Understanding apprentice pay Interim Report

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Executive summary

This study consisted of two parts, a quantitative and qualitative element.

The quantitative study aimed to:

- review the improved Apprenticeship Pay Survey (APS) for internal quality and coherence with previous findings
- reconcile ASHE and APS estimates of non-compliance

The key findings of this section are that:

- APS 2014 significantly improves data collection of apprentices' pay and hours relative to past APS surveys, enabling a more accurate and detailed analysis
- information from payslips in particular is a very welcome addition and it should be maintained
- the analysis of APS 2014 confirms, and even strengthens, some of our previous findings concerning non-compliance: non-compliance is significantly related to the age of apprentice/year of course and appears lower in better quality jobs
- non-compliance decreases with age when the Apprentice Rate (AR) is the relevant minimum (first-year apprentices); in contrast, it increases with age when a higher minimum needs to be paid (i.e. for second-year apprentices over 18 years old)
- the measurement of hourly pay is again found to affect non-compliance estimates; more accurate responses (e.g. if both pay and hours are reported from a payslip) are related to less non-compliance
- large between-framework differences exist and can only partly be explained by observable characteristics. This is the case, for example, for the large difference between the most non-compliant sector (hairdressing) and the least non-compliant one (management)
- the new questions on awareness of the NMW legislation are a significant improvement over APS 2012; importantly, a more detailed knowledge of the NMW legislation appears negatively related to non-compliance, in general
- future APS surveys may consider asking each apprentice about his/her knowledge of the NMW rate that applies to him/her (currently, only awareness of the AR is recorded)
- ASHE data appears to have a much lower number of apprentices than expected; given the way ASHE is collected, this strengthens the idea that ASHE is a lower bound estimate of non-compliance
- concern over accuracy of self-reported pay suggests that APS is an upper bound estimate (inaccuracy, per se, leading to over-estimation at the yes/no boundary)
- ASHE data gives similar numbers to APS 2014 data when the latter is fully documented through the use of a payslip; hence this APS figure might be taken as a 'minimum' estimate

The qualitative study aimed to explore the findings, suggested by the previous quantitative analysis and confirmed by more recent work. To keep the project manageable within the very short reporting period, only apprenticeships in childcare and hairdressing were considered, as these have some of the highest non-compliance rates. The team interviewed college trainers, apprentices individually and in focus groups, and employers.

At this stage the qualitative analysis has not yet been completed; however, some strong findings have emerged:

- knowledge of what paid was very poor indeed; some students still felt their employer did not understand how salaries would change after second year etc.; they relied upon friends, colleagues and classmates for information, and did not think of government information sources such as the LPC website
- knowledge of training hours was also a bit vague; most apprentices needed to confer to check how many hours of training they had at college, despite being at college when the interviews/focus groups took place
- apprentices saw low pay as a normal feature of being an apprentice at the bottom of the workplace hierarchy; they disliked the low take-home pay, but did not worry overmuch about the specific hourly rate
- apprentices had a very high level of trust in their employers to 'do the right thing'
- colleges had a role to play, they had strategies in place, and apprentices felt confident discussing pay with them; however, college staff clearly did not know apprentices as well as they thought, as the staff claimed no non-compliance whereas a questionnaire showed significant levels
- some power issues arose between employer and employee – not necessarily intentional, but if employers made mistakes in pay there were few mechanisms for employees to find and report such mistakes
- one employer noted the conflict between government plans to encourage school-leavers to extend their education, and the need for low-cost apprentices (i.e. the very youngest)

The qualitative work is due to complete in February; the final report is due in March/April 2016.

Recommendations to date
- APS should be taken as the preferred measure of non-compliance; specifically, the documented (with the use of a payslip) compliance rate is the best estimate, with the baseline APS sample giving the upper bound estimate, and ASHE figures providing a lower bound estimate
- Apprentices have very little idea of what their wage rate is, or should be, and do not explore the internet to look for more information; instead they rely on friends and colleagues; a downloadable mobile phone application (the "app app") allowing simple calculations might reach this group
- The message that non-compliance is associated with the idea of 'bad jobs' could be usefully targeted to support bodies such as the Citizen's Advice Bureaux in identifying problematic working arrangements
- There is some evidence that apprentices feel concerned to raise low pay with their employers; hence there may be a role for LPC in helping employees to overcome their fears by, for example, suggesting positive arguments or ways to raise the topic
- College staff should be provided with practical guidelines about apprentices' difficulties calculating wages, and the data that needs to be collected to do this

1. Introduction

1.1 Apprentice pay in the UK

Apprenticeships combine practical paid work experience and on- and off-the-job training which culminates in a nationally recognised qualification. As employees, apprentices earn as they learn and gain practical skills in the workplace (SFA, 2015). Apprenticeships should include a minimum of 280 'guided learning hours' (GLHs) per year of which 100 must be delivered away from the workplace (Higton, 2013); this equates to roughly six hours per week training, including two hours off-site.

Apprenticeships are organised around industry-specific 'frameworks' which specify the length and content of the apprenticeship for that industry. Variations between the content and delivery of apprenticeships, frameworks, employer input and apprentice figures may be partly explained by differences in the institutional characteristics of educational systems and labour markets (see, for example, Ashton et al, 2000; Hall and Soskice, 2001; Rainbird, 1993; Steedman, 2010; Toner, 2008). The face of apprenticeships has changed in recent years, shifting from skilled manual labour to service and managerial roles.

Responsibility for public funding of apprenticeships is currently shared between the Department for Business, Innovation and Skills (BIS) and the Department for Education (DfE) in England, and the devolved administrations elsewhere. Funds are provided directly to the training providers. In the 2015 Summer Budget and Autumn Statement (HMG, 2015, pp.45-46), the government announced plans to make the apprenticeship scheme self-funding through a levy on larger businesses by 2020, to create a new body for training standards, and to give employers more control over the choice of training provider.

The number of apprenticeships in the UK has increased steadily since 2008, with 865,000 funded apprentices registered in each of the last three academic years (SFA, 2015); the current target is for three million by 2020 (HMG, 2015). Sectors tend to be gender-dominated, with females choosing apprenticeships in service sectors, and males taking up apprenticeships in industrial sectors. This has led to a marked gap in pay for male and female apprentices (Fuller et al, 2005). Similarly, there are differences across sectors in the age of apprentices: child-care has limited opportunities for younger apprentices as employers are reluctant to take on under-18s, while hairdressing tends to be youth-dominated. Drew et al (2015, p.2) estimate that 70% of apprentices worked at the organisation before beginning their apprenticeship, suggesting that the majority of apprentices would be older than the school-leaving age; LPC estimates that around 70% are aged 19 or over.

1.2 The Apprentice Rate

The National Minimum Wage (NMW) was introduced in the UK in 1999, with age-related minimum wages set every October since 2000. Employees on formal apprenticeships were exempt from the NMW legislation; instead, many of the apprenticeship 'frameworks' had industry-wide, but not statutory, agreements on weekly wages for apprentices at different stages of their training. Following recommendations from the Low Pay Commission (LPC), the Apprentice Rate (AR) was introduced in October 2010, resulting in an overall increase in apprenticeship wages (Behling and Speckesser, 2013).

The AR applies to those aged 18 or under, or those over 18 and in their first year of apprenticeship. Table 1 shows the NMW rates since the introduction of the AR. The final column of Table 1 also shows the datasets which contain data allowing apprentice pay to be analysed for each minimum wage period, namely the Apprenticeship Pay Survey (APS) and the Annual Survey of Hours and Earnings (ASHE).

Table 1 National Minimum Wage rates 2010-2013

Rate from…	21 and over	18 to 20	Under 18	Apprentice Rate (AR)*	Data currently available
October 2010	£5.93	£4.92	£3.64	£2.50	APS2011
October 2011	£6.08	£4.98	£3.68	£2.60	
October 2012	£6.19	£4.98	£3.68	£2.65	APS2012, ASHE2013
October 2013	£6.31	£5.03	£3.72	£2.68	APS2014 ASHE2014
October 2014	£6.50	£5.13	£3.79	£2.73	ASHE2015
October 2015	£6.70	£5.30	£3.87	£3.30	Questionnaires**

*applies to those under 19 or in year 1 apprenticeship; otherwise NMW applies
**data collected as part of this study

Broadly the AR has grown at a similar rate to other MWs, but in 2015 the government took the unusual step of rejecting the LPC's recommended AR of £2.80. Both the government and the LPC noted the fall in apprenticeship starts in 2014, but appear to draw opposite conclusions. The LPC (LPC, 2015, p.269) took the view that a high rate was stopping employers taking on apprenticeships and that a substantial increase in the AR may increase non-compliance, which was already exceptionally high among apprentices. While the government's specific rationale for choosing a higher rate was not stated in the press releases, the implication is that the AR was too low to attract candidates.

1.3 Previous work on the AR

Drew, Ritchie and Veliziotis (2015, henceforward DRV) reviewed previous work on apprentice pay, noting that there were significant differences between frameworks, and that analyses of the 2011 and 2012 APS carried out by the APS survey team showed extremely high levels of non-compliance[1].

DRV also analysed the 2011/2012 APS and 2013/2014 ASHE microdata, and had access to summary results from the 2014 APS. They concluded that, while there were problems with the APS data, non-compliance appears to be significantly higher for apprentices than for other workers. It could be argued that this is just the 'bedding down' of the Apprentice Rate (AR) introduced in 2010. However,

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[1] For a more detailed analysis of the problems with the old APS, see Drew Ritchie and Veliziotis (2014). DRV summarises key findings.

there does not seem to be much empirical support for this. All surveys (APS 2011, 2012 and 2014, and ASHE 2013 and 2014) show continuing high rates of non-compliance compared to other groups. Non-compliance is not limited to those on the AR, but also includes apprentices who are eligible for the age-applicable minimum wage; in fact, non-compliance is significantly higher for the latter group.

