The Pensions Regulator

Governance survey 2008

Technical appendices

Ipsos MORI

Research study conducted
for the Pensions Regulator

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Contents

1. Sampling frame overview

1.1 Overall survey objective

The study was designed to gain a broad understanding of current (2007/08) practice in pension scheme administration and governance among 'live' trust-based private sector pension schemes. Details of the survey methodology and the findings from the study can be found in the separate main report.

1.2 Target population and sampling frame

The target population of pension schemes that the survey covers are **'live' trust-based private sector pension schemes**, both defined benefit (DB) and defined contribution (DC) schemes. Except where otherwise indicated, hybrid and segregated schemes are classified as DB.

The SCORE database was used as the sampling frame for the survey, as at 23 November 2007. The Pensions Regulator was able to exclude all ineligible schemes at source, except for small self-administered schemes (SSASs) which the SCORE database does not identify. After excluding ineligible schemes and duplicates, schemes registered as live in the SCORE database were reduced to 7,454.

The Pensions Regulator provided Ipsos MORI with this sample of 7,454 schemes, recognising that some inaccuracies would be identified during survey screening and would lead to further exclusions of schemes. A list of the eligible and ineligible schemes can be found in Table 1 (see below).

1.3 Issues of coverage

Very small private trust schemes, as defined by membership, were excluded from the research. In the 2006 Occupational Pension Schemes Annual Report[1] very small schemes[2] were estimated to account for 79% of all schemes, but these schemes were responsible for only around 1% of active members.

The decision to exclude them was taken on pragmatic grounds. From the same survey it was estimated that 80% of active members of these very small schemes were from small self-administered schemes and would therefore be ineligible for this survey. Including these very small schemes would lead to over-coverage in the sampling frame

[1] http://www.statistics.gov.uk/downloads/theme_population/Occ-pension-2006/OPSS_Annual_Report_2006.pdf

[2] Occupational pension schemes which have between 2 and 11 members

and screening out such 'ineligible' schemes would be prohibitively time-consuming, within the fieldwork parameters. These schemes were therefore excluded from the sampling frame.

All schemes that had been *contacted to take part* in the Pensions Regulator's 'DC Risk' and 'Self Service' surveys or *had taken part* in the Pensions Regulator's 'Perceptions Tracker' survey were excluded from the sampling frame, as these surveys had recently been conducted and the decision was taken to avoid over-contacting those schemes. This comprised 2,085 of the 7,454 eligible schemes in the survey's sampling frame.

It is worth noting that there will be some **under-coverage** in the survey's sampling frame, as it does not include all of the eligible DB schemes with fewer than 12 members and DC schemes with fewer than five members or any of the 2,085 eligible schemes from the three surveys listed above.

Table 1 – Population and sampling frame

Population	**Sampling frame**	**Ineligible schemes**
Private sector	Private sector	Public sector schemes
Live schemes (classified as open, closed or frozen)	Live schemes	All private sector winding up or wound-up schemes
Trust-based schemes	Trust-based schemes and small self-administered schemes (SSASs)	All private sector contract-based schemes, including GPPs, stakeholder pensions, SIPPs and SSASs
Defined Benefit (DB) and Defined Contribution (DC)	DB (12+ members) and DC (5+ members)	

2. Sampling methodology

The overall survey sampling frame comprised a target of 500 interviews across all seven strata, with a minimum of 50 interviews in any one stratum so that comparisons could be made between them. Based on the expected non-response, ineligibility and non-contact rates from the previous wave it was estimated that a sample of 2,200 pension schemes would achieve approximately 500 interviews.

Using an optimal Stratified Random Sampling[3] (STRS) design, Ipsos MORI estimated the sample required per stratum based on a total sample of 2,200. The purpose of the STRS design was to maximize the precision of survey estimates given our sample size, by giving a higher probability of selection to schemes with a larger number of members.

