



# Government Actuary's Department

## **NHS Superannuation Scheme (Scotland): Actuarial valuation at 31 March 2012**

Report on data used for experience analysis

Date: 20 January 2015

Author: Sue Vivian



## Contents

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>Description of data provided</b>	<b>4</b>
<b>3</b>	<b>Summary of membership movements</b>	<b>6</b>
<b>4</b>	<b>Limitations of analysis based on data</b>	<b>8</b>
	<b>Appendix A: Actives movement data</b>	<b>9</b>
	<b>Appendix B: Pensioner movement data</b>	<b>11</b>
	<b>Appendix C: Description of valuation groups</b>	<b>13</b>
	<b>Appendix D: Description of pensioner groups</b>	<b>14</b>
	<b>Appendix E: Key items of exposed to risk data</b>	<b>15</b>



## 1 Introduction

- 1.1 This report is addressed to the Scottish Public Pensions Agency (SPPA) as the agency appointed by Scottish Ministers to administer and manage the National Health Service Superannuation Scheme (Scotland) ('the Scheme' or 'NHSS'). It is also being made available to the Scottish Pensions Group (SPG). The report should not be reproduced or disseminated to other parties without prior consent. The Government Actuary's Department (GAD) does not accept any liability to third parties, whether or not it has agreed to the disclosure.
- 1.2 The purpose of this report is to discuss and summarise the member experience data provided and to be used for the purposes of analysing the Scheme's experience over the period 1 April 2008 to 31 March 2012. The purpose of this document is to ensure that users of the valuation report understand the issues relating to the data used and in particular those issues that may have a material impact on the valuation result.
- 1.3 Membership data used for the actuarial valuation calculations are the subject of a separate report.
- 1.4 All data, provided and discussed in this report were supplied by SPPA. Resource accounts for the relevant period are publicly available.
- 1.5 Throughout this report the totals given for summed data may not be exactly the same as the sum of the components shown due to rounding effects.
- 1.6 In preparing this report, GAD has relied on data and other information supplied by SPPA as described in the report. Any checks that GAD has made on this information are limited to those described in the report, including any checks on the overall reasonableness and consistency of the data. These checks do not represent a full independent audit of the data supplied. In particular, GAD has relied on the general completeness and accuracy of the information supplied without independent verification.
- 1.7 A draft of this report was provided to SPPA in September 2013. It has been signed alongside the formal valuation report. No substantive changes have been made.



## 2 Description of data provided

2.1 Data was supplied for members joining and exiting active service and in respect of members joining or exiting pensioner status over the inter-valuation period<sup>1</sup>, in accordance with the "Data Specification for Funding and Accounting Valuations of the NHSS" dated 14 March 2011.

### Movement data – actives

- 2.2 SPPA provided data in respect of members joining or exiting active service over the inter-valuation period as follows:
- > as individual member records recording every time that any member joined or exited active service, and
  - > as 18 separate tables for each valuation group, reconciling movements in and out of active service at each age. These tables also provide the numbers in each group at the start and end of each year. This data is required to enable the 'exposed to risk' to be determined (see paragraphs 2.8 - 2.9). Some data requested in the data specification report was missing and so some analysis was restricted (see Section 4).
- 2.3 The data items provided in respect of the above are set out in Appendix A.

### Movement data – pensioners

- 2.4 SPPA provided data in respect of pensioner deaths and new pensioners occurring over the inter-valuation period as follows:
- > as individual member records recording every time that any member joined or exited pensioner status, and
  - > as 15 separate tables for each pensioner group, reconciling movements in and out of each group at each age.
- 2.5 The data items provided for each member are set out in Appendix B.
- 2.6 The data also indicates whether a member's death gives rise to payment of a pension to a dependant. This information is intended to allow analysis of family statistics ie to inform the appropriate assumptions of proportions married or with an eligible dependant. From the data provided, however, this analysis was not conclusive (see Section 4).
- 2.7 In addition, the data provides information on commutation of pension for a tax-free lump sum for members taking their retirement benefits over the inter-valuation period. This information is intended to allow analysis to inform the assumptions around commutation at retirement. From the data provided, however, this analysis was not possible (see Section 4).