Hence, the higher rate of non-compliance for apprentices appears real and persistent. DRV used descriptive and multivariate analyses, but concluded that there was little which seemed systematically related to the probability of non-compliance. There were suggestions that being in the public sector, working for a large organisation, and greater job protection are indicators of compliant wages, but these results were not robust. Similarly, there were weak, but only weak, indications of sectoral differences. The exception to this was that apprentices who were eligible for the age-applicable minimum wage (aged 19 or over, and not in the first year of training) were more likely to receive wages below the minimum. This result was manifest across all data sources and all periods.

This raises the possibility that apprentices and/or employers do not understand the rules. A second possibility is that some or all understand the rules, but choose to ignore them – perhaps an apprentice is afraid of being fired, or has been told that a very low wage keeps the business going, or is just wanting to 'help'. Statistical analyses cannot distinguish between these effects.

DRV noted the surprising lack of correlation between 'awareness' of the AR and the probability of non-compliance. This may be due to the ambiguity of the question. The 2014 APS clarified the question and found that while around 62% of apprentices in Great Britain are aware of the existence of the AR, only 26% of them claimed to know the actual rate for apprentices (IFF Research, 2014). This relative lack of knowledge of the exact AR means that, potentially, there is substantial scope for non-compliance. At the same time, it also begs the question of whether power relationships override statutory duties – one may be aware that one is paid below the rate, but be unable to address the problem.

Finally, training hours are problematic. Hourly wage calculations should take account of both off- and on-the-job training, as well as regular work, and there is a concern that not all of it is (and so the hourly wage is being overstated). DRV noted that only limited inferences could be made about the training from the APS 2011 and 2012, despite the detailed questions. In response to this ambiguity, the training questions were dropped from the APS 2014. ASHE has no data on training hours; DRV investigated whether training could be inferred from variation in paid hours between apprentices and others in ASHE, but could come to no robust conclusions.

In summary, there is agreement that non-compliance is significantly higher for apprentices than other groups; that non-compliance appears to be largely random (few robustly significant influences), apart from becoming eligible for the higher age-applicable minimum wage; and that data difficulties have limited the scope of the analysis.

1.4 Aims of this study

The previous statistical analyses identified where problems were occurring, but are of limited value in distinguishing between hypotheses. For example, on observing a non-compliant wage, there is no

information allowing us to ascribe this to lack of knowledge on the part of the employer or employee, power relations, or economic conditions which might have led to this outcome.

DRV also highlighted the large difference between compliance estimates from sources; ASHE is consistently lower than APS. This is consistent with findings comparing general wage distributions from the Labour Force Survey (LFS) and ASHE, but the distribution of LFS and ASHE is similar, whereas the APS seems more attenuated at specific values.

DRV's analysis was limited by the availability of data. APS 2011 data were felt to be reliable, the APS 2012 data were not, and the APS 2014 microdata were not available; the latter are now available but the survey has been substantially revised to address methodological shortcomings making it difficult to compare estimates from the 2012 and 2014 surveys. ASHE 2013 was made available in 2014 after long negotiations with ONS, but the limited sample size meant only simple analyses could be carried out. ASHE 2014 was made available in late November 2014, and preliminary analyses could be done; but much of the richness in ASHE (particularly the use of longitudinal elements) was not used. DRV noted these limitations and proposed extending analysis on all five datasets.

Accordingly, this project has two aims: to provide evidence for competing hypotheses of why wages are being paid below the minimum; and to exploit the increased microdata. These lead to the research questions for this report, outlined below:

On understanding the previous analyses through qualitative research:

- Do apprentices/and or employers understand the laws on training hours?
- Are apprentices unaware of their rights, or are they aware but unable to enforce them?
- Are employers aware of the AR?
- If they are aware, do they know how it works/how to calculate it?

On extending the previous analysis through the use of more and better data:

- Why is there a gap between ASHE and APS estimates?
- Can a more detailed analysis of the data (especially the revised questions in the APS 2014) shed light on DRV's conclusion that non-compliance is largely random?

1.5 Methods

1.5.1 Qualitative analysis

The qualitative questions have been addressed by interviews with employers and apprentices. It is important to have both, as errors on the part of either or both are consistent with the statistical findings. DRV and previous reports for LPC have suggested that human behaviour is the major source of the non-compliance observed, not employment related factors; given this, and the short delivery period for this project, the team focused on two sectors which appear to have the most compliance problems (and which are also of interest to the LPC): child care and hairdressing.

In line with Silverman (2013), the qualitative stage aimed to produce a deeper understanding of the data generated by the statistical analysis. The interviews provide rich data on explanations for non-compliance, awareness of apprentice rates in both apprentices and employer populations and the impact of training hours. In addition, in the case of children's care and hairdressing apprentices, this

research aimed to analyse the experiences of vulnerable and marginalised groups of low-paid workers, and hence support policy interventions to address wage discrepancies for these strata of the labour market.

The project was only able to start interviewing in November 2015; interviews are still ongoing, and are expected to complete in February 2016. Hence, the qualitative results presented here are interim, and may be revised in the final report in March.

1.5.2 Quantitative analysis

The interviewing process collected anonymous data from apprentices via questionnaires, post-focus group. This provided some additional quantitative information, albeit without the quality control of a formal survey.

The main quantitative analyses in this report focus on the 2014 APS. As described below, we are confident that the methodology of the APS 2014 is a substantial improvement on that of the previous APS. A positive note is that many findings from the 2014 APS are similar to those of the previous studies, but they appear to be much more robust. Unfortunately, the opportunity to combine all APS datasets is limited by the lack of overlapping variables, and hence this report mainly focuses on the 2014 APS.

The report also uses both the 2013 and 2014 ASHE data. Analyses showed very little qualitative difference between the two surveys, and hence they were analysed jointly, improving the sample size. ASHE 2015 data was made available to the research team in December 2015, and showed similar results. Hence, all three ASHE datasets are analysed jointly, without distinction between years.

2. Quantitative analysis

2.1 Understanding the Apprenticeship Pay Survey

This section discusses the characteristics of the 2014 APS. Because the construction of hours and earnings variables is complex, Appendix A2 gives a detailed breakdown of the steps needed to create the data and of potential problem areas.

2.1.1 General aspects of the APS series

Table 2 describes the three Apprenticeship Pay Surveys (APS), conducted in 2011, 2012, and 2014. DRV analysed the first two of these in great detail, while this report is mainly based on the analysis of APS 2014. Important changes in the APS were undertaken for the 2014 round (following also recommendations made from the preliminary work of DRV); these are outlined in IFF Research (2014, pp.33-34) and are pointed out in the text that follows when it is deemed necessary.

Table 2 Characteristics of the APS 2011, 2012 and 2014

Survey year	2011	2012	2014
Data collection period	June 1st -July 31st	October 15th -December 23rd	July 22nd -September 14th
Coverage	UK	England, Wales, NI	Great Britain
Post-processing sample size	6140 (England) 2041 (Scotland) 1997 (Wales) 842 (NI)	6507 (England) 1817 (Wales) 640 (NI)	5481 (England) 2162 (Scotland) 1724 (Wales)
Response rate	51.9% GB 7.9% NI	45.2% (England) 47.2% (Wales) 5.9% (NI)	43% (England) 48% (Scotland) 57% (Wales)
Relevant wage rate for data period			
AR	£2.50	£2.65	£2.68
16-17	£3.64	£3.68	£3.72
18-20 (YDR)	£4.92	£4.98	£5.03
Adult NMW	£5.93	£6.19	£6.31

Source: Drew et al. (2015) and IFF Research (2014).

Note that the data collection periods of the 2011 and 2014 surveys are better timed than the 2012 one. The 2012 survey took place just after the introduction of the new minimum rates in October 2012. This could be an important factor behind the substantially higher non-compliance rates observed in that year (see below and DRV) as the pay cited by respondents may have referred to the previous pay period so appearing non-compliant at the time of interview. No such concerns can be raised for the 2011 and 2014 surveys, since both took place close to the end of the respective minimum wage periods.

2.1.2 Sample selection for analysis

In the following analysis we focus on the APS 2014 sample of Level 2 and Level 3 apprentices for Great Britain as a whole. We drop observations with missing values for any of the variables that appear in the multivariate analysis of non-compliance that will be reported below, in order to keep a consistent sample of apprentices across all descriptive and regression analyses in this report. We also drop all cases for which an hourly pay could not be calculated (see IFF Research, 2014). After these choices, we end up with a sample of 6,567 apprentices. This is the baseline sample in the analyses that follow. Due to the above restrictions, our estimates and reported results will be slightly different from those appearing in the published APS 2014 report (IFF Research, 2014).

A second, more restricted sample is used in some analyses that follow, in particular in the analysis of the hourly pay distribution among apprentices. This restricted sample focuses only on those apprentices that provided a 'stated hourly pay' (variable 'e11' in APS 2014; see Appendix A2). After all the core pay and hours questions in APS, the interviewees were given the option to report, if they knew it, their gross hourly pay in a single question. Focusing only on those who answered this question further restricts our sample to 4,104 observations. Note that this is not the same as those who stated their gross pay as an hourly rate, of which there are 517 respondents:

Total reporting data to allow an hourly wage to be calculated ('baseline sample'):   6,567

In all tables and graphs that follow we note whether the sampling weights available in the published survey dataset have been used or not for the calculations, tabulations, and estimates reported. As a rule, all calculations of sample means and descriptive statistics that are presented in order to draw inferences for the whole population of apprentices are based on weighted data. All the rest of the presented results, including multiple regression analyses, are based on unweighted observations.

2.1.3   Description of the pay distribution among apprentices

There are two main variables of pay calculated by IFF Research (2014) and used in their analysis. The first is a measure of the 'basic gross hourly pay'. This excludes all extra/overtime pay and hours and does not take account of any accommodation offsets, bonuses, tips etc. The second is a measure of the 'NMW gross hourly pay', which is calculated in order to accurately estimate non-compliance with the NMW legislation. To achieve that, all unpaid overtime hours and paid overtime hours remunerated at the standard rate are taken into account, while adjustments are also made for accommodation provision and charges (see IFF Research, 2014, pp.34-35). Overtime paid at a higher rate, tips, bonuses and other such extra payments are not taken into account. We use this latter measure of hourly pay when we examine non-compliance in more detail below. For this section, we briefly focus on the basic gross hourly pay (using the restricted 'stated hourly pay' sample described above).

