size are typically lower than rates that only allow for the number of lives or, equivalently, that mortality rates are lower for those receiving higher pensions.

4.11 The report shows a consistent socio-economic pattern of mortality with the highest rates of death for the routine and manual class and the lowest for the managerial and professional class. The ONS data also shows that the mortality of individuals in class 1 was lower than that of those in class 2. We have calculated that at the ages relevant for the valuation of the judicial pension scheme, male mortality rates in class 1 are about 7% lower than class 2 and female are about 5% lower than class 2.

4.12 We calculated life expectancies and annuities using the TPS proposed assumption with mortality rates adjusted down by 7% for males and 5% for females to reflect the fact that teachers are in a different socio-economic class to judges. We compared these against equivalent figures using the NHSPS proposed assumption with no adjustment.

4.13 The results of the comparison showed that the NHS proposed assumption produced slightly higher life expectancies and annuities than the adjusted TPS proposed assumption. The only exception was the life expectancies of the youngest current female pensioners.

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[12] http://www.ons.gov.uk/ons/rel/health-ineq/health-inequalities/1982---2006/index.html

4.14 Table A43 of the 2012 Edition of *Family Spending*[13] shows that the average gross weekly household income for the two subdivisions of the socio-economic class that judges fall into was £1,617 and £1,374 in 2011. Both of these figures are significantly lower than the average pensionable salary of a member of JPS which was £120,000 a year (£2,300 a week) as at 31 March 2012.

4.15 Given the high pay of judges relative to others in their socio economic class, their mortality may be at the low end of the range of assumptions that might be appropriate for their socio-economic class. We have therefore adopted the approach of comparing the adjusted TPS and unadjusted NHS assumptions and taking the one with the lower overall mortality rates.

4.16 Given the approach outlined above, our proposed assumption is the NHS proposed assumption. The JPS experience is not inconsistent with this assumption.

Financial impact

4.17 The approximate financial impact of the proposed change to the mortality basis (both baseline and update of the improvement basis) compared to that proposed in 2009 is set out in Table 4.3.

Table 4.3: Approximate financial impact of proposed change in mortality assumptions

	Past service effect*	SCR (2015-2019)
Change in mortality basis (baseline and improvements) from 2009 basis to that proposed for 2012	+1.2%	+0.5%

* (adjustment to contribution rate for 15 years from 2015)

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[13] http://www.ons.gov.uk/ons/rel/family-spending/family-spending/family-spending-2012-edition/index.html

5   Age retirement from service

> *This chapter sets out our recommendation for the assumed patterns of retirement on grounds other than ill health, the rationale for those assumptions and their financial impact.*

Proposed assumptions for 2012 valuation

5.1   We recommend that rates of age retirement are set separately for members who will continue in the existing schemes after April 2015, for new entrants after 2015 and for those who will have service in the existing schemes and the 2015 scheme. Sample age retirement rates are provided in Annex A.

Members remaining in the existing schemes

5.2   The assumed retirement age for both men and women of the 1993 scheme is 67 years, and for the 1981 scheme this is assumed to be 70 years. For the 1993 scheme between 1 April 2009 and 31 March 2012 about 18% of members retired before 65 (the normal pension age of the scheme), about 22% at 65, 48% spread between 65 and 70 years and the remaining 12% between 70 and 75.

5.3   For the 1981 scheme between this period 4% retired before 65 (the normal pension age of the scheme), 12% at 65, and 46% of members between 65 and 70 years and the remaining 38% between 70 and 75.

New entrants after April 2015

5.4   We recommend that members with an SPA over 65 are assumed to retire half way between their SPA and 70, the compulsory retirement age of 70 years old for those first appointed to judicial office on or after 31 March 1995. The assumed retirement age for those with SPA of 65 would be age 67 as is assumed for members of the 1993 scheme. This is broadly consistent with what scheme experience has shown between 2009 and 2012.

Members with service in the existing and 2015 schemes

5.5   We recommend assuming a gradual change between the patterns of retirement for members remaining in the existing scheme and those applying to new entrants to the 2015 scheme. Members will be assumed to have a single retirement date applying to all their service, reflecting the requirement to leave judicial service before accessing their existing scheme benefits. Members with taper protection will have the majority of their service in the existing schemes and are assumed to retire in line with members who have full protection. Members with no protection will have the majority of their service in the 2015 scheme and are assumed to retire in line with new entrants after April 2015.