However, this design does not take into account the requirement to achieve a minimum number of achieved interviews in each stratum. By forcing these constraints into the sampling design a more appropriate distribution of the sample across the strata was obtained but with the negative effect of reducing the precision of our estimates.

2.1 Drawing the sample

At the first step the pension schemes in the sampling frame were stratified by size and type into seven strata. These strata can be seen in Table 2, column 1 (see below). At the second stage, the sample size required per stratum was calculated based on the optimal STRS design, by making use of the scheme membership size information on the score database to calculate approximate estimates of within strata variance S_i^2.

At the third stage, information from the 2006/07 survey on differential ineligibility, non-contact and non-response rates by stratum were used to make adjustments to the STRS sample sizes so that at least 50 interviews would be achieved in each stratum. The final sample size required in each stratum can be found in column 4 of Table 2.

At the final stage, the schemes within each stratum were ordered based on their membership size from the score database and a one in N sample was taken within each stratum. This guaranteed that the schemes selected in each stratum were reflective of the spread in membership size of all the schemes within each stratum. The sampling fraction (number sampled/total number in universe) for each stratum is given in the last

[3] Neyman allocation is an optimal (STRS) technique that finds the sample size required in each stratum to obtain the smallest variance in the survey estimates. Using Neyman allocation the 'best' sample size for stratum *h* would be:

$$n_h = n * (N_h * S_h) / [\Sigma (N_i * S_i)]$$

where n_h is the sample size for stratum *h*, n is total sample size, N_h is the population size for stratum *h*, and S_h is the standard deviation of stratum *h*.

column of Table 2 as a percentage. As shown in the table below, for two of the seven strata a census of all schemes was taken.

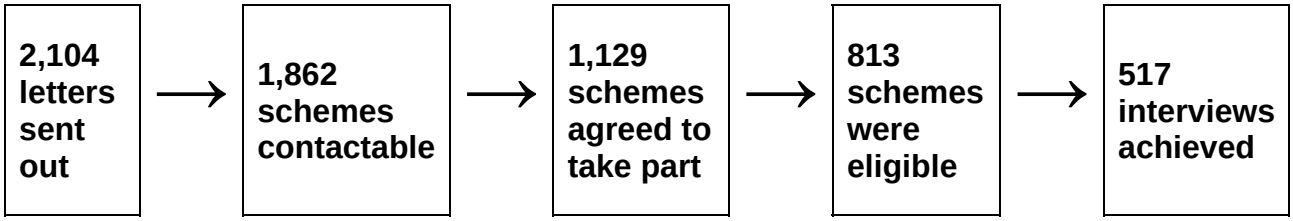
Table 2 – Sample design

Strata	Sampling frame	STRS optimal allocation	Optimal allocation given minimum and maximum constraints and expected contact / eligibility / response rates	Percentage sampled (to nearest %)
DB (5-99 members)	1,799	47	170	9
DB (100-999 members)	2,935	686	305	10
DB (1000-4999 members)	758	761	266	35
DB (5000+ members)	261	261	261	100
DC (12-99 members)	1,035	23	713	69
DC (100-999 members)	562	125	285	51
DC (1000+ members)	104	104	104	100
Total	**7,454**	**2,200**	**2,104**	**29**

2.2 Number of interviews

2,104 schemes were selected to take part in the survey. Each of these schemes was contacted by letter to inform them about the survey. By the end of fieldwork Ipsos MORI had contacted 1,862 of these schemes by phone.

Of the 1,862 contacted, 733 refused to take part in the survey (either when contacted or during interviewing), 316 were ineligible, 190 were not available during fieldwork and 106 were out of quota. This left 517 schemes where we achieved a complete interview.



A breakdown by stratum of the 517 achieved interviews can be found in Table 3 (see below).