The measurement of gross hourly pay in the APS 2014 is a complex issue and depends on the way earnings and hours of work data are reported in the survey (see Appendix A2). Since it involves a series of calculations (e.g. conversions from net to gross pay, from monthly to weekly pay etc.), the resulting gross hourly pay may be calculated with considerable measurement error. DRV, Ritchie et al. (2014) and Fry and Ritchie (2013) discuss the details of such issues in great depth, based on the analysis of both the past APS surveys and other official data sources (ASHE, LFS etc.).

In contrast to the APS 2011 and 2012, APS 2014 includes a much lower proportion of direct hourly pay responses. This in part is due to a very substantial percentage of answers based on payslip information (46% in the examined sample in this section, 35% in the overall sample), which does not record a direct hourly pay for any of the apprentices. Because of this, the calculated gross hourly pay shows much more dispersion in these data than in APS 2011 and APS 2012. This is evident in the upper left panel of Figure 1. Even if we exclude the derived hourly rates that are observed less than three times in the data (as we do in all panels of Figure 1), the picture that we get is one of a substantial dispersion around some clearly identified spikes. These spikes are the legal NMW rates that apply to apprentices (£2.68, £5.03, and £6.31), as well as some 'sensible' or 'focal' rates (Fry and Ritchie, 2013; DRV), such as £4, £5 etc.

Figure 1 Derived hourly pay, payslip information and the stated hourly pay
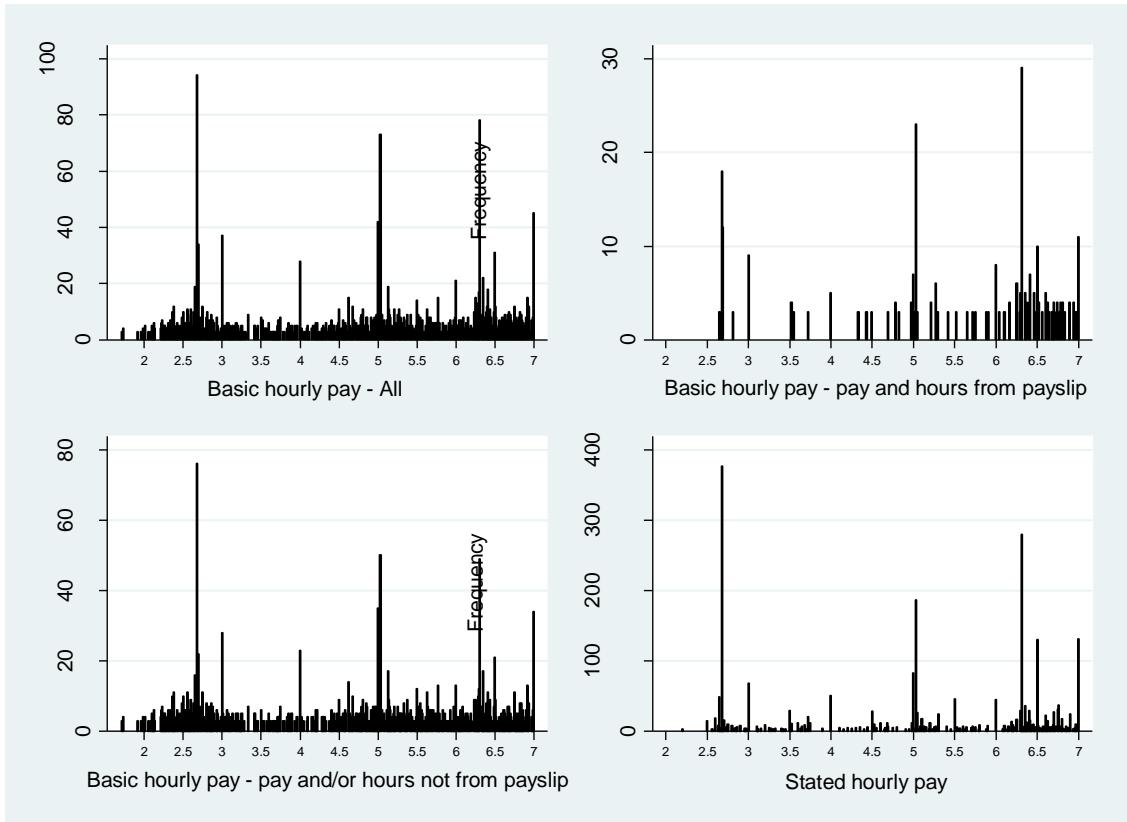
Source: Authors' calculations; APS 2014, unweighted data, stated hourly pay sample

An intuitive way to judge the accuracy of hourly rate calculations is to compare apprentices that report both pay and hours from their payslips with those that do not. This is similar to what DRV did by comparing hourly to non-hourly pay respondents in APS 2011 and 2012. The upper right and lower left panels in Figure 1 present this comparison. A much less dispersed and (seemingly) more accurate picture can be observed for those reporting both pay and hours from their payslips. It should be noted that all these rates are derived ones, since payslip respondents could not directly report a gross hourly rate. Nevertheless, a larger proportion of apprentices that use their payslip for providing both pay and hours of work information seem to earn an hourly rate that is either equal to one of the legal minima or to a 'sensible' number (see upper right panel in Figure 1).

As a further comparison, we also checked the distribution of responses in the additional question that asked apprentices to report directly their hourly pay (stated hourly pay – see above), if they knew it. Since we use the same sample of apprentices throughout in this section (based on those that do indeed provide a stated hourly pay), the comparison between the derived hourly pay and the stated hourly pay is a direct one and based on the same persons. By looking at the upper left and the lower right panels of Figure 1, the difference seems a startling one (note the different scaling on the y-axis): the stated hourly pay distribution shows a much smaller variation, with greater frequencies and proportions of numbers on the various legal minima and on some 'sensible' rates. This is something to be expected and replicates the findings in DRV concerning their comparison between the hourly and non-hourly paid in APS 2011 and 2012.

2.2 Non-compliance

2.2.1   Overall non-compliance

Non-compliance with the relevant NMW rate in APS 2014 can be estimated through a more complex, but also more accurate, procedure relative to APS 2011 and 2012 (IFF Research, 2014). Questions about working and training hours have been improved and should be considered much more accurate, since it is now made clear to respondents what working and training is and how to arrive to a final answer concerning all relevant hours that should be remunerated. Also, unpaid overtime is now taken into account and included in the denominator of the formula that derives the gross hourly pay to be used for identifying non-compliance. Finally, if accommodation is provided by the employer, this is taken into account into earnings. After all these adjustments, an 'NMW gross hourly pay' is derived for apprentices in the sample.

We start our analysis by presenting basic tabulations of non-compliance incidence. Table 3 shows all estimates of non-compliance from all available sources (APS and ASHE) since 2011[2]. Note that the ASHE data are lower than the official LPC estimates. This seems to be because the LPC data is weighted; we have concerns about the ASHE weights (see below) and hence use unweighted data.

<div align="center">Table 3 Overall non-compliance rates</div>

Eligible NMW	Non-compliance					
	APS			ASHE		
	2011	2012	2014	2013	2014	2015
AR (16-18 or first year)	11.2%	16.5%	10.2%	3.0%	2.4%	1.1%
YDR (19-20, second year)	46.9%	54.7%	33.0%	10.7%	13.4%	7.5%
Adult (21+, second year)	27.0%	35.5%	30.5%	5.4%	6.7%	5.8%
Overall	**19.8%**	**29.4%**	**15.8%**	**5.0%**	**5.5%**	**3.3%**

Source: Authors' calculations; APS 2011, 2012 and 2014, weighted; ASHE 2013-15, unweighted. Non-compliance rates reported as a proportion of the apprentice population (APS) or sample (ASHE).

In our final selected sample from APS 2014, non-compliance is estimated at around 16%. The pattern of much higher non-compliance among second year apprentices noted by DRV for the APS 2011 and 2012 data is also apparent in the 2014 data; this is something not observed in ASHE. The APS 2014 survey also reveals a reduction in non-compliance relative to 2011 (the unusually high non-compliance estimated in the 2012 data is an unreliable estimate due to issues with the timing of the survey; see DRV for more details). However, it is difficult to conclude whether this represents an actual fall in non-compliance or just a difference due to the different survey structure and pay and hours questions in 2014. What is more certain is that the improvements in the 2014 survey provide some reassurance that the 2014 estimate is a more reliable one.

Looking at differences in non-compliance based on the way pay and hours data were reported and collected in APS 2014 reveals some interesting findings. These indicate the importance of

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[2] Table 3 ASHE data for 2013/2014 differ from DRV due to different disclosure control treatment of small cells. ASHE data includes adjustment for rounding error; that is, we include as being 'at the AR' those who are paid a monthly wage and who have a stated wage rate at the AR but for whom the calculated wage is 1p below the AR (see DRV, p23 and Table 15).

measurement issues behind any estimate of non-compliance that is based on data reported by employees themselves. Table 4 reports the estimates split by data source.

Table 4 Extent of non-compliance, by APS source

	% of apprentices earning below their legal minimum
Baseline sample (*N*=6,567)	15.8%
Payslip respondents (*N*=2,698)	12.0%
Non-payslip respondents (*N*=3,869)	20.7%
Both pay and hours from payslip (*N*=1,074)	5.7%
Reporting hourly pay (*N*=517)	3.8%

Notes: Source APS 2014, authors' calculations; weighted data

Importantly, factors that should improve reporting accuracy in pay and hours seem to lead to a reduction in non-compliance: respondents that used a payslip to answer their earnings questions are less likely to be non-compliant than respondents that did not use a payslip (12% versus 21%, respectively).