5.6   The average age in 2012 of unprotected members was 48 with average service of 3 years. The Pensions Bill currently before Parliament will increase the SPA of an individual of this age in 2012 to 67. The retirement age assumed for members of this age with service only in the 2015 scheme would be 68.5. Therefore an average unprotected member would accrue 6 years in the existing scheme and 16 years' service in the 2015 scheme.

5.7   The average age in 2012 of taper members was 53 with average service of 5.5 years. The SPA of an individual of this age is 66. The retirement age assumed for these members is 67. The taper will last for seven years and so last 3.5 years on average. Therefore an average taper member would accrue 12 years in the existing scheme and 7.5 years' service in the 2015 scheme.

Previous valuation assumptions

5.8   In 2009, the assumed retirement age for both men and women was aged 67 for the 1993 scheme aged 68 and for the 1981 scheme.

Use of the assumption

5.9   Age retirement rates specify the rate at which members are assumed to retire on grounds other than ill health and therefore potentially include allowance for retirements before and after NPA.

5.10   In both sections of the existing scheme and in the 2015 scheme an actuarial reduction is applied to the pension payable on retirement earlier than NPA. The actuarial reduction is set to give the early retirement pension the same value as the deferred benefits payable following withdrawal at the same age (with special terms applying for the period between 65 and SPA in the 2015 scheme). As the deferred benefits in the existing scheme are expected to be less valuable than the benefits payable had the member stayed in service and retired at NPA, early retirement in the existing scheme represents a saving to the Scheme. However, deferred benefits in the new scheme are expected to have a very similar value to the benefits payable if a member stays in service and retires at NPA.

5.11   An actuarial uplift will be applied to the 2015 scheme for retirement after NPA. However in the 1981 and 1993 sections the pension payable on retirement after NPA is not subject to actuarial adjustment. This means pensions paid from the existing schemes on retirement after NPA will be less costly to the scheme (i.e. the value of the benefit payable to a member is lower) than a pension paid at or before NPA. The rates of retirement of members in the existing schemes on at or after NPA are therefore the most financially significant components of the assumption. Late retirement is common in the JPS and so the late retirement assumptions have a significant impact on overall costs.

Results of analysis

5.12   We analysed the pattern of age retirements from active membership over the three-year period to 31 March 2012 for the 1981 section and 1993 section of the Scheme. There was sufficient data to perform a credible analysis of both sections' experience. In total there were around 220 age retirements from the 1993 section over the period and 23 from the 1981 section over the period. The analysis compared the

numbers of actual retirements to the expected number of retirements under previous valuation assumptions. Further information on the data analysed and the results of that analysis are shown in the report The Judicial Pension Scheme: Actuarial Valuation as at 31 March for the Analysis of Experience, dated September 2014.

5.13   The analysis showed that experience over the period was slightly higher for the 1981 scheme, and slightly higher for the 1993 scheme compared to assumptions for the 2009 valuation. There was a slight increase in early retirements for the 1981 scheme. Other deviations from the 2009 assumptions were consistent with the experience between 2005 and 2009 and so our recommended assumptions are in line with the experience analysed.

Financial impact

5.14   The approximate financial impact of the retirement assumptions in comparison to those used in 2009 is set out in Table 5.1.

Table 5.1: Approximate financial impact of variation in assumed rate of age retirements from 2009 assumption

	Past service effect*	SCR (2015-2019)
Protected (including taper members) in 1981 scheme	-0.4%	immaterial
Protected (including taper members) in 1993 scheme	no change in assumption	actuarially neutral
All service in new scheme and unprotected members with service in new and old scheme	no change in assumption	new assumption

6   Ill-health retirement from service

This chapter sets out our recommendation for the assumed rates of retirement on grounds of ill health, the rationale for those assumptions and their financial impact.

Proposed assumptions for 2012 valuation

6.1   We recommend that a single assumption is used to allow for the incidence of ill-health retirement, ie applying both to those members who remain in the existing scheme and to those who join the new scheme. Assumed rates of ill-health retirement are nil for all ages. An assumption of nil ill health retirement means that it is not necessary to set an assumption for the proportion of members retiring on ill health who would qualify for an upper tier ill health pension.