Table 3 – Number of interviews achieved in each stratum

149 DC schemes		
DC 12-99	DC 100-999	DC 1000+
55	51	43

368 DC schemes (DB, Hybrid and Segregated)			
DB 5-99	DB 100-999	DB 1000-4999	DB 5000+
44	90	116	118

3. Universe building

In order to calculate the estimated universe of eligible pension schemes in the sampling frame it was necessary to take account of the unequal probabilities of selection used in the optimal stratified sample design, namely:

- contact success rates, and
- screener response rates.

Once these factors had been accounted for, the universe could be estimated based on multiplying the total sample in the sampling frame by the proportion of eligible schemes found in the sample from the total number of schemes who were screened for eligibility.

Table 4 (see below) provides the universe estimates for each stratum. Please note that the eligibility of a scheme could be separated into two parts:

1. the proportion found to be eligible for the stratum that they were originally sampled from, and
2. the proportion found to be eligible for a different stratum other than the one they were originally sampled from (eg a scheme taken from the SCORE database as DC 12-99 found to be DC 100-999).

Table 4 – Total universe size calculations

		Strata						
	Total	**DB 5-99**	**DB 100-999**	**DB 1000-4999**	**DB 5000+**	**DC 12-99**	**DC 100-999**	**DC 1000+**
Sample frame	**7,454**	1,799	2,935	758	261	1,035	562	104
Sample selected	**2,104**	170	305	266	261	713	286	104
Design weight		**10.58**	**9.62**	**2.85**	**1.00**	**1.45**	**1.97**	**1.00**
Sample screened	**968**	103	160	166	155	219	107	58
Screener non-response weight		**1.65**	**1.91**	**1.60**	**1.68**	**3.26**	**2.66**	**1.79**
Eligible	**696**	65	128	148	145	89	69	52
Eligible for this cell	**608**	58	114	126	128	77	58	47
Eligible for another cell of which:	**88**	7	14	22	17	12	11	5
Eligible for DB 5-99	**14**		9	1	0	3	1	0
Eligible for DB 100-999	**22**	5		12	0	2	2	1
Eligible for DB 1000-4999	**20**	0	4		15	0	1	0
Eligible for DB 5000+	**6**	0	0	6		0	0	0
Eligible for DC 12-99	**6**	2	0	0	0		4	0
Eligible for DC 100-999	**13**	0	1	1	0	7		4
Eligible for DC 1000+	**7**	0	0	2	2	0	3	

Table 4 – Total universe size calculations (continued)

		Strata						
	Total	**DB 5-99**	**DB 100-999**	**DB 1000-4999**	**DB 5000+**	**DC 12-99**	**DC 100-999**	**DC 1000+**
Universe Building								
Universe estimates for schemes originating in correct stratum	**4648**	1,013	2091	575	216	364	305	84
Additional universe estimates for schemes originating in another strata	**632**	189	164	104	27	56	63	28
From sample in DB 5-99		0	87	0	0	35	0	0
From sample in DB 100-999		165	0	73	0	0	18	0
From sample in DB 1000-4999		5	55	0	27	0	5	9
From sample in DB 5000+		0	0	25	0	0	0	3
From sample in DC 12-99		14	9	0	0	0	33	0
From sample in DC 100-999		5	11	5	0	21	0	16
From sample in DC 1000+		0	2	0	0	0	7	0
Total estimated universe	**5,280**	**1,202**	**2,255**	**679**	**243**	**420**	**368**	**113**

In the last row of Table 4 the total estimated universe for each stratum is given. This is equal to:

Design weight (1/(proportion of stratum sampled)) * Screener non-response rate (1/(proportion of stratum who were selected to sample who went through the screening process)) * the number of eligible schemes in stratum.

For example, looking at the DB 5-99 stratum, the estimated universe is equal to 1,202 and using the above calculation we get:

10.58 * 1.65 * 65 = 1,135 eligible schemes in stratum universe.