Moreover, non-compliance incidence is even lower if both pay and hours are reported directly from the apprentice's payslip: an incidence of around 6% is estimated among such apprentices. This may indicate that actual non-compliance is lower than the 15-16% headline rate found for the whole sample and reported in the first line of Table 4 and also in IFF Research (2014). In line with the findings in DRV, much lower non-compliance is also observed for apprentices that report an hourly pay. This should be expected from a measurement error perspective given that no extra calculations based on reported working and training hours need to be made in order to arrive to a gross hourly pay rate. As noted above, though, there are relatively few (517) persons that provide an hourly pay in the core earnings questions in APS. The small sample size means that we should be somewhat cautious in interpreting this result.

2.2.2   Reconciling ASHE and APS

The payslip-based APS figures are much closer to the ASHE data; see Table 5.

Table 5 Non-compliance rates in ASHE

	2013	2014	2015
Hourly paid	5.1%	5.2%	3.1%
Not hourly paid	4.8%	5.8%	3.6%
Overall	5.0%	5.5%	3.3%
Sample size	1,508	1,863	1,982

Source: ASHE 2013-2015, authors' calculations, unweighted.
Rounding: adjustment made for errors in calculation made to monthly earnings; see DRV, p23

One concern of the LPC is that there is a substantial difference between APS and ASHE compliance rates. It is clear from Tables 4 and 5 that when information is taken directly from payslips (a subset in APS, and – in theory – all data in ASHE) the difference narrows or disappears.

Hence, one reason for the difference between the two surveys may be measurement error caused by the lack of documentation. This would imply that ASHE is the more accurate measure of non-compliance, as all data collection is supposed to come from the pay records of the employer. However, this assumes that ASHE is representative of the apprentice population, and this might not be true for five reasons.

First, ASHE only appears to be identifying an unexpectedly small proportion of apprentices. ASHE is intended to pick up 1% of the working population; actual responses rates are around 0.75%. In the case of apprentices, sampling rates are much lower:

Table 6 Sampling rates in ASHE

	2013	2014	2015
Registered apprentices in year	868,000	852,000	871,000
Estimated apprentices, point-in-time	592,000	581,000	594,000
ASHE observations	1,508	1,863	1,982
Sampling rate	0.25%	0.32%	0.33%

Source: ASHE data, authors calculation; Registered apprentices from SFA (2015). Point-in-time apprentices estimated by adjusting to weighted APS estimate (581,000 in 2014)

In other words, the ASHE sampling rate appears to be less than half the expected rate.

The second concern is that the missing apprentices in ASHE are disproportionately likely to be low earners changing jobs frequently (see Knight, 2010). It seems reasonable that the observed ASHE sample is made up of individuals in more stable employment with well-established employers.

Third, APS respondents not using documentation to complete the survey may be the result of poor administrative practices on the part of the employer. This lowers the likelihood that, for example, the tax authorities will be made aware of an employee in a timely manner, if at all. The lack of documentation may reflect cash-in-hand payment rather than traceable earnings.

Fourth, employees in APS may not want to reference payslips if they are aware of being very low paid; this relates back to concerns about power relationships, where employees may accept unlawful wages as they believe this is necessary to retain their job.It could also be argued that employees in this position would simply lie about their wages, but this would imply higher compliance among those without payslips, which is not observed.

Finally, DRV observed that individuals who start an apprenticeship with their current employer are more likely to be paid at or above the relevant minimum wage. Individuals who remain at their employer for longer are more likely to be identified in ASHE, which uses "latest known employer" information from HMRC to trace respondents.

In summary, while the APS and ASHE broadly agree on the non-compliance rates for fully documented earnings, the low sampling rates for ASHE are likely to be biased towards compliant observations; hence, the ASHE non-compliance data can be taken as a 'lower bound' for non-compliance.

This perspective is supported by the qualitative analysis, reported below, which found that apprentices change employers much more frequently than they change courses. As the sampling frame for the APS is the Individual Learner Record (and hence the course), this suggests the APS is

more likely to be representative of the apprentice population. This does also suggest that the sampling rate for the APS may fall when employer-managed training is brought in in 2017.

2.2.3 Non-compliance by relevant minimum

Table 7 gives a more detailed breakdown of the exact distribution of hourly pay responses for each subgroup presented in Table 4. We now tabulate the extent of non-compliance for each relevant minimum wage rate, looking also at percentages paid at or between the different rates. For example 2.1% of those in the whole sample which are eligible for the AR are paid it, whereas 14.3% of apprentices eligible for the AR are paid between the AR and the 16-17 Year Old rate. Cells which indicate non-compliance are marked in dark red; cells which indicate compliance are marked in light green, while total non-compliance for each MW group is indicated in italics below the number of observations. The 16-17 year-old rate is not represented in the columns as 16-17 year old apprentices are covered by the AR. However, this is included in the rows as apprentices may be (lawfully) paid this rate.

Table 7 Non-compliance, by relevant MW (APS 2014), various samples

(a) Baseline sample

Actual wage range	AR	YDR	Adult NMW
Under AR	12.7%	3.1%	1.9%
At AR	2.1%	0.2%	0.1%
Between AR and 16-17 Rate	14.3%	5.8%	1.3%
At 16-17 Rate	0.2%	0%	0%
Between 16-17 Rate and YDR	15.3%	21.2%	8.8%
At YDR	1.0%	3.9%	0.1%
Between YDR and Adult	16.2%	25.5%	17.2%
At Adult NMW	1.3%	0.5%	2.3%
Over Adult NMW	36.9%	39.9%	68.4%
Observations	5,016	670	880
Non-compliance	*12.7%*	*30.3%*	*29.4%*

(b) Payslip sample | | | **(c) Non-payslip sample** | | |

Actual wage range	AR	YDR	Adult NMW	AR	YDR	Adult NMW
Under AR	11.0%	2.5%	0.7%	13.9%	3.6%	2.6%
At AR	2.0%	0%	0%	2.2%	0.3%	0.2%
Between AR and 16-17 Rate	14.9%	4.2%	0.7%	13.9%	7.0%	1.6%
At 16-17 Rate	0.1%	0%	0%	0.3%	0%	0%
Between 16-17 Rate and YDR	14.8%	17.7%	6.0%	15.6%	23.8%	10.2%
At YDR	1.2%	6.7%	0.3%	0.9%	1.8%	0%
Between YDR and Adult	16.3%	20.5%	13.3%	16.1%	29.2%	19.2%
At Adult NMW	1.4%	0.4%	3.3%	1.3%	0.5%	1.7%
Over Adult NMW	38.3%	48.1%	75.8%	35.9%	33.9%	64.5%
Observations	2,112	283	302	2,904	387	578
Non-compliance	*11.0%*	*24.4%*	*21.0%*	*13.9%*	*34.7%*	*33.8%*

(d) Pay & hours from payslip | | | **(e) Hourly paid sample** | | |

Actual wage range	AR	YDR	Adult NMW	AR	YDR	Adult NMW
Under AR	3.6%	0%	0.7%	3.0%	2.0%	0%

At AR	2.3%	0%	0%	10.8%	0%	0%
Between AR and 16-17 Rate	10.3%	4.8%	0%	6.8%	4.0%	0%
At 16-17 Rate	0.4%	0%	0%	0.5%	0%	0%
Between 16-17 Rate and YDR	13.3%	8.7%	1.5%	9.8%	16.0%	0%
At YDR	2.0%	6.4%	0%	4.8%	10.0%	0%
Between YDR and Adult	16.1%	24.6%	8.9%	11.2%	28.0%	3.0%
At Adult NMW	3.1%	0%	3.0%	7.0%	2.0%	11.9%
Over Adult NMW	49.0%	55.6%	85.9%	46.3%	38.0%	85.1%
Observations	813	126	135	400	50	67
Non-compliance	*3.6%*	*13.5%*	*11.1%*	*3.0%*	*22.0%*	*3.0%*

Notes: Source APS 2014, authors' calculations; unweighted data.

Again, the pattern of lower overall non-compliance is apparent for apprentices reporting from a payslip (especially if they report both pay and hours from it) and for the hourly paid. What is also evident from this table is that these document-holding apprentices are more likely to have an hourly wage equal to some of the minimum rates (the AR, the 16-17 rate, the YDR, or the Adult NMW). For example, while only 1.8% of non-payslip apprentices eligible for the YDR are observed earning this rate (sub-table c), this percentage rises to 6.7% for payslip apprentices (sub-table b) and to 10% for hourly paid ones (sub-table e). Similar examples can be given for all relevant minimum rates. This reinforces our conclusion that responses using a payslip or reporting an hourly pay lead to a more accurate estimate of the hourly wage. A similar finding was reported for APS 2011 and 2012 by DRV, who compared responses between hourly and non-hourly paid apprentices.

It is worth noting that, for all groups and samples, most non-compliance occurs in the band just below the legal minimum, and reduces by several percentage points when payslips are used. DRV also noted the possibility of rounding/measurement error in ASHE data and accounted for that by allowing for a ±1p to be counted towards the relevant minimum rate in such tabulations and the estimation of non-compliance. To check this in APS 2014, and to see whether the number of individuals just below the MW is due to rounding, we allow for the same error for the whole sample and present the new numbers in Table 8.

Table 8 Non-compliance by relevant MW (APS 2014), allowing for ±1p error

	Baseline sample, raw			Allowing for +/- 1p		
Actual wage range	**AR**	**YDR**	**Adult NMW**	**AR**	**YDR**	**Adult NMW**
Under AR	12.7%	3.1%	1.9%	12.4%	3.0%	1.9%
At AR	2.1%	0.2%	0.1%	3.2%	0.3%	0.1%
Between AR and 16-17 Rate	14.3%	5.8%	1.3%	13.4%	5.8%	1.1%
At 16-17 Rate	0.2%	0%	0%	0.5%	0.3%	0.1%
Between 16-17 rate and YDR	15.3%	21.2%	8.8%	15.0%	20.5%	8.5%
At YDR	1.0%	3.9%	0.1%	1.4%	4.3%	0.3%
Between YDR and Adult	16.2%	25.5%	17.2%	15.7%	25.4%	16.8%
At Adult NMW	1.3%	0.5%	2.3%	1.8%	0.6%	2.7%
Over Adult NMW	36.9%	39.9%	68.4%	36.8%	39.9%	68.3%
Observations	5,016	670	880	5,016	670	880
Non-compliance	*12.7%*	*30.3%*	*29.4%*	*12.4%*	*29.9%*	*28.8%*

Notes: Source APS 2014, authors' calculations; unweighted data.