Previous valuation assumptions

6.2   At the previous valuations, a nil assumption was also used.

Use of the assumptions

6.3   Ill-health retirement rates specify the rate at which members are assumed to retire on grounds of ill health. The assumed eligibility for upper or lower-tier awards specifies the benefits which will be provided. The rates of mortality experienced after ill-health retirement are also relevant to the valuation calculations. Post-retirement mortality is addressed in Chapter 4.

Results of analysis

6.4   Nine ill-health retirements occurred over the three-year period to 31 March 2012. No thorough analysis was carried out on these due to the small number (0.2% of the membership per year). This is not sufficient evidence to both demonstrate that the previous valuation assumption is materially inappropriate and on which to base an alternative credible assumption which would give a materially different valuation result. If an assumption were to be adopted in line with the experience instead of retaining the existing assumption, it would not materially affect the valuation results.

Ill-health retirement rates

6.5   The recommended ill-health rates have been based on the assumption for the previous valuations.

7 Voluntary withdrawal from service

> *This chapter sets out our recommendation for the assumed rates of withdrawal from active service, the rationale for those assumptions and their financial impact.*

Proposed assumptions for 2012 valuation

7.1 We recommend that a nil assumption is made for rates of withdrawal for the purposes of the valuation, ie applying equally to those members who remain in the existing scheme and those who join the new scheme.

Previous valuation assumptions

7.2 At previous valuations, a nil assumption was also used.

Use of the assumption

7.3 Withdrawal rates specify the rate at which members are assumed to leave voluntarily before retirement becoming entitled to either deferred benefits

Results of analysis

7.4 We have analysed the pattern of withdrawals from active membership over the three-year period to 31 March 2012 for the 1981 and 1993 sections combined. In total there were six withdrawals over the period (0.1% of the membership per year). This is not sufficient evidence to both demonstrate that the previous valuation assumption is materially inappropriate and on which to base an alternative credible assumption which would give a materially different valuation result. If an assumption were to be adopted in line with the experience instead of retaining the existing assumption, it would not materially affect the valuation results.

8   Death before retirement

> *This chapter sets out our recommendation for the assumed rates of death before retirement, the rationale for those assumptions and their financial impact.*

Proposed assumptions for 2012 valuation

8.1   We recommend using assumptions based on the experience of the NHSPS with rates adjusted downwards by 20%. Assumed rates of death in service increase with age but fewer than 1% of members are assumed to die each year, even at the highest ages. Sample rates are provided in Annex A.

Previous valuation assumptions

8.2   In 2009, a single set of rates (separate for men and women) was used for the 2009 valuation to allow for the possibility of death before retirement. The rates were based on the pensioner mortality rates used in the 2009 valuation and were higher than the pre-retirement mortality rates recommended for the 2012 valuation.

Use of the assumption

8.3   Death before retirement rates are used to allow for the possibility of death whilst in active service or whilst entitled to a deferred pension. The number of deaths observed annually, and the recommended rates to be assumed, are low and thus this assumption has relatively little financial significance.

Results of analysis

8.4   We have analysed the deaths of active members over the three-year period to 31 March 2012. The recommended assumptions for both deaths in service and in deferment are based on this analysis. In total there were 12 deaths of active members over the period. The analysis compares the number of actual deaths to the expected number of deaths under previous valuation assumptions. Further information on the data analysed and the results of that analysis are shown in the report The Judicial Pension Scheme: Actuarial Valuation as at 31 March for the Analysis of Experience, dated September 2014.

8.5   The analysis showed there were fewer deaths than expected although the total number of deaths is too low to provide a credible basis for setting assumptions.

Wider evidence

8.6   We have considered the death in service assumptions proposed by the NHS Pension Scheme (NHSPS) together with the ONS report *Age specific mortality rates by National Statistics socio-economic classification* published in February 2013.

8.7   The analysis leading to the NHSPS death in service assumption was based on the number of deaths in service rather than the amounts of payment. Therefore there is likely to be a lower weighting in this assumption to the NHS staff who are in the same socio-economic class as judges. We have therefore applied a reduction of 20% to these rates to allow for this. 20% is broadly the difference in mortality rates between those in socio economic classes 1 (which includes doctors and legal professionals) and 3 (which includes medical technicians).

8.8   The JPS experience is not inconsistent with this assumption.

Financial impact

8.9   The approximate financial impact of the proposed change to assumed rates of death before retirement is set out in Table 8.1.

