



UK COMMISSION FOR
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Investment in Training Survey 2015: Technical Report

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Investment in Training Survey 2015: Technical Report

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1 Introduction

1.1 Background

The Investment in Training survey is a follow-up survey to the Employer Skills Survey, looking more specifically at training that employers provide for their employees, and how much employers invest in this.

This publication is a supplement to the Employer Skills Survey 2015 report, and presents training expenditure figures, by country, broken down into its constituent elements.

It also tracks training expenditure figures over time, incorporating findings from the 2011 and 2013 Investment in Training surveys.

It is worth noting that for the 2015 data, a new weighting strategy was implemented to improve the accuracy of the training spend estimates. This new weighting strategy was also retrospectively applied to both the 2011 and 2013 data files. Readers who are familiar with the Investment in Training 2011 and 2013 reports will therefore find that the historical figures presented here do not exactly match those previously presented. A technical annex contains a more detailed explanation of the revised weighting strategy, analysis of its effectiveness, and impact on training spend.

2 Key Findings Tables

Table 2.1 shows investment figures (i.e. using the revised weighting approach) for total training expenditure, spend per person trained, and spend per employee at a UK level and within country.

As discussed in the main report, the 2015 UK spend of £45.4bn was a six per cent increase on the £43.0bn spend in 2013, and a four per cent increase on the 2011 figure of £43.8bn¹. Employers' total investment in training was equivalent to around £2,610 per person trained and £1,640 per employee. Although a slight increase on 2013, these figures were in line with 2011. This is due to the fact that, although overall spend in 2015 was higher than in 2011, the numbers in employment and the number trained also both increased.

Table 2.1 Total training expenditure and spend per person trained and per employee (2011 to 2015)

	2011			2013			2015		
	Total	Spend per person trained	Spend per employee	Total	Spend per person trained	Spend per employee	Total	Spend per person trained	Spend per employee
UK	£43.8bn	£3.0k	£1.6k	£43.0bn	£2.6k	£1.6k	£45.4bn	£2.6k	£1.6k
Country									
England	£37.3bn	£3.0k	£1.6k	£36.4bn	£2.6k	£1.6k	£39.0bn	£2.7k	£1.7k
Northern Ireland	£1.2bn	£2.8k	£1.6k	£1.1bn	£2.6k	£1.5k	£0.9bn	£2.0k	£1.3k
Scotland	£3.7bn	£2.7k	£1.6k	£3.5bn	£2.3k	£1.5k	£3.4bn	£2.3k	£1.4k
Wales	£1.6bn	£2.5k	£1.4k	£1.9bn	£2.7k	£1.7k	£2.1bn	£2.8k	£1.8k

Spend in Wales increased in 2015 to £2.1bn, an eight per cent increase from £1.9bn in 2013; this, along with a six per cent increase in total spend in England, drove the overall UK increase in training expenditure in 2015.

The increase in total spend in Wales was not simply a product of increased employment: Wales had the highest spend per employee of the four nations, with this figure having increased steadily since 2011.

In contrast, Northern Ireland and Scotland present a picture of decreasing overall spend, with the decrease between 2011 and 2015 particularly marked in Northern Ireland (a 22 per cent fall, compared to an eight per cent drop over the same period in Scotland). Spend in these two countries on a per-trainee and per-employee basis in 2015 was also lower than that in England and Wales.

¹ It is worth noting that training expenditure figures for 2011 and 2013 have not been adjusted for inflation.

Table 2.2 summarises results on the breakdown of training expenditure by country.

Table 2.2 Training expenditure in 2015 by country, the proportion spent on off-the-job elements, and the breakdown of total training expenditure (both on-the-job and off-the-job) by key elements

<i>Row percentages</i>	<i>Unwtd Base</i>	Expenditure on training	% spent on off-the-job training		Wages of trainees	Wages of trainers	Fees to external providers	Other
UK	12,614	£45.4bn	50	%	48	19	7	27
Country								
England	9,616	£39.0bn	50	%	48	19	7	26
Northern Ireland	699	£0.9bn	55	%	44	18	7	31
Scotland	1,065	£3.4bn	52	%	45	19	7	29
Wales	1,234	£2.1bn	54	%	47	16	5	31

Each nation spent around half of their total training expenditure on off-the-job training, although this was slightly higher in Northern Ireland (55 per cent) and Wales (54 per cent) and slightly lower in Scotland (52 per cent) and England (50 per cent). These results were all in line with 2013, aside from a five percentage point increase in the proportion spent by Welsh employers on off-the-job training (up from 49 per cent in 2013).