The changes are not very notable. One can now observe higher percentages clustered at each minimum rate, but the differences are not that large. In contrast to the ASHE 2013 and 2014 data (see DRV, p.23), allowing for rounding error in APS 2014 does not drastically change the distribution

of hourly pay and, thus, the extent of non-compliance. A similar conclusion can be drawn for each subgroup in Table 7, if we allow for rounding error (results not reported).

2.3 Awareness of NMW and non-compliance

The new APS 2014 included a series of improved questions concerning the awareness of apprentices with the NMW legislation and the minimum wage rate for apprentices (the AR). Specifically, all respondents were first asked if they have heard of the NMW. If yes, they were then asked if they are aware that there is a NMW rate for apprentices. If they responded positively again, they were finally asked if they know what this hourly minimum for apprentices is. Based on these questions, we construct four mutually exclusive categories of apprentices based on their knowledge of the NMW legislation. Table 9 reports the percentages belonging to each category, for each group of apprentices according to their relevant minimum.

Table 9 NMW awareness (APS 2014)

	All	AR eligible	YDR eligible	Adult MW eligible
Not heard of NMW	5.1%	5.3%	4.5%	4.6%
Heard of NMW	32.0%	32.3%	19.4%	35.4%
Aware of existence of AR	35.9%	34.8%	37.7%	39.4%
Aware of value of AR	27.0%	27.6%	38.4%	20.6%
Observations (unweighted)	6,567	5,017	670	880

Notes: Source APS 2014, authors' calculations; weighted data

It can be seen that most apprentices are at least aware of the NMW legislation in general. Only around 5% of apprentices (in all groups) have not heard of the NMW. However, only a minority of apprentices actually knows the specific value of the AR, with only around 28% of AR-eligible apprentices knowing its exact value. This surely seems as a cause for policy concern, particularly if the aim is to effectively deal with non-compliance through increased awareness among apprentices in Great Britain. In contrast, the most knowledgeable group in this respect is that of the YDR-eligible apprentices (19-20 year olds, past their first year in the course), with about 38% of them knowing the specific rate (the AR might not apply to them, but they should have a rough idea having been paid a similar amount in previous years). Apprentices with the adult NMW as their relevant minimum appear to have the most limited knowledge of the AR value.

Turning now to the link with non-compliance, Table 10 presents non-compliance incidence, for all apprentices and for those eligible for the AR, by NMW awareness; for example, amongst those who have not heard of the NMW, non-compliance is 24% amongst all apprentices, and 17.3% amongst those who are eligible for the AR.

Table 10 Extent of non-compliance, by NMW awareness (APS 2014)

	% of apprentices earning below their legal minimum (all apprentices)	% of apprentices earning below their legal minimum (eligible for AR)
Not heard of NMW	24.0%	17.3%
Heard of NMW	15.5%	9.6%
Aware of existence of AR	12.4%	6.7%
Aware of value of AR	19.2%	13.9%

Notes: Source APS 2014, authors' calculations; weighted data

The highest non-compliance rate is observed for those apprentices that have not even heard about the NMW. Moreover, a more detailed knowledge of the NMW legislation and the AR seems to be related with less non-compliance incidence, both for all apprentices and the AR-eligible ones. In particular, among apprentices that are AR-eligible, non-compliance is as high as 17% for those that have not heard about the NMW, while it falls to less than 7% for those that are aware of the existence of a specific rate for apprentices. However, this almost linear relationship seems to break down when we focus on non-compliance of the supposedly most knowledgeable group of apprentices, i.e. those that additionally know the specific value of the AR (last row of Table 10). A higher non-compliance is estimated for this category, with around 14% of those eligible for the AR earning below that amount. While this result appears puzzling at first sight, it may reflect the fact that some of the apprentices on particularly low (and, also, non-compliant) pay may have been more likely to compare their earnings with the legal minima and the AR. Additionally, it might also be explained by the specific personal, course and job characteristics of these apprentices. We return to this issue below, when we examine non-compliance using multiple regression analysis.

2.4 Multiple regression analysis of non-compliance and awareness

In this section we describe the results of different multivariate analyses of the data, which aim to identify the direction and relative importance of multiple variables in determining compliance, awareness and wage levels. As the statistical results are large, the detailed tables are given in Appendix 1 and are verbally summarised here.

2.4.1 Factors associated with non-compliance

In this section we proceed by examining non-compliance in a multiple regression framework. This way we can identify which factors that seem at first sight to be correlated with non-compliance remain so when one controls for a range of other factors. The analysis closely follows that presented in DRV, but differs in some ways due to the differences in APS 2014 compared to past APS data.

A series of models of non-compliance were estimated, each one for a different group of apprentices. Specifically, we estimated a different model for each of the five groups shown in Table 4: for the baseline sample, the payslip sample, the non-payslip sample, the 'both pay and hours from payslip' sample, and the hourly paid sample. Since the dependent variable in all cases is a binary indicator of non-compliance, probit models are estimated via the maximum likelihood method for the first four

samples. For the hourly paid sample, we estimate a linear probability model using OLS, since the sample size in this case is a relatively small one (*N*=517).

A series of personal, job, course and survey structure variables are entered in the model as the possible correlates of non-compliance (Table A1 in Appendix 1 presents the means of all variables for each of the five samples). Table A2 in Appendix 1 reports the whole range of regression results. Starting from the specifications which we judge as more reliable since they are based on a larger sample size (whole, payslip, and non-payslip samples), we can summarize the main results as follows:

- Gender and race do not seem to be significantly related to non-compliance incidence. A qualification can be made here for the male effect, since the male dummy acquires a large, statistically significant, and negative coefficient for the non-payslip specification. On the other hand, the 'white' coefficient is very small and insignificant throughout.
- Non-compliance is around 3-4 percentage points (p.p.) lower in Scotland than in England or Wales. This is a strong finding, consistent in all first three specifications.
- Another strong result is the higher non-compliance observed, *ceteris paribus*, for Level 2 apprentices relative to Level 3 ones. A difference though can be observed in this case between the payslip and the non-payslip sample: the effect is significantly larger in the second case.
- Due to the small number of apprentices (71 in the whole sample) with disabilities or learning difficulties, the effect of this variable appears inconsistent across the different specifications. It would be unwise then to draw any definitive conclusion regarding this variable, given also the imprecise estimate we get for the whole sample.
- A standard finding in previous research on non-compliance with the NMW among apprentices (see DRV and above) is the importance of the age/year of course interaction effect. Specifically, we first find that older apprentices that are eligible for the AR (because they are in the first year of their course) appear to be significantly *less* likely to earn an hourly pay rate that is non-compliant. There is an almost linear relationship between age and non-compliance in this case. Second, apprentices aged 19 or over and in their second year of the course and, thus, eligible for a higher legal minimum than the AR, are *more* likely to experience non-compliance. The effect here is particularly strong: an around 20 p.p. higher incidence of non-compliance is observed among apprentices aged 21 and over in Year 2 or above, compared with apprentices aged between 16-18 years and in their first year of the course. The pattern of these two results is similar in the first three specifications (1) to (3), where most information is not based on payslip data. Moreover, the consistency of this finding across all APS analyses points to important and policy-relevant conclusions: either a limited understanding by employers and/or employees of the rules governing the minimum wage for apprentices, or a conscious choice by employers to avoid the higher labour costs associated with older apprentices past their first year, are things that need to be addressed in order to achieve a reduction in overall non-compliance.
- Consistent with previous findings, as well as the tabulations provided in IFF Research (2014), the apprenticeship framework seems to be strongly related to non-compliance, even when a range of other factors is controlled for in a multiple regression setting. In particular, significantly higher non-compliance is observed in hairdressing and in children's care, while

non-compliance is significantly lower in the more modern electrotechnical, engineering, business and management frameworks. These results are in general robust across the different specifications. They again point to the need of qualitative research to get a better understanding of the pay and hours practices in the more non-compliant frameworks like hairdressing, something that we contribute to in the second part of this report.

- There is evidence that some indicators of job quality are significantly related to non-compliance. Having a contract, being on a permanent post and having a longer tenure with current employer, are all negatively related to the probability of receiving a wage below the eligible minimum.

- Regularly receiving tips is not associated with non-compliance in our data. On the other hand, receiving bonuses seems to be negatively related to non-compliance. Since bonuses do not appear to be used (illegally) as a substitute of regular pay, this result may point to more profitable employers that offer higher quality and better remunerated jobs.

- Variables related directly to the calculation of hourly pay, as well as the questionnaire's design and structure, are also found to be significantly related to non-compliance. This points to the importance of measurement issues, a recurrent finding in analyses of the different APS rounds (see DRV). Higher reported basic and unpaid overtime hours are positively correlated with non-compliance; this is to be expected as our measure of non-compliant wage takes account of these unpaid hours. On the other hand, receiving accommodation is correlated with less non-compliance; remember that accommodation is included in pay if it is provided by the employer. Among the whole sample, if information is provided by the payslip, and especially if both pay and hours are provided from it, this leads to a lower incidence of non-compliance, *ceteris paribus*. This confirms, in a multiple regression setting, the descriptive finding reported above and is probably related to a more accurate reporting of pay and hours information. Finally, the hourly paid (note that we can only observe hourly paid apprentices in the non-payslip sample) are less likely to be paid below their legal minimum rate: there is a ceteris paribus reduction in the probability of non-compliance of around 9 p.p. (or 11 p.p. in the non-payslip sample) for the hourly paid relative to the non-hourly paid. This should be mainly related to the fact that not many extra calculations need to be made to arrive at the rate which will be judged against the eligible minimum rate for the identification of non-compliance.