Table 8.1: Approximate financial impact of proposed change in death in service

	Past service effect*	SCR (2015-2019)
Change from 2009 assumptions to those proposed for 2012	+0.2%	-0.1%

* (adjustment to contribution rate for 15 years from 2015)

9   Promotional pay increases

> *This chapter sets out our recommendation for the assumed promotional pay increases of active members, the rationale for those assumptions and their financial impact.*

Proposed assumption

9.1   We recommend that promotional pay increases are assumed to increase pay by 0.25% a year.

Previous assumption

9.2   The assumption used for the 2009 valuation was that there would be no promotional pay increases.

Use of the assumption

9.3   For the existing sections of the Scheme, benefits are linked to salary at, or near, retirement. Members' salaries can increase through a combination of annual general pay awards and promotional pay increases. To calculate an estimate of the level of benefit payable in the future requires assumptions for both these components. The assumption for general pay awards is directed by HMT. The assumption for promotional pay increases is set by the responsible authority.

9.4   Future pay progression will be more significant (in terms of expected pension) for those members with either full or tapered protection because they will continue to have benefits linked to final pensionable pay for service beyond 31 March 2015. A significant proportion of the past service liability for active members (about two-thirds) relates to members with full or tapered protection and thus the impact of experience differing from the assumptions used is likely to be most material over the next couple of valuation cycles as it relates to older existing members. This experience will impact future employer contribution rates and the cost cap mechanism.

Results of analysis

9.5   We analysed the annual increases received by individual members over the three-year period to 31 March 2012. Further information on the data analysed and the results of that analysis are shown in the report The Judicial Pension Scheme: Actuarial Valuation as at 31 March for the Analysis of Experience, dated September 2014.

9.6   The analysis of the annual pay increases for individual members between 2009 and 2012 suggested that promotional pay increases had been higher at all ages than assumed under the 2009 valuation (where promotional pay increases were assumed to be 0% at all ages).

9.7   The results of both analyses should be treated with some caution. It is, in general, difficult to identify promotional increases separately from other elements of pay increase.

9.8   Between 1 April 2009 and 31 March 2012 there were 133 promotions (equating to around 6% of the active membership). The average salary increase due to a promotion was 13%. This would indicate that overall the salary increase due to promotion was around 0.25% per year.

9.9   We have not analysed salary scales by age. The credibility of such an analysis would be limited given the small number of members.

9.10   We therefore recommend using a flat percentage increase of 0.25% promotional pay increases per year at all ages.

Financial impact

9.11   Table 9.1 shows the approximate financial impact of assuming promotional increases that are 0.25% a year higher than those proposed.

Table 9.1: Approximate impact of alternative promotional salary increase assumption

	Past service effect*	SCR (2015-2019)
Promotional increases are 0.25% a year higher than proposed for 2012	+0.5%	+0.6%

* (adjustment to contribution rate for 15 years from 2015)

10   Commutation of pension for cash at retirement

The existing Judicial Pension Scheme does not allow commutation of pension for cash at retirement. Instead all members receive a lump sum at retirement and therefore no evidence is available to set an assumption.

Proposed assumptions for 2012 valuation

10.1   Members of the existing schemes cannot commute pension for a lump sum.

10.2   HMT have specified a commutation assumption in the Valuation Directions to be used by all schemes. This is set to be 15% of pension. There is therefore no requirement for the Lord Chancellor to decide an assumption or the Scheme Actuary to provide advice.

Previous valuation assumptions

10.3   Since the Judicial Pension Scheme does not allow commutation of pension for cash at retirement no evidence is available on the proportion of pension that judges might commute.

Use of the assumption

10.4   Members may commute part of their pension for a lump sum at a rate of £12 for each £1 of pension given up. The assumption is important because the value of the pension given up is typically more than £12 and so commutation has a significant impact on total liabilities.

11 Family statistics

> *This chapter sets out our recommendation for the assumptions around dependants'*
> *pensions, the rationale for those assumptions and their financial impact.*

Proposed assumptions for 2012 valuation

11.1 We recommend the following assumptions.

> - 90% of men and 80% of women in the existing schemes are assumed to be married or in a civil partnership at retirement consistent with current percentages of active members married in the data provided. For current pensioners this is steadily reduced after retirement age in line with the ONS proportion married analysis

> - 90% of men and 80% of women in the 2015 scheme are assumed to be married, in a civil partnership, or have a nominated adult dependant at retirement

> - Male members are assumed to be three years older than their partners and female members are assumed to be two years younger than their partners based on the assumption adopted by public sector pension schemes and those scheme's experience

> - No allowance is made for remarriage in line with scheme experience.