However, this is not the total (1,202) shown in the last row of Table 4. The reason for this difference is that not all the schemes sampled from this stratum based on the sampling frame (SCORE database) are from this stratum. When the schemes were screened, it became clear that some were incorrectly classified to the wrong stratum. Therefore in order to obtain unbiased estimates of the universe for each stratum we needed to take these inconsistencies into account.

To do this we calculated the universe of schemes originating in correct strata and added to this the universe of schemes originating from incorrect strata (eg those schemes not classified as DB 5-99 in the SCORE database but found to be during screening).

For the DB 5-99 stratum this was calculated as

(10.58 * 1.65 * 58 = 1013) + (9.62 * 1.91 * 9 = 165) +

(2.85 * 1.60 * 1 = 5) + (1.45 * 3.26 * 3 = 14) + (1.97 * 2.66 * 1 = 5) = 1,202

3.1 Splitting the universe into MNT and MND[4] schemes

As part of the screening process, Ipsos MORI identified the incidences of schemes for which MNT and MND rules applied. Proportions varied by cell and, by applying them to the overall universe estimate in each case, separate MNT and MND universes were estimated. Table 5 (below) provides the estimated universes for MNT and MND schemes.

Table 5 – Estimated MNT and MND universe

		Strata						
	Total	**DB 5-99**	**DB 100-999**	**DB 1000-4999**	**DB 5000+**	**DC 12-99**	**DC 100-999**	**DC 1000+**
Total Estimated Universe	**5,280**	**1202**	**2,255**	**679**	**243**	**420**	**368**	**113**
MNT proportion from screening process		81%	72%	54%	36%	54%	72%	57%
MND proportion from screening process		19%	28%	46%	64%	46%	28%	43%
Estimated MNT universe	**3,607**	968	1629	366	87	229	264	65
Estimated MND universe	**1,672**	234	626	313	156	191	104	48

Overall there are an estimated 3,607 schemes where MNT rules apply and 1,672 where MND rules are relevant.

[4] Member Nominated Trustee (MNT) or Member Nominated Director (MND)

4. Weighting

4.1 Weighting the data for non-response

Having calculated universe estimates for all schemes and for MNT and MND schemes, it was possible to weight each of the 517 main stage interviews, with weighting for differential non-response based on the relationship between the universe estimate for each strata and the number of interviews conducted in it.

It was necessary, however, to introduce some limited modifications to the weighting process as a consequence of small interview numbers when some fairly small strata were divided between MNT and MND schemes.

Ideally, weighting would have been based on a 14-cell matrix. This is shown in Table 6 (below), which also summarises the number of interviews completed and the universe estimate for each of the 14 cells.

Table 6 – 14-cell weighting matrix

		Strata						
	Total	**DB 5-99**	**DB 100-999**	**DB 1000-4999**	**DB 5000+**	**DC 12-99**	**DC 100-999**	**DC 1000+**
Total Estimated Universe	**5,280**	**1202**	**2,255**	**679**	**243**	**420**	**368**	**113**
Estimated MNT universe	3607	968	1629	366	87	229	264	65
Estimated MND universe	1672	234	626	313	156	191	104	48
MNT interviews	320	42	74	61	39	32	42	30
MND interviews	197	8	25	46	75	19	9	15
Number of schemes each MNT interview would represent		23	22	6	2	7	6	2
Number of schemes each MND interview would represent		29	25	7	2	10	12	3

Due to the low numbers of interviews conducted in most of the MND strata, the decision was taken that it would be statistically prudent to apply an overall weight across all DC MND schemes and also across all DB MND schemes in the three size ranges of 5-99, 100-999 and 1,000-4,999 members.

Therefore, in producing weighted tables of survey data, a 10-cell rather than 14-cell weighting matrix was used, as shown in Table 7 (below).