- The results taken in the multiple regression framework concerning the relationship between awareness with the NMW legislation and non-compliance, differ a bit from the simple relationships we reported above. Specifically, having heard about the NMW does not cause a significant change in non-compliance relative to a situation where the apprentice has not heard of the NMW. What seems to matter more for non-compliance, and in the expected direction, is increased knowledge concerning the AR. Both apprentices that know the existence of an AR and those that know it's value, are significantly less likely to earn a wage less than their legal minimum than those that just know about the NMW or have not even heard about the latter. A slightly bizarre finding (also mentioned in the previous section) has to do with the lower non-compliance observed among apprentices that are aware of the AR than those that additionally know the specific value of the AR. However, this difference is not as pronounced as in Table 10, and in the case of the non-payslip sample is not even statistically significant at a conventional level of confidence.

The above summarize the main results for the more robust specifications (1-3) reported in Table A2 in Appendix 1. As mentioned above, in addition to these specifications, we also estimated two models of non-compliance (see specifications 4 and 5) for two substantially smaller samples: one for those apprentices that report both their pay and hours from their payslip (*N*=991), and one for those that directly report an hourly pay in the core earnings questions of the survey (*N*=517). Perfect prediction and the possibility of obtaining inconsistent maximum likelihood estimates led us to estimate an OLS regression for the latter, smaller sample, while perfect prediction meant that some observations and the relevant variables could not be used in the probit model of the former sample.

The above issues with estimation also mean that the results taken here should be treated with some caution. Irrespective of this, what emerges from these specifications is a picture of more imprecision in estimates, with a lot more variables than in the first three specifications discussed above failing to achieve statistical significance at a conventional level of confidence. Some of the main results reported above are still observed though. For example, the importance of the age/year of course interaction can still be observed to a certain extent in the 'both pay and hours from payslip' sample, while the same is the case with the awareness variables in the hourly paid sample.

Some of the insignificant findings here may also mean that the importance of certain variables in explaining non-compliance no longer applies in these more specific samples. This is the case with some of the system/survey variables. For example, while basic hours and unpaid overtime hours are still negatively related to non-compliance incidence in the restricted payslip sample, this is not the case for the hourly paid sample. This is something to be expected: if there is some measurement error in non-compliance due to the way basic and overtime hours are reported, this fact should not affect the apprentices that directly report an hourly pay.

To conclude this section, the specifications on which we place more confidence (1-3, and 4 to a certain extent), seem to confirm and, thus, strengthen previous findings based on past APS surveys (DRV). In particular, the importance of age and year of course in explaining non-compliance is a recurrent finding and surely a matter of policy concern. We also confirm here that some non-compliance is, at least to a certain extent, related to the way the hourly pay is calculated from earnings and hours data. Finally, the improved questions regarding awareness with the NMW legislation were used and pointed to an important finding: increased levels of awareness, and in particular knowledge about the existence of an AR, are negatively correlated with non-compliance incidence. The policy implications of this finding are obvious. In the following section we examine awareness in more detail.

2.4.2   Awareness

How does awareness of the existence of an AR vary with the personal, course, and job characteristics of apprentices? Since awareness is related to a lower incidence of non-compliance, it seems worthwhile to have an understanding of what determines it in the first place. For this reason, we estimated a series of simple probit models of awareness for the whole sample of apprentices and those that are eligible for the AR. The latter group is the most relevant one in this case, since it is the one that the AR applies to. Table A3 in Appendix 1 reports the whole set of estimates. For each group, we are estimating a model of 1) simple knowledge of the existence of an AR, and 2) knowledge of the specific value of the AR.

The first thing to note is that the results appear in general consistent across the two samples. This is something that should be expected, since a large part of the whole sample consists of AR-eligible apprentices (5,017 out of a total of 6,567 apprentices). Demographic variables are much more important in the case of awareness than in the case of non-compliance. Men are more likely to be aware of the existence of an AR and the specific value of the AR than women, while the 'white' coefficient is positive and significant only in the case of awareness of the existence of an AR. On the other hand, apprentices in Scotland and Wales are far less likely than apprentices in England to be aware of the NMW legislation concerning the AR. As we saw above, however, this does not appear to affect their non-compliance differential with apprenticeships in England. It should still be a cause for concern though, if the aim of policy is to limit any differences across different demographic and regional groups in order to raise the overall level of awareness.

Another important result concerns the knowledge of Level 2 apprentices. They are less likely than Level 3 ones to know the AR part of the NMW. This appears as a worrying result, since Level 2 apprentices are also more likely to earn a wage that is below the legal minimum. The results about the age/year of course interactions are not so clear cut and, also, not as intuitive as in the case of non-compliance. Lower awareness is observed for Aged 16-18, second year, and Aged 21+, first year apprentices than Aged 16-18, first year ones; however, these apprentices are also less likely to experience non-compliance than the latter group.

Framework differences are also not so pronounced in this case. We can observe a significant and substantial higher awareness among business apprentices than other frameworks, a group that also experiences lower non-compliance. On the other hand, we do not estimate significant differences for apprentices in the less compliant frameworks, *ceteris paribus*. Finally, it is interesting to mention the higher awareness of the specific value of the AR among the hourly-paid apprentices. Note, that these are also apprentices that appear to be less likely to be non-compliant, as the results reported above have already indicated.

2.4.3   Determinants of basic hourly pay

Up to now, we mainly examined the hourly pay of apprentices only in relation to the eligible NMW rate and, hence, its compliance with legislation. In this section we are looking more generally at the determination of the apprenticeship hourly pay. In particular, we use the log of the 'basic gross hourly pay' measure mentioned above as the dependent variable and estimate a standard log-linear regression model of the basic hourly pay on the usual range of characteristics available in the APS 2014 and used up to now in this report. Table A4 in Appendix 1 reports the full set of estimates.

When we move beyond non-compliance, the estimated effects of different demographic, course, job and survey characteristics on the basic hourly pay provide some new findings and insights. Male apprentices receive around 6% higher hourly pay than similar female ones. Note, importantly, that this difference does not depend on the differential sorting of males and females on high- and low-paying industries and occupations, since we control for framework in the model. However, we cannot really claim that we have identified some sort of gender discrimination, since there are still many unobservable personal, job and workplace factors that we do not take account of. The same is the case with the nearly 13% lower pay for those apprentices with disabilities or learning difficulties. As we saw above, these pay differences do not lead to higher non-compliance among these groups:

the average pay of females and for disabled apprentices may be lower, but this does not lead to an increased probability of them being paid below their eligible minimum rate.

Level 2 apprentices are paid less than Level 3 ones, consistent with their increased propensity to receive a non-compliant hourly pay. On the other hand, apprentices in Wales and, mainly, Scotland, are better paid than similar apprentices in England. The result for Scotland is in line with the lower incidence of non-compliance across the Scottish sample.

Age and year of course depict a positive relationship with average pay. This is a picture that is relatively simpler than the picture shown above concerning non-compliance. For Age 21+ apprentices in their first year of the course, average pay is around 43% higher than that of Age 16-18, Year 1 apprentices. This pattern confirms the lower non-compliance among the older Year 1 apprentices. Average pay also increases with age for Year 2+ apprentices, but this does not seem to be enough to accommodate the increases needed due to the higher legal minimum that needs to be paid, hence the higher non-compliance among the older groups of Year 2+ apprentices.

Differences in pay across frameworks reflect different industrial, occupational and workplace pay structures and practices. Higher pay is observed in apprenticeships such as management, business, electrotechnical, and engineering, with significant pay premiums in customer services as well. On the other hand, significant and large pay penalties are observed in hairdressing and children's care. These average pay differences broadly correspond to non-compliance differences across frameworks.

Characteristics pointing to higher job quality are also related to higher pay, similar to their relationship with non-compliance. Having a contract, holding a permanent job and having a longer tenure with the employer are all positively and significantly related to hourly pay. Pay premiums of around 9-12% are associated with these characteristics. On the other hand, receiving tips seems to depress hourly pay, probably because tips are largely used as a supplement to regular pay by employers. Receiving bonuses instead is correlated with higher pay. This reiterates the finding concerning non-compliance and may point to more profitable employers offering better remunerated jobs.

Measurement and survey characteristics are also correlated with average hourly pay. Although, as expected, basic hours are negatively related to hourly pay, being included in the denominator of the formula that calculates hourly pay; unpaid extra hours are not as, in contrast to the 'non-compliant wage' used earlier, the hourly pay variable here does not use unpaid overtime. An interesting finding has to do with the significantly higher pay observed for people that use a payslip to provide their information to the survey. Remember that we interpreted lower non-compliance for payslip respondents as an indication of more accurately provided information. Under-reporting of pay and/or over-reporting of hours may be more prevalent among apprentices that do not use a payslip in their answers. This may indeed be the case and also explain our finding here. A different explanation may point to higher quality employers and/or employees: these should be more likely to be found among apprentices that have and use a payslip in their answers. This may also support the argument that ASHE (all fully documented wages; see section 2.2.2) should be interpreted as a lower bound for compliance estimates.

Finally, there is a pay premium for apprentices that are aware of the existence of the AR. On the other hand, no such premium is observed for persons that know the specific value of the AR. This is a pronounced difference, not as in the case of non-compliance, and it may have something to do with the unobserved characteristics of the most knowledgeable group of apprentices.

2.4.4 Framework-level analysis

In DRV's work, framework-level analysis was constrained by the fact that not many observations were available for each apprenticeship framework. This is no longer the case, since we now have three rounds of APS surveys to utilize. Pooling the data is a fair response, as this analysis and previous ones suggest that, although non-compliance measures are not comparable across surveys, the determinants of wages do seem common to all years. However, the changes in the survey design and questionnaire over the years mean that our analysis is constrained to the common variables and cannot be as detailed as single-year analyses like the preceding one on the 2014 APS.

The purpose of this section is to pool the data from APS 2011, 2012, and 2014 and compare the pay, non-compliance with the NMW, and the characteristics of apprentices across the different frameworks. A comparison between the lowest and the highest paid frameworks (hairdressing and children's care versus management) also paves the way for the qualitative analysis that follows, which focuses on the hairdressing and child care sectors. We should note from the beginning that because of the need to harmonize the data across the different years and to keep as many observations as possible in each survey, the 2014 sample used in this section differs slightly from the one used up to now in this report.