Although Welsh employers spent a greater proportion of their total training expenditure on off-the-job training than those in England and Scotland, they spent less on fees to external providers (five per cent, compared with seven per cent in each other nation). Welsh employers also spent less on wages of trainers (16 per cent, compared with 18 to 19 per cent in the other nations). Both of these figures were a decrease from 2013, when Welsh employers spent seven per cent of total spend on fees to external providers, and 22 per cent on wages of trainers.

Employers in Northern Ireland spent the least on the wages of trainees (44 per cent, down from 49 per cent in 2013), closely followed by Scotland (45 per cent, down from 48 per cent in 2013).

3 Technical Annex

3.1 Original weighting design

The weighting design used in 2011 and 2013 placed priority on training type, size and sector at a UK level. The weighting approach used three grids at a UK level with population targets for each of:

- On-job only trainers
- Off-job only trainers
- Those that trained both on and off the job.

Each of these three grids was a matrix of sector interlocked with size of employer. In the final stage of the process a rim weight was applied by geography (country and English regions). Population figures for training employers were taken from weighted ESS data in each year.

This weighting design provided an accurate estimate of training expenditure within training type at a UK level, but was less accurate at estimating spend within country; this was due to the fact that the weighting was not designed to match the profile of establishment size *within country*.

Where the size profile of training employers within country did not fully match the population profile this could have a considerable impact on the training expenditure figures for each country, particularly where the largest employers were over- or under-represented, as was the case for Scotland and Wales respectively.

3.2 Weighting adjustment

The new weighting approach built on the original weighting approach by multiplying each of the original weights either up or down to correct the size profile of establishments within each country (in effect, 'weighting the weights').

Table 3.1 shows the target profile of establishment size within each country, the profile achieved by the original weighting strategy, and the profile achieved by the new or adjusted weighting strategy.

Table 3.1 Comparison of 2015 profile if the original weight had been used with the revised weighting approach

	Target Profile		Original Weight		Revised approach	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
England						
2 to 4	392,702	40.2	381,983	39.1	392,629	40.2
5 to 9	238,678	24.4	246,833	25.3	238,633	24.4
10 to 24	194,613	19.9	200,551	20.5	194,577	19.9
25 to 49	78,343	8.0	78,111	8.0	78,329	8.0
50 to 99	40,732	4.2	38,467	3.9	40,725	4.2
100+	31,674	3.3	30,617	3.1	31,668	3.2
Northern Ireland						
2 to 4	13,785	40.8	18,219	54.0	13,771	40.8
5 to 9	8,667	25.6	6,725	19.9	8,658	25.6
10 to 24	6,550	19.4	5,302	15.7	6,544	19.4
25 to 49	2,650	7.8	1,851	5.5	2,648	7.8
50 to 99	1,370	4.1	1,226	3.6	1,368	4.1
100+	766	2.3	432	1.3	766	2.3
Scotland						
2 to 4	38,614	37.9	39,433	38.5	38,783	37.9
5 to 9	26,909	26.4	21,737	21.2	27,027	26.4
10 to 24	21,574	21.2	19,350	18.9	21,668	21.2
25 to 49	7,865	7.7	9,728	9.5	7,899	7.7
50 to 99	3,841	3.8	7,112	6.9	3,858	3.8
100+	3,179	3.1	5,068	4.9	3,193	3.1
Wales						
2 to 4	20,085	39.0	25,552	49.9	19,993	39.0
5 to 9	13,059	25.4	12,013	23.5	13,000	25.4
10 to 24	10,519	20.4	8,209	16.0	10,471	20.4
25 to 49	4,238	8.2	3,275	6.4	4,219	8.2
50 to 99	1,978	3.8	1,269	2.5	1,969	3.8
100+	1,570	3.1	895	1.7	1,563	3.1

As an illustration of the weighting approach, the 2 to 4 size band was over-represented within Northern Ireland by the original weighting strategy. Therefore, the weight for each record in Northern Ireland with 2 to 4 staff was multiplied by 0.76, to reduce the size of the overall 2 to 4 group and bring it in line with the population.