Table 7 – 10-cell weighting matrix

Weighting cell	Schemes interviewed	Universe estimate	Schemes represent
MNT schemes			
DC 12-99	32	229	7.2
DC 100-999	42	264	6.3
DC 1,000+	30	65	2.2
DB 5-99	42	968	23
DB 100-999	74	1,629	22
DB 1,000-4,999	61	366	6
DB 5,000+	39	87	2.2
MND schemes			
All DC	43	343	8
DB 5-4,999	79	1,174	14.9
DB 5,000+	75	156	2.1

As a consequence of this approach, the weighted results from the survey (in 10 cells) do not produce entirely accurate estimates for the number of schemes in each cell of the 14-cell matrix. The level of inaccuracy is small, however, and likely to be less damaging to overall statistical robustness than grossing up using the original number of weighting cells, where some weights would have been based on very small cell sizes.

The differences in approach, and outcome, are summarised in Table 8 (below). This also demonstrates that differences between actual estimated cell sizes and those used to weight interview results occur only with respect to MND schemes.

The weights based on 10 cells were applied to the raw data to provide the overall weighted survey findings.

Table 8 - MNT and MND universe estimates compared with apparent universe sizes derived from merging cells for weighting purposes

		Strata						
	Total	**DB 5-99**	**DB 100-999**	**DB 1000-4999**	**DB 5000+**	**DC 12-99**	**DC 100-999**	**DC 1000+**
Total Estimated Universe	**5,280**	**1,202**	**2,255**	**679**	**243**	**420**	**368**	**113**
MNT estimated universe	**3,607**	**968**	**1,629**	**366**	**87**	**229**	**264**	**65**
MND estimated universe	**1,672**	**234**	**626**	**313**	**156**	**191**	**104**	**48**
Total universe estimate used in weighted tables	**5,280**	**1,087**	**2,000**	**1,049**	**243**	**380**	**336**	**185**
Difference	0	-115	-255	370	0	-40	-32	72
MNT universe estimate used in weighted tables	**3,607**	**968**	**1,629**	**366**	**87**	**229**	**264**	**65**
Difference	0	0	0	0	0	0	0	0
MNT universe estimate used in weighted tables	**1,673**	**119**	**371**	**683**	**156**	**151**	**72**	**120**
Difference	0	-115	-255	370	0	-40	-32	72

4.2 Implications of the weighting process on statistical accuracy

The effect of weighting to remove the impact of bias due to the two weighting variables (size and status), on the precision of survey estimates (standard errors and confidence intervals) has been estimated by using the design factor (DEFT) and the net effective sample size (neff).

The DEFT is defined as the ratio of the standard error after weighting to the standard error prior to weighting, and is a measure of how weighting has affected the standard error of the estimates. A DEFT of 1.0 would indicate that there is no difference between the weighted and unweighted standard errors

The neff is the size of the unweighted simple random sample that would have produced the same precision as the weighted sample

By taking into account the design effect due to weighting when calculating the accuracy of our findings (ie margins of error at the 95% confidence level) we can obtain a

measure of how confident we are that our survey estimates lie close to the true population value. This approach is preferable to relying on the standard calculation based on simple random samples as it takes account of the design issues around unequal probability of selection and non-contact, ineligibility and non-response.

Calculations also took into account the relationship between the estimated universe of schemes and the number of interviews achieved in each cell. Where the universe in a cell was small and a reasonably high proportion of the schemes were interviewed, we could apply a small universe statistical adjustment, commonly called the finite population correction multiplier:

SQRT(1-n/N), where n = sample size and N = population estimate

This corrector reduces the statistical margin of error (the effective estimated standard error) for these cells, because the error estimate in these cases is less than expected from applying standard statistical rules for simple random samples drawn from a large universe. This adjustment was applied in two cells where the ratio of sampled schemes versus universe was greater than 0.2, namely MNT DC 1,000+ and MND DB 5,000+ schemes.

After allowing for this adjustment, the DEFT for this survey was 1.52; therefore, the margins of error in the results were in practice greater than would be associated with a truly random sample of 517 by a factor of 1.23, meaning that our effective base size neff was 341 respondents.