---

<sup>1</sup> The period 1 April 2008 to 31 March 2012 for the purposes of this report



### **Exposed to risk data**

- 2.8 In order to compare actual experienced movements with expected movements based on assumptions adopted for previous valuations it is necessary to determine 'exposed to risk' populations. As a minimum the populations, split by all the criteria by which assumptions are applied, at the start and end of the inter-valuation period are required. This data is provided at the start and end of each year of the inter-valuation period in the tabulated movements data (although the tabulated data does not separate data by membership section (ie 1995 or 2008 section) which is relevant for some movement types. The valuation data itself is an alternative source of exposed to risk data (at the start and end of the inter-valuation period). The limitations of the valuation extract routine at the 2008 valuation (when only data grouped by age and valuation group) was available, means that suitably segregated populations as at the beginning of the inter-valuation period are not available from this source. There was some inconsistency in the exposed to risk data provided in the tabulated movements data and the valuation data as at 31 March 2008 and 31 March 2012. These issues have restricted the scope of the analysis which could be undertaken.
- 2.9 The key items of the exposed to risk data as required to complete a robust experience analysis for actives and pensioners is shown in Appendix E.

### **Accounting information**

- 2.10 Published resource accounts were available for the full inter-valuation period. It is noted that full movements data has only been published in the resource accounts since 2011/12.

### **Additional data**

- 2.11 Additional data was provided for ill health retirements indicating the numbers retiring with either Tier 1 or Tier 2 awards.



### 3 Summary of membership movements

3.1 The table below summarises the membership movements over the inter-valuation period compared to the corresponding figures based on information published in the resource accounts. There are some differences and we comment on these further below.

	Valuation data		Resource accounts
<b>Actives</b>			
<b>Number at 31/3/08</b>	<b>Valuation extract</b>	<b>Movement data</b>	
	151,033	149,652	158,532 <sup>(2)</sup>
	<b>Individual movement data</b>	<b>Tabulated movement data</b>	
<b>Additions</b> • New entrants, rejoiners and re-employed	31,101	33,823	N/A <sup>(3)</sup>
<b>Deductions:</b> • Deaths • Retirements • Withdrawals	439 10,616 30,205	0 11,676 32,377	N/A <sup>(3)</sup>
<b>Number expected 31/3/12</b>	139,422 – 140,874 <sup>(1)</sup>		N/A
<b>Number at 31/3/12</b>	<b>Valuation extract</b>	<b>Movement data</b>	
	149,395	139,956	162,376 <sup>(2)</sup>
<b>Deferreds</b>			
<b>Number at 31/3/08</b>	75,446		62,013
<b>Additions</b>	N/A <sup>(4)</sup>		N/A
<b>Deductions</b>	N/A <sup>(4)</sup>		N/A
<b>Number expected 31/3/12</b>	N/A <sup>(4)</sup>		N/A
<b>Number at 31/3/12</b>	52,711 <sup>(5)</sup>		53,812
<b>Pensioners</b>			
<b>Number at 31/3/08</b>	<b>Valuation extract</b>	<b>Movement data</b>	
	70,208	60,905 <sup>(6)</sup>	71,395
	<b>Individual movement data</b>	<b>Tabulated movement data</b>	
<b>Additions</b>	11,836 <sup>(6)</sup>	18,130 <sup>(6)</sup>	N/A <sup>(7)</sup>
<b>Deductions</b>	3,753 <sup>(6)</sup>	4,386 <sup>(6)</sup>	N/A <sup>(7)</sup>
<b>Number expected 31/3/12</b>	N/A <sup>(6)</sup>		N/A
<b>Number at 31/3/12</b>	<b>Valuation extract</b>	<b>Movement data</b>	
	80,363	73,721 <sup>(6)</sup>	80,501



- (1) This is dependent on the combination of starting position and movement information used.
- (2) This figure is number of contracts rather than number of members.
- (3) This data is not available. Only movement information for the year ending 31 March 2012 is available. For actives the 2011/12 resource accounts showed 14,800 additions and 19,700 deductions.
- (4) Deferred movements data was not requested or provided for the valuation.
- (5) An additional 28,662 members are eligible for a refund of contributions.
- (6) Movement data for pensioner members was only available for a subset of the pensioner population (approximately 87%). The movements shown are therefore known to be incomplete.
- (7) This data is not available. Only movement information for the year ending 31 March 2012 is available. For pensioners the 2011/12 resource accounts showed 5,200 additions and 2,900 deductions.

- 3.2 Due to the inconsistency in active membership reporting between the resource accounts and the valuation data (number of contracts are reported in the accounts, compared to number of members in the valuation data), it is not possible to directly compare the number of active members in the valuation data with the numbers shown in the resource accounts.
- 3.3 The numbers of deferred and pensioner members as at 31 March 2012 included in the valuation data and shown in the resource accounts are broadly consistent.
- 3.4 Movements data for deferred members was not requested or provided in the valuation data.
- 3.5 Full movements data has only been reported in the resource accounts since 2011/12 and so it has not been possible to compare the numbers of movements in the valuation data with those reported in the resource accounts.