Previous valuation assumptions

11.2 The proportion married was 90% male and 80% female. This was steadily reduced after retirement age, in line with the 2009 mortality basis.

11.3 The assumed proportions of current pensioners married/partnered are generally higher than adopted for the 2009 valuation.

11.4 Allowance was made for remarriage of widows and widowers in the 2009 but at rates typically well below 1% a year.

Use of the assumption

11.5 Dependants' pensions[14] are provided to qualifying dependants on the death of a member. Assumptions are required for the proportion of members who are married or partnered to determine how many dependants' pensions will be paid. The 2015 scheme will extend provision to unmarried dependants. Assumptions are required about age differences between members and partners as this affects how long dependants' pensions will be paid for.

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[14] Pensions are also payable to dependent children on a member's death but the costs are not material overall.

Results of analysis

11.6 Approximately 211 pensioners died during the three-year period to 31 March 2012. We analysed the proportion of deaths giving rise to the payment of a surviving spouse's pension and the age of the dependants relative to the members. Further information on the data analysed and the results of that analysis are shown in the report The Judicial Pension Scheme: Actuarial Valuation as at 31 March for the Analysis of Experience, dated September 2014.

11.7 The recommendations for age differences between members and their spouses are broadly consistent with the results of the analysis. Given the relatively high proportion of members that are assumed to be married at retirement, we have assumed that the extension of provision to unmarried dependants would not have a material impact.

11.8 No cessations of widow or widower pensions as a result of remarriage were recorded in the data.

Financial impact

11.9 The approximate financial impact of the proposed change to the family statistics assumptions compared to those adopted in 2009 is set out in Table 11.1.

Table 11.1: **Approximate financial impact of proposed changes in family statistics assumptions**

	Past service effect*	SCR (2015-2019)
change to family statistics assumptions	+0.5%	immaterial

* (adjustment to contribution rate for 15 years from 2015)

Appendix A: Details of assumptions

This annex contains details of the recommended assumptions including sample rates and values.

Pensioner mortality

Table A1: Baseline mortality assumptions

Baseline mortality	Standard table[15]	Adjustment
Male	S1NMA	80%
Female	S1NFA	85%

As specified by HM Treasury, future improvements in mortality will be assumed to be in line with those underlying the most recent (i.e. 2012-based) principal ONS population projections for the UK.

Age retirement from service

Table A2: Age retirement rates for members with full and taper protection

Age	1993 Section		1981 Section	
	Males	Females	Males	Females
67	100%	100%	0%	0%
68	100%	100%	0%	0%
69	100%	100%	0%	0%
70 and over	100%	100%	100%	100%

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[15] SAPS tables are published by the Actuarial Profession and based on the experience of self-administered pension schemes over the period 2000 to 2006. The 'S1' series has separate standard tables based on experience of members retiring in normal health (S1NXA) and in ill health (S1IXA) and for dependants (S1DFA).

Table A3: Age retirement rates for members with service in 2015 scheme only and members with service in existing scheme and 2015 scheme but no protection

Age	SPA 65		SPA 66		SPA 67		SPA 68	
	Males	Females	Males	Females	Males	Females	Males	Females
67	100%	100%	0%	0%	0%	0%	0%	0%
68	100%	100%	100%	100%	50%	50%	0%	0%
69	100%	100%	100%	100%	100%	100%	100%	100%
70 and over	100%	100%	100%	100%	100%	100%	100%	100%

Ill-health retirement from service

Nil

Voluntary withdrawal from service

Nil

Death in service

Table A5: Death in service rates for all members

Age	Males	Females
20	0.0002	0.0002
30	0.0002	0.0002
40	0.0005	0.0003
50	0.0010	0.0007
60	0.0025	0.0015
65	0.0040	0.0022

Promotional pay increases

Increases are assumed to be 0.25% a year at all ages.

Commutation of pension for cash at retirement

The 1981 and 1993 Judicial Pension Schemes do not allow commutation of pension for cash at retirement. Instead all members receive a lump sum at retirement and therefore there is no need to set an assumption.