As a starting point in our analysis, Table 11 reports non-compliance incidence by framework and survey year. We have already noted the highest overall non-compliance observed in the 2012 data due to the timing of the survey; this distinctive characteristic of the 2012 data is also obvious when one looks at non-compliance by framework. Here, however, we are interested in the *relative* differences (i.e. the different *rankings*) across frameworks and survey years, and not the absolute numbers. Such a comparison of relative rankings effectively controls for any differences arising from survey design and questionnaire changes across the three APS survey years.

Table 11 Extent of non-compliance, by framework and survey year

2011		2012		2014	
1. Hairdressing	47.7%	1. Hairdressing	68.6%	1. Hairdressing	45.1%
2. Construction	31.1%	2. Children's care	43.0%	2. Children's care	28.4%
3. Other	27.5%	3. Other	42.4%	3. Other	22.2%
4. Children's care	26.0%	4. Construction	41.9%	4. Construction	22.0%
5. Engineering	19.6%	5. Electrotechnical	31.0%	5. Electrotechnical	17.7%
6. Electrotechnical	19.1%	6. Business	30.5%	6. Engineering	16.2%
7. Business	14.6%	7. Health	21.0%	7. Business	13.9%
8. Hospitality	13.2%	8. Engineering	20.6%	8. Health	12.5%
9. Health	5.1%	9. Hospitality	19.0%	9. Retail	12.4%
10. Customer	4.7%	10. Customer	18.0%	10. Customer	11.4%
11. Management	4.4%	11. Retail	16.6%	11. Hospitality	9.7%
12. Retail	3.7%	12. Management	3.9%	12. Management	4.3%

Notes: Source APS 2011, 2012, and 2014, authors' calculations; weighted data.

Although some differences between years in the ranking of the different frameworks according to their non-compliance incidence can be observed, the broad ranking pattern appears quite similar. Specifically, hairdressing is consistently the sector appearing as the most non-compliant one, with a relatively large difference from the sector that is ranked second each year (construction in 2011, children's care in 2012 and 2014). The children's care, 'other' and construction frameworks always occupy the second, third, and fourth highest places, with 'other' consistently appearing in the third place. On the other hand, retail, customer services, hospitality/catering, and management are always observed at the bottom of the rank with respect to their non-compliance. Management appears as the most compliant sector in two of the survey years (2012 and 2014), with retail taking the last position in 2011. Finally, in the middle of the rank we can always observe the engineering, electrotechnical and business frameworks.

A relevant question that arises here is the following: are these differences across frameworks expected, given the different characteristics of apprentices and apprenticeship jobs in each one of them? A first answer to this question can be given by comparing the structural differences of apprenticeships across the different frameworks. Table A5 in Appendix 1 reports these differences by focusing on a specific subset of the independent variables we have used up to now in this report. Looking only at these specific variables is a choice dictated by the fact that these are the only ones available consistently in all three APS surveys. Note also the large sample size for each framework that can be obtained by pooling the data across the three years: sample sizes as large as 2,675 (for the Engineering framework) are now available.

There are some findings in Table A5 in Appendix 1 that appear consistent with the different non-compliance incidence across frameworks and the results of our analysis in the previous section concerning the correlates of non-compliance. Apprentices in the highest non-compliant frameworks are consistently lower-paid and younger, and are also less likely to have been working with their current employer before the apprenticeship started. The opposite characteristics are observed in the lowest non-compliant frameworks. For example, 98% and 87% of apprentices in management and retail, respectively, have been working with their employer before the course started, compared with only 61% of apprentices in either hairdressing or children's care. Moreover, apprentices in management are overwhelmingly among the Age 21+, Year 1 group (77%), a group that is consistently found to exhibit the lowest levels of non-compliance (see Table A2 in Appendix 1). In contrast, the majority of apprentices in hairdressing are aged between 16 and 18 years.

Not all structural differences, though, appear consistent with the non-compliance differences across frameworks. For example, hours of work and training do not differ much between hairdressing and management, while overtime incidence is higher in the latter sector. Children's care apprentices also appear to be more likely to be hourly paid than management apprentices.

To examine, thus, how far the differences in characteristics can explain the differences in non-compliance, a comparison of frameworks using a multiple regression framework can be quite useful. In Table 12 we report results of different probit models of non-compliance, where the hairdressing indicator variable, which captures the highest non-compliance sector, is now used as the reference (excluded from models) category. In each specification, we gradually add the controls described in Table A5 in Appendix 1 as independent variables in the models. In this way we can examine how the size and significance of the marginal effects of the framework indicator variables change as

structural differences between the frameworks are accounted for (see Table A6 in Appendix 1 for the full results).

Table 12 Non-compliance differences between hairdressing and other frameworks

	(1)	(2)	(3)
(Base: Hairdressing)			
Business and related	-0.1603***	-0.1594***	-0.0857***
	[0.0043]	[0.0043]	[0.0048]
Children's Care	-0.1079***	-0.1067***	-0.0000
	[0.0064]	[0.0064]	[0.0112]
Construction and related	-0.1294***	-0.1271***	-0.0858***
	[0.0054]	[0.0055]	[0.0050]
Customer Service	-0.1755***	-0.1744***	-0.0902***
	[0.0035]	[0.0035]	[0.0044]
Electrotechnical	-0.1379***	-0.1374***	-0.0914***
	[0.0050]	[0.0049]	[0.0046]
Engineering/Manufacturing	-0.1617***	-0.1598***	-0.1069***
	[0.0045]	[0.0046]	[0.0045]
Health, Social Care and Sport	-0.1758***	-0.1741***	-0.0817***
	[0.0037]	[0.0037]	[0.0054]
Hospitality and Catering	-0.1713***	-0.1697***	-0.0860***
	[0.0037]	[0.0037]	[0.0045]
Management	-0.1900***	-0.1885***	-0.1055***
	[0.0031]	[0.0031]	[0.0036]
Retail	-0.1807***	-0.1794***	-0.0851***
	[0.0034]	[0.0034]	[0.0052]
Other	-0.1214***	-0.1207***	-0.0559***
	[0.0057]	[0.0057]	[0.0069]
Controls			
Country and survey year	No	Yes	Yes
All other controls	No	No	Yes
Observations	20,018	20,018	20,018

Source: APS 2011, 2012, and 2014 pooled together and authors' calculations.
Notes: The table reports marginal effects of probit models calculated at the means of independent variables; unweighted data; standard errors in brackets (*** $p<0.01$, ** $p<0.05$, * $p<0.1$).

As expected, the differences in non-compliance between hairdressing and the other frameworks are reduced substantially as more controls are gradually added to the model. For example, the marginal effect of the management dummy is nearly halved in size in the "full set of controls" specification (compare specifications 1 and 3). However, large and significant differences between hairdressing and the rest of the frameworks still remain even if one controls for all observable characteristics (specification 3). The only exception to this pattern is the difference between hairdressing and children's care. The significant difference observed in the "no controls" specification (1) is fully accounted for by observable characteristics (the children's care dummy is insignificant in specification 3).

The above exercise shows the limits of any quantitative analysis in addressing in full the pattern of differential non-compliance rates observed across the different apprenticeship frameworks. In part, this can be attributed to the limited set of variables available in the pooled 2011-2014 APS dataset. Important variables such as NMW awareness or job quality characteristics cannot be used in the pooled analysis, due to non-availability across all the years. However, even if we had an extensive range of variables to work with, specific aspects of the reality concerning pay and hours practices, norms, and behaviours within each apprenticeship framework, would still be very difficult to quantify and measure with precision. The qualitative analysis that follows and focuses on the hairdressing and children's care sectors tries to cast some light on such aspects.

2.5 ASHE analysis

The ASHE 2015 data was received in December 2015, and some use has been made above in the summary statistics. A preliminary analysis of ASHE 2015 shows the same patterns as 2013/2014 (as for instance in Table 7 above), but with markedly lower compliance rates. This may be due to an error in coding but none has come to light yet; and it is consistent with the lower non-compliance rates in the APS 2014 data, although these have been put down to better data collection.

Aside from the lower compliance rates, ASHE 2015 data tells almost exactly the same story as reported in DRV for the 2013 and 2014 data, including the effects of rounding during processing. The final version of this report will therefore pool the three years of ASHE data to investigate whether the increased sample size can shed more light on non-compliance in this dataset.

3. Qualitative analysis

3.1 Data collection

Apprentice trainers, employers and apprentices are the key actors whose insights into the patterns emerge from the statistical analysis of the first stage. Some interviews have been conducted to date with training assessors and apprentices; however, in these early stages of the research it proved difficult to complete interviews with employers. Interviews with employers have already been planned and, to date, three employer interviews have been carried out in the hairdressing sector[3]. We have also arranged to speak to an accountant who does payroll for a salon and have been in contact with the National Hairdressing Federation to ask for their comments on our research.

Access to research participants was facilitated through a snowball sampling technique, which is an efficient way to identify research subjects who may be difficult to target directly, either because the sample is hidden or the research topic is of a sensitive nature (Atkinson and Flint, 2001;Browne, 2005; Bryman and Bell, 2011). We had initially intended to target further education colleges that were partnered with our own institution as a way of making first contact with college tutors. When this proved to be unsuccessful, we made direct contact with colleges where apprentices were taught. As part of identifying potential employers and interviewees, the team visited a number of websites where apprentices were commenting on work matters. This provided an additional source of qualitative information. We spent some time introducing the study and its aims and objectives, in

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[3] These have been anonymised as Employers A, B and C.

order to emphasize the significance of the research. After this, we were able to use these initial contacts to identify further research subjects, including apprentices, trainers and employers.