## 4 Limitations of analysis based on data

- 4.1 The data described in this report is to be used to inform the process of setting assumptions for the valuation to be undertaken as at 31 March 2012. Past experience over a particular period does not necessarily correlate to an exact expectation for a particular future period. Therefore the weight that is attached to the precise outcome of the inter-valuation experience analysis depends on the analysis itself and an assessment of the extent to which recent experience is a guide to the future.
- 4.2 Where other information is considered as part of the process of agreeing assumptions for the valuation such information will be discussed within the report providing our advice on those assumptions.
- 4.3 There is some inconsistency between the two sets of movements data provided for the valuation and between the exposed to risk data within the movements data and the valuation data itself. Neither set of movements data allows a close reconciliation between the data as at 31 March 2008 and as at 31 March 2012. This implies there is either some misreporting of movements (ie the movements data provided is to some extent unreliable) or the exposed to risk' data (ie the valuation data as at 31 March 2008 and as at 31 March 2012) is inconsistent. This means any analysis of the data provided must be interpreted with caution. It may be viewed as useful to support other evidence but is unlikely to be sufficiently reliable to set assumptions directly.
- 4.4 The data specification requested 30 sub tables of information to be provided for active members (see Appendix A) so that members would be split by valuation group and section (ie 1995 or 2008 Scheme). However, only 18 sub tables were provided so that the section distinction was not possible. This has restricted analysis for some types of analysis where section is important such as age retirement experience.
- 4.5 A particular issue for pensioners is that records are stored on two systems, the pension administration system and the pension payroll system, with movements data being extracted from the administration system. Some 87% of pensioner records are held on both systems, with around 13% being held on the payroll system only. These pensioner records were migrated in from an outsourced pension payroll provider in 2007 and do not contain all the information GAD require to undertake the mortality assessment. Unless the profile of pensioners stored on both systems is identical the proportion of movements included in the data will not necessarily be 87% of the total movements. Some analysis of the data suggests that the experience data provided might not be representative of the whole population.
- 4.6 In addition, the pension data was not sufficient to allow a commutation analysis to be carried out conclusively. It was not possible to reconcile amounts of pension commuted with total pension figures in a way that it was clear exactly how much pension had been commuted.
- 4.7 Within the pensioner movement data, the proportion of deaths attributed to members and dependants did not seem to be realistic and so a proportions with dependants analysis could not be carried out.



## Appendix A: Actives movement data

The following data was provided separately for each year of the inter-valuation period for active staff who joined / rejoined or left the Scheme during that year:

### Table 1E(a) - Actives Exit Analysis

For every time that any member joined or exited active service during the extract year, a record was included in this table for that member.

#### Required fields

- a. identifier of member;
- b. gender;
- c. valuation group at date of entry/exit;
- d. date of birth;
- e. method of entry/exit.

Other fields – these should be present and correct in the majority of records

- f. date of entry/exit;
- g. section entry/left – 1995 or 2008;
- h. WTE pensionable pay at date of entry/exit;
- i. Calendar service at join/exit including past periods of service.

### Table 1E(b) - Actives Movements

This table should contain 30 sub-tables. The first 18 relate to the 18 valuation groups as specified in Appendix C, and are restricted to members in the 1995 section of the Scheme. The other 12 relate to the 12 open valuation groups (1/11, 3/13, 5/15, 7/17, 8/18, 10/20) and are restricted to members in the 2008 section of the Scheme. Each sub-table is as follows:





## Appendix B: Pensioner movement data

For pensioners and dependants whose pension started or ceased during each year in the inter-valuation period, we were provided with the following details for each individual:

### Tables 2E(a) - Pensioner Movements

A record is created for any time that any member or dependant enters or exits pensioner status during the extract year.

#### Required fields

- a. identifier (for dependants, the identifier of the member);
- b. gender (for dependants, the gender of the dependant);
- c. date of birth (for dependants, the date of birth of the dependant);
- d. reason for entry to/exit from pensioner status;
- e. pensioner group.