Members are assumed to commute 15% of their 2015 scheme pension.

Family statistics

Table A6:   Recommended proportion married, in a civil partnership or (2015 scheme only) with an adult dependant at retirement for all members

	Proportion married
Males	90%
Females	80%

For current pensioners, these rates are reduced after normal retirement ages; in line with ONS proportion married data.

Male members are assumed to be three years older than their partners and female members are assumed to be two years younger than their partners.

Appendix B: Analysis of Experience

This appendix contains the results of our analysis of experience including interim conclusions drawn at the time it conducted in September 2013.

Pensioner mortality

B.1   The pensioner mortality assumptions adopted for the Scheme's valuation as at 31 March 2005 and 31 March 2009, with related life expectancies, are set out below:

	2005 assumptions	2009 assumptions
Baseline mortality	PA92 tables	PA00 tables with improvements included to 2009
Current pensioners		
Future improvements	PA92 projections 2005 year of use tables	2006 ONS improvements projected to 2024
Future life expectancy at 65 (years)	19.5 years male 22.6 years female	23.6 years male 25.1 years female
Future pensioners (currently age 45)		
Future improvements	PA92 projections to 2025 with a -1 year age rating	2006 ONS improvements projected to 2049
Future life expectancy at 65 (years)	21.1 years male 24.0 years female	25.4 years male 27.0 years female

B.2   We have analysed the pensioner mortality experience over the 3 year period from 31 March 2009 to 31 March 2012. There were 222 exits from the pensioner data over the intervaluation period, of which 211 were pensioner (including spouses) deaths and 11 were other cessations of pensions. 121 of the deaths were of male former judicial office holders. Below is a graph showing the distribution of pensioner deaths over various ages over the 3 year period. Please note that this graph excludes 98 pensioner deaths over the 3 year period due to dates of birth being missing in the data provided.
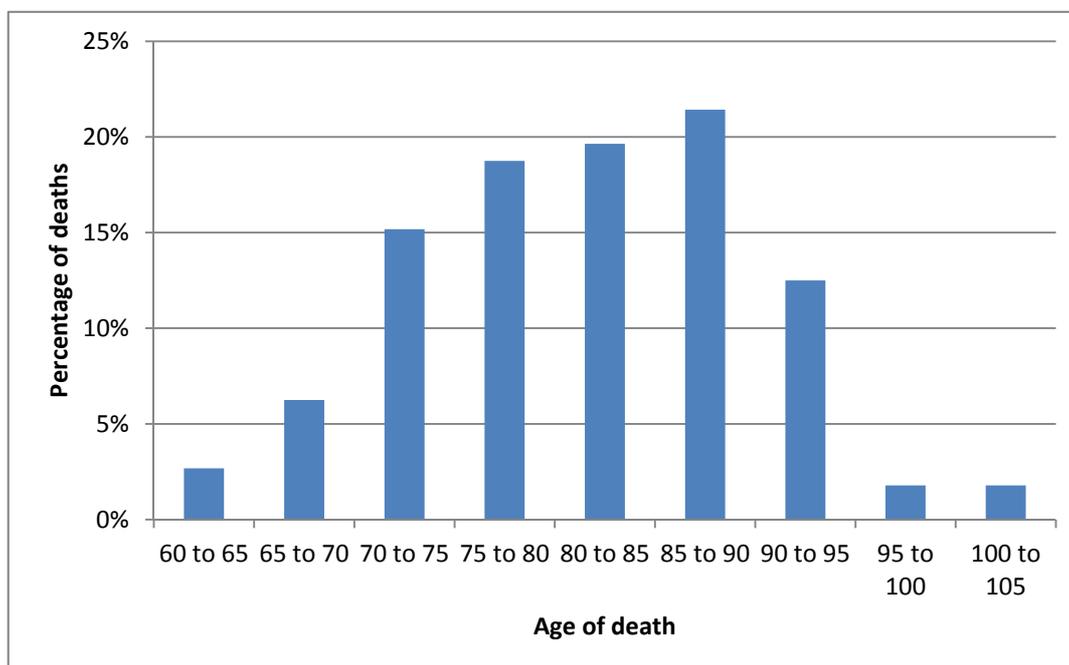
B.3 Mortality can be analysed on either a "lives" basis or an "amounts" basis. A lives basis gives an equal weighting to every member of the population being analysed. An amounts basis weights the experience by the size of each member's pension. There is much evidence to demonstrate that size of pension is positively correlated to longevity, i.e. those with a bigger pension live longer on average. Due to restrictions in the data available we have carried out our analysis on a "lives" basis. For the underlying population of JPS we consider this to be appropriate, since the population is relatively homogenous and we would not expect to see such a strong link between pension size and longevity as is seen in the wider population.