Conversely, as the 100+ size band in Northern Ireland was *under*-represented by the original weighting, each record in that group was multiplied by 1.77, therefore increasing the size of the 100+ size band to bring it in line with the population.

3.3 Alternate weighting considerations

Other options for reweighting the data were considered by an independent leading industry statistician, alongside the one finally adopted (and described in this report). The two alternate options that were tested (full interlocking weights, and using a series of rim weights only) are described below.

Full interlocking weights

Although grossing up on a full interlocking basis, with interlocked grids covering size by sector within training type *within country*, would theoretically be the most robust strategy, this approach was quickly determined to be unsuitable for the Investment in Training dataset as the base sizes were too low to support such an approach (there were too many cells with a low number of or no respondents). With four countries, six size bands 14 sectors, and three training types, this would require 1,008 cells within the overall weighting matrix.

Rim weights only

The second alternative approach considered was to weight entirely by separate rim weights, with individual rim weights applied for:

- Country (and English region)
- Size within country
- Sector within country
- Training type within country.

To assess the effectiveness of this rim-weights-only approach, these weights were applied to the data and the resulting profile analysed and compared against the reweighting strategy that was finally adopted. The results of this are discussed below.

3.4 Analysis and checking of the reweights

Each weighting strategy (the 'adjusted reweight' and 'the rim-weights-only') was first checked by comparing the weighted profiles achieved with the target population profile (that is, all employers in the UK that had conducted any training).

In the case of the adjusted reweight, due to its multi-stage nature, the weighted profiles were checked against the target at both the intermediate stage (interlocking weights and regional rim weight only), and the final stage (a multiplier applied to the weights to correct for size within country).

The two proposed weighting strategies were tested using chi-squared analysis to enable a focus on the main areas of weakness of each scheme.

The rim-weights-only approach performed best on single variable targets and within country, but was weak on the two-way targets (size within sector, size within training type, and sector within training type).

The adjusted weighting scheme performed better on the two-way targets, but was weaker on the targets for sector within country, and training type within country.

Based on this, the adjusted weight was assessed to be the better approach, as it performed better on more of the two-way targets (size within country, size within sector, size within training type and sector within training type), and these targets were likely to be the most important when estimating training spend.

The approach adopted gives an optimal balance between the need for robust country and robust sectoral estimates.

3.5 Impact of the reweight on training expenditure

The greatest impact of the reweight was in the total spend figures for the Devolved Administrations. The 2015 reweight increased (compared with applying the weighting approach originally employed in 2011 and 2013) the spend figure for Wales by 33 per cent, and the figure for Northern Ireland by 13 per cent, and decreased the figure for Scotland by 19 per cent (with England remaining largely unchanged, a one per cent increase).

At an overall level the effect was much smaller: as a result of the adjusted reweight, the overall total spend for 2011 decreased by three per cent, the spend for 2013 increased by 0.3 per cent, and the spend for 2015 increased by one per cent.

The breakdown of different training spend elements also remained largely unchanged by the reweight at a UK level.

Confidence intervals were also calculated for the reweighted 2015 total training spend. Assuming no design effect, at a 95 per cent confidence level, the minimum spend was £43.1bn, and the maximum spend £47.8bn.

3.6 Impact of post-publication revision to the core ESS weighting

The core ESS weighting was revised in May 2016 following the original publication due to an error with some regional level population targets within Wales and Northern Ireland (see the main UK technical report for full details²).

² www.gov.uk/government/publications/ukces-employer-skills-survey-2015-uk-report

Following these revisions made to the main ESS weighting, the impact on the Investment in Training weighting was assessed. The impact of updating the Investment in Training weighting using the revised training population figures from the main ESS data proved to be negligible, with no spend figures changing at a statistically significant level. As a result, the decision was taken not to change the Investment in Training weighting. However, some changes occurred to the figures for spend per trainee and spend per employee, as the figures for numbers trained and numbers of employees are taken from the main ESS data; these revised figures appear in the updated report published on 26th May 2016.

Evidence Reports present detailed findings of the research produced by the UK Commission for Employment and Skills. The reports contribute to the accumulation of knowledge and intelligence on skills and employment issues through the review of existing evidence or through primary research.

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