#### Other fields – these should be present and correct in the majority of records

- f. date of entry/exit;
- g. pension amount at entry/exit including pension increases to that date (after any commutation for (additional) lump sum for commencements);
- h. (for commencements only) before commutation, amount of pension which has the commutation option;
- i. (for commencements only) lump sum payable before commutation;
- j. (for commencements only) lump sum payable after commutation.



**Table 2E(b) - Pensioners Movements**

This table contains 15 sub-tables – one relating to pensioners from each of the pensioner groups (as specified in Appendix D). Each sub-table is as follows:

A. Age (completed years) at start of extract year	B. Number of pensioners at start of extract year	C. Number started receiving pension in extract year (including first drawdown of phased retirement)	D. Number who joined this pensioner group by making a second or subsequent phased retirement drawdown during the extract year	E. Number died with no spouse/partner pension payable	F. Number died with spouse's pension payable	G. Number died with partner's pension payable	H. Number stopped due to marriage or cohabitation	I. Number stopped due to trivial commutation	J. Number stopped for serious ill-health commutation	K. Number stopped due to age or education status of child dependants	L. Number who left this pensioner group by making a further phased retirement drawdown during the year	M. Number stopped for any other reason	N. Number of pensioners at end of extract year
16													
..													
50													
51													
52													
53													
..													
120													

Of note is that not all the above columns are relevant to all pensioner groups. If a member moves multiple times during the year, they may be counted in numerous cells, and in the same cell more than once.

The data specification was deficient in that gender details were not requested. This has meant that some analysis where the exposed to risk information is required to be split by gender has been restricted.



## Appendix C: Description of valuation groups

Description		Valuation Group
Administrative and managerial staff not in GP practices	Men	1
	Women	11
Non-manual MHOs (including those not yet doubling service)	Men	2
	Women	12
Manual staff (not MHOs)	Men	3
	Women	13
Manual staff (MHOs)	Men	4
	Women	14
Clinical staff not in any other group	Men	5
	Women	15
Medical Practitioners	Men	7
	Women	17
Dental Practitioners	Men	8
	Women	18
Nurses, physiotherapists, midwives and health visitors with special class status	Men	9
	Women	19
GP practice staff (except Practitioners and those with special class status who are included in the appropriate groups above)	Men	10
	Women	20



## Appendix D: Description of pensioner groups

<b>Reason for Pension</b>	<b>Pensioner group</b>
Age retirement (including preserved pension coming into payment without actuarial reduction)	A
Ill health retirement (on pre-2008 terms)	B
Ill health retirement (on post-2008 terms with higher tier benefits)	C
Ill health retirement (on post-2008 terms with lower tier benefits)	D
Actuarially reduced retirement (including early payment of preserved benefits)	E
Approved early retirement (accrued benefits without actuarial reduction)	F
Compulsory or premature early retirement (accrued benefits with service enhancement)	G
Phased retirement (in receipt of pension from first draw down, but still in active service)	H
Phased retirement (in receipt of pension from two draw downs, but still in active service)	I
Widow or widower (including pensions paid to widow or widower as a result of allocation)	J
Surviving civil partner, including nominated partner	K
Child (not incapacitated)	L
Child (incapacitated)	M
Pension credit member	N
Unknown or reason not included in above list	O



## Appendix E: Key items of exposed to risk data

Individual member data required as a minimum at start and end of inter-valuation period in order to carry out a robust experience analysis. Ideally, this data would be provided at each intermediate year end within the inter-valuation period.

### 1. Active members

- > Valuation group (also identifies gender) (see Appendix C)
- > Section of the Scheme (ie 1995 or 2008)
- > Unique identifier (system generated)
- > Date of birth
- > Date first joined the Scheme
- > Date of most recent entry into reckonable service
- > Actual annual pensionable pay at the yearend (annualised equivalent for those not in service for full year)\*
- > Whole time equivalent (WTE) annual pensionable pay at the yearend\*
- > Total reckonable service.

\*whilst not required for exposed to risk calculations this data is required for a robust pay analysis

### 2. Pensioners and Dependants

- > Section of the Scheme (ie 1995 or 2008)
- > Unique identifier (system generated)
- > Gender
- > Date of birth
- > Pensioner group (grouping based on reason for pension coming into payment eg age retirement, ill-health retirement, child of deceased pensioner etc)
- > Pre-retirement valuation group (see Appendix C)
- > Date pension payment commenced
- > Total pension in payment including increases to the extract date (Long-term rate if short-term rate in payment. After abatement if applicable, and excluding any employer-funded enhancement)
- > Total prospective spouse's pension including increases to the extract date and excluding any employer-funded enhancement (Required for all members).