B.4 We have compared the mortality experience of the Scheme between 1 April 2009 and 31 March 2012 on a lives basis with that of the most appropriate S1 table. The S1 series of standard tables was published by the CMI and based on the experience of self-administered pension schemes over the period 2000 to 2006. Separate tables are available based on experience of members retiring in normal health, ill health and for dependants. We have compared to the S1 tables for male former judicial office holders only as the number of deaths over the period is too small for a further split to be credible.

B.5 The dates of birth for many of the pensioner deaths were missing. We therefore used the pensioner data at 31 March 2012 and 31 March 2009 with the probability of death from the standard S1NA-10 tables to derive an expected death rate for the population. We then compared this to the actual death rate. Using this approach the percentage adjustment on the S1NA-10 tables which provides the best fit with experience is 100%.

B.6   Using this "best fit" assumption along with an allowance for improvements in longevity in line with the 2010 ONS population projections would result in the following life expectancies:

	2012 proposed assumptions
Baseline mortality	S1NA tables possibly with an adjustment to reflect the experience observed in other large public sector pension schemes and allow for Judges lower expected mortality
Future improvements	2010 ONS projections, year of use 2012
Current pensioners	
Future life expectancy at 65 (years)	26.3years male 29.6 years female
Future pensioners – current age 45	
Future life expectancy at 65 (years)	28.6years male 32.0years female

B.7   The method we have used is very approximate and we would therefore not recommend using the results in isolation to form the basis of a mortality assumption. Also, since the data available relating to deaths is very limited this does not form a dataset which gives a credible result. Before making a recommendation we therefore propose to consider the mortality experience of other public sector pension schemes.

B.8   The 2009 valuation report set out the impact of increasing the assumed life expectancies by approximately one year, as follows:

Change in assumption	Approximate increase in the liabilities (%)	Approximate increase to liabilities (£m)
Assumed longevity increased by approximately one year	2.5% for all members	45

B.9   The impact of the assumptions at the 2012 valuation may be different to that above, because of changes in the scheme membership since 2009 and changes to other assumptions. However we would expect the impact at 2012 to be broadly consistent with that set out above.

Age Retirements from Service

B.10   The average age of retirement assumption adopted for the Scheme's valuation as at 31 March 2005 and 31 March 2009 are set out below:

Scheme	Age (years) as at 31 March 2005	Age (years) as at 31 March 2009
1993	68	67
1981	69	68

B.11   There were 310 normal retirements and 51 early retirements between 1 April 2009 and 31 March 2012. The average age of retirement excluding early retirements is 69.9 years for the 1981 scheme and 67.9 years for the 1993 scheme. After allowing for early retirements, the average retirement age is 69.7 years for the 1981 scheme and 66.8 years for the 1993 scheme. Overleaf is a graph showing the age distribution for retirements over the intervaluation period.
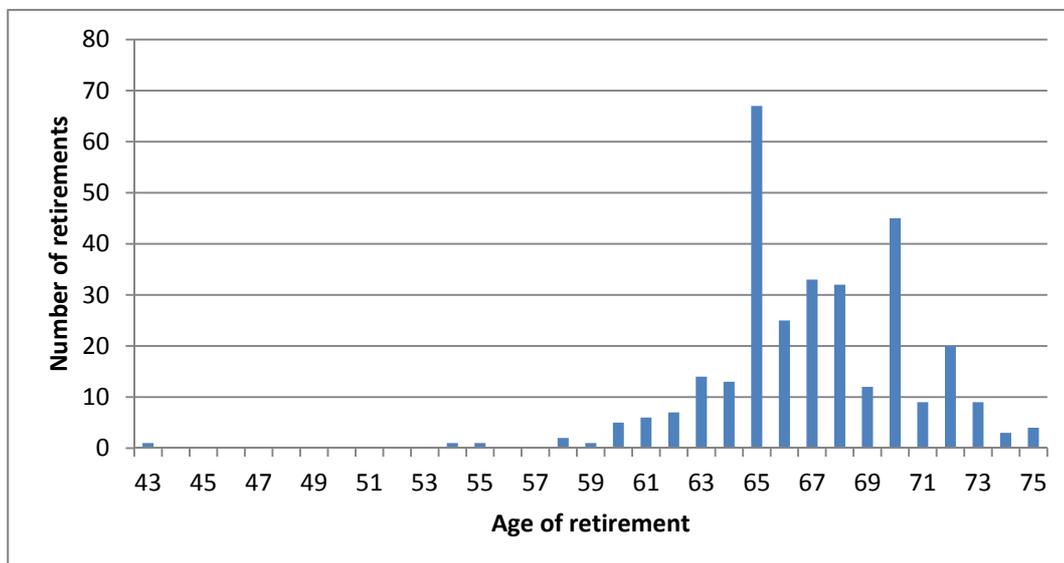
B.12   Based on this analysis it would not be unreasonable to adopt an assumption for the average age of retirement as at 31 March 2012 to be in line with experience, i.e. adopting an assumption of 70 years for the 1981 scheme and 67 years for the 1993 scheme.

B.13   Further thought will be needed prior to recommending an assumption because of the impact of transitional protection and accrued service on the timing of future retirement decisions.

Ill–health Retirement from Service

B.14   In 2009 a nil ill health retirement assumption was adopted. Between 1 April 2009 and 31 March 2012 there were 9 ill health retirements. Given such a small number of ill health retirements, it would not be inappropriate to adopt an assumption of nil ill health retirements.

Withdrawal

B.15   In 2009 a nil ill withdrawal assumption was adopted. Between 1 April 2009 and 31 March 2012 there were 6 withdrawals. Given such a small number of withdrawals, it would be appropriate to continue to adopt an assumption of nil withdrawals.

Death in Service

B.16   At 31 March 2009 the PNA00 mortality tables, with longevity improvements to 2011 (the mid-point of the following intervaluation period) was adopted, for consistency with the mortality tables adopted for current and future pensioners.

B.17   There were 12 deaths in service between 1 April 2009 and 31 March 2012, around half the expected number.

B.18   Due to the lack of credible data for a detailed analysis, it would not be unreasonable to adopt an assumption to reflect the experience of large public sector pension schemes, with an adjustment to allow for Judges lower expected mortality.

Promotional Pay Increases

B.19   In 2009 no allowance was made for promotions due to the small numbers of promotions which occurred. Between 1 April 2009 and 31 March 2012 there were 133 promotions (equating to around 6% of the active membership). The average salary increase due to a promotion was 13%. This would indicate that overall the salary increase due to promotion was around 0.25% per year.

B.20   The most important aspect of a salary scale is its steepness, which represents the extent to which salaries are expected to increase due to promotional and career progression factors (rather than increases in general pay levels) between a given age and assumed age at retirement (or earlier exit).

B.21   The 2009 valuation report set out the effect of introducing a salary scale of 0.5% pa across the board, as follows:

Change in assumption	Approximate increase in the liabilities (%)	Approximate Increase to liabilities (£m)
Salary scales of 0.5% pa across the board	3% for actives	30

B.22   The impact of the proposed assumptions at the 2012 valuation may be different to the above, because of changes in the scheme membership since 2009. However we would expect them to be broadly in line with the impacts set out above.

B.23   Note that there would be negligible impact on the cost of accrual in the 2015 scheme because all benefit accrual in that scheme will be on a career-average basis; salary scales only have a material effect on the cost of future accrual if benefits are provided on a final-salary basis.

Commutation of Pension for cash at retirement

B.24   The Judges' Pension Scheme does not allow commutation of pension for cash at retirement. Instead all members receive a lump sum at retirement and therefore no evidence is available to set an assumption.

Family statistics

B.25   In 2009, 90% of male active members were assumed to be married, with a lower rate assumed for females. The proportion of married members was then assumed to steadily reduce after normal retirement age in line with the mortality assumption.

B.26   At 31 March 2012 there were 2,227 members in the active data set. 87.1% of the membership was either married or in a civil partnership, 12.7% were single, widowed or divorced and 0.2% was not given a marital status.

B.27   The actual experience is therefore in line with the existing proportion married assumptions, and therefore it would not be unreasonable to retain them.