As snowball sampling relies on the use of social networks to identify respondents, this method has been criticized for leading to bias within the data as a particular sample will be selected (Van Meter, 1990). In order to limit the instance of bias, we contacted a further set of apprentices, employers and trainers who were not affiliated with a college. Again, we made use of a snowball sampling technique. In order to recruit employers for the research, we used personal networks to identify the first hair salons. We then asked the salon owners and managers to suggest further employers and trainers who might speak to us. These employers also permitted us to speak to their apprentices, who, in turn, put us in touch with their contacts, thereby enabling us access to employees and apprentices who were not affiliated with any of the colleges.

Apprentices were interviewed in focus groups. As well as allowing more apprentices to participate, it also addressed concerns that the individuals were likely to be quite reticent in a single-interview format; group sessions encouraged dialogue between participants. All of the focus group participants completed a questionnaire, although there is clear evidence of a small number copying others.

As access to apprentices for the focus groups was facilitated through the relevant college, this raised questions around generalizability. Since the relationship between the apprentice and the college trainer/training assessor was cited frequently as being of importance, it was deemed important to speak to some apprentices who were not being trained by the college and, therefore, did not have the same contact with, or experience of being supported by a college. To these ends, three apprentices who did not attend a college, but were trained within the salon, took part in the study[4]. Amy (18) began her apprenticeship in hairdressing in September 2015 and she is one of four apprentices in her salon. Becky is 21, in her second year as a hairdressing apprentice, and she works in a small salon where there is one other trainee. Chloe (19) is in her first year of a childcare apprenticeship and she works for a nursery where there are four other apprentices besides her.

In addition, twelve further short semi-structured interviews (10-20 minutes) were conducted with salon workers and childcare workers. Of these respondents, in the hairdressing sector, three were senior stylists, three were recently qualified stylists and two were working in other salon roles. For childcare, four interviews were conducted with employees who had completed an apprenticeship within a three to five year period. The overarching aim of these interviews was to put the apprentice-employer employment relationship within a wider context by also speaking to individuals who had already completed the apprentice process. Respondents were asked to comment on their past experiences, as well as their impression of the current situation surrounding apprentices and pay rates in their own workplaces. These interviews also provided an opportunity to check information and to gain a further perspective on some of the areas where conflicting information had been gathered from, for example, employers and apprentices.

Numbers interviewed were as follows:

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[4] Apprentice names have been replaced by pseudonyms. These interviews have not yet been transcribed.

Table 13 Qualitative study numbers

Group	Method	Number	
		Children's care	Hairdressers
Provisioning managers	Semi-structured interview	2	1
Trainers/training assessors	Semi-structured interview	3	5
Apprentices	Semi-structured interview	1	2
Apprentices	Focus group and questionnaire	9 (1 f.g.)	24 (2 f.g.)
Employees	Semi-structured interview	4	8
Employers	Semi-structured interview	0	3

In order to facilitate the semi-structured interviews, a short list of question topics was sent to the different groups interviewees in advance. The aim behind providing these topics is to give focus to the interview in advance (Bryman and Bell, 2011). Moreover, this approach enables respondents to prepare themselves and limit the extent to which they might be apprehensive about engaging in conversations around sensitive topics. The pre-interview list did not contain a fixed set of questions; nonetheless, the interviews will follow the broad structure of topics. The topics include:

- Awareness of the Apprentice Rate and minimum wage;
- Pay composition;
- On and off-the-job training;
- Employment contracts;
- Experience of apprenticeship;
- Quality and availability of work experience.

Our previous LPC research did not encounter geographical effects or any specific regional differences for non-compliance in the data; nor did a previous LPC study by Ritchie et al. (2014). Both suggested that common human responses are more important than location, industry, occupation and so on. Therefore, interviews were conducted in the South West of England and the sample in the South West was taken as generalizable.

Once interviews started, it became clear that experiences in the urban South West area chosen for the initial data collection were relatively similar. However, some interviewees suggested that more rural areas would have different experiences. Hence, an additional set of interviews was sought at colleges in Cornwall, but this could not be arranged in the reporting timetable. Again, alongside the employer interviews, the research team will follow this up in early 2016.

Interviews were recorded and partially transcribed. Instead of utilising qualitative software, in order to code and classify the data, data analysis is thematic, based on a pragmatic approach to grounded theory (see, for example, Charmaz and Mitchell, 2001). This method is more closely aligned to the interpretivist perspective of qualitative research.

3.2 Results

This section presents the findings from the qualitative research undertaken to date. It also introduces some of the findings which have come from the apprentice questionnaire, administered to apprentices during the focus group sessions.

3.2.1   Questionnaire results

The questionnaires were completed by the focus group attendees anonymously before the focus groups began. Table 14 outlines the responses gathered.

Table 14 Apprentice questionnaire data

	Hairdressers	Children's care
Number	24	9
Age 16-18	19	4
Age 19+	5	5
Year 1	14	2
Year 2+	10	7
Paid below MW	8	1
Paid at MW*	3	2
Paid above MW	11	6
Don't know pay	2	0
Non-compliance rate	36.4%	11%

Note: two wages of £3.29 and £5.29 assumed to be compliant at £3.30 and £5.30 respectively

The non-compliance rate for hairdressers is similar to the APS rate, whereas that of childcare is lower. These figures should be treated with caution as, as well as being small numbers, there is clear evidence of a number of apprentices copying each other to complete the form. In addition, wages were gathered at various levels (hourly, weekly, monthly) and are likely to be subject to rounding errors.

Training hours varied wildly. For the hairdressers, 6 hours per week (or one day) off-site seemed to be the norm although this was as low as 1.5 and as high as 8. Most hairdressers reported 2-3 hours of on-site training but several suggested it was variable. Childcare workers mostly reported 4 or 6 hours per week off-site, but eight out of nine reported no on-site training.

The questionnaires suggest that misreporting might be behind some of the non-compliance we have found because, as discussed below, there is a distinct lack of awareness amongst apprentices around pay.

3.2.2   Preliminary findings

There was general acknowledgement that hairdressing and childcare are low paid sectors. In the hairdressing sector, the consensus between training assessors, managers and salon workers is that employers will try to pay as little as possible and that low pay is woven into the culture of the industry.

> *"Salons want to pay the least they can get away with"*
>> (Hairdressing training assessor)

> *"Without us, they (other salon employees) wouldn't be able to do their jobs.*
> *I'm surprised they don't feel guilty (that apprentices receive low pay)".*
>> (Year 1 hairdressing apprentice)

However, from the initial employer interviews, it seems that salon owners and managers feel that they are justified in keeping apprentice pay as low as possible. Low pay for apprentices was justified by one employer who pointed to the value of the experience, as a hairdressing apprenticeship combines on-the-job training, with real salon experience and a qualification at the end:

> *"What the apprentices get from us is a lot. [...] it's very labour-intensive [...]*
> *they shouldn't be paid a lot".*
>> (Employer C)

This stance that the overall benefits of apprenticeships overshadow the challenges of extreme low pay in the early years was echoed by one of the college trainers:

> *"In this job, you start at the bottom. It's three, four years and then you can*
> *really see the value of the qualification. I tell the girls 'don't give up; it's*
> *worth sticking out these first years' and everyone's been in the same boat".*
>> (Hairdressing trainer)

Colleges preferred to work with existing employer partners. Training assessors and apprentice managers were surprised when told about the issue of non-compliance (indeed, the initial response of training providers was that they were unaware of any non-compliance in their students). Some said they were aware of a few cases where employers had been taken to court.

Focus groups with apprentices indicated the extent to which low pay in general was more of an issue amongst apprentices rather than consideration about the amount they were actually being paid. The majority of apprentices were particularly vociferous when it came to the types of tasks they had to undertake at work and believed that they should be paid more for doing these jobs:

> *"We are professional cleaners and professional cleaners get paid more".*
>> (Year 1 hairdressing apprentice)

> *"I get all the end of the day jobs, all the clearing up which takes ages and*
> *nobody helps me".*
>> (Year 1 childcare apprentice)

> *"We work hard, long hours for rubbish money. We do most of the stuff that the fully trained staff do".*
>
> (Year 2 hairdressing apprentice)

Whilst all apprentices agreed that low pay was the worst part of their job, focus groups revealed that apprentices had a very poor level of knowledge about what they were actually being paid. In many cases, apprentices were surprised that they were being asked questions about pay and struggled to calculate the hours they worked.

Despite being asked to fill out the questionnaire on pay individually, the majority of apprentices conferred or asked the trainer for help. Consequently, the apprentice questionnaires are useful, not for the fact that they suggest non-compliance, but for the fact that they demonstrate the extent to which there is a lack of knowledge around apprentice pay rates for apprentices. Questionnaires contain the same answers where apprentices have copied from each other, despite the fact that each apprentice worked at a different salon, nursery or crèche and worked different hours. Apprentices simply replicated answers[5].

Childcare apprentices had the lowest level of awareness of pay rates. Childcare apprentices were asked how they knew if their pay was correct. The majority said they did not know if it was right.

> *"It (salary) just appears in my bank account at the end of the month".*
>
> (Year 1 childcare apprentice)

When asked how they would go about checking, the responses from first year childcare apprentices further underlined the lack of awareness:

> *"I wouldn't check".*

> *"I'd ask (name of trainer at college)".*

> *"I'd ask the others".*

When pressed for an answer, first year childcare apprentices overwhelmingly replied to the question about how to check that their pay rates were correct by stating that they would check with friends or the college. What is interesting here is what is behind this lack of knowledge and the lack of desire to have the knowledge. Initially, it seemed that this apathy might be related to a lack of commitment to the apprenticeship, or even a limited interest in the experience so far, as these respondents were in their first year. However, further questions revealed that the main reason that Year 1 childcare apprentices did not feel compelled to have a greater understanding of their pay was that they trusted their employer to pay them the right wages.

> *"I trust the nursery to pay me the right money".*

> *"Why wouldn't they pay me the right wage?"*

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[5] This is not directly relevant for the APS, where apprentices are telephoned individually to get pay data and so cannot confer. However, it is indicative of concerns over the reliability of responses by some apprentices.

The second quotation illustrates the element of surprise at being asked about pay which was present in many of the focus groups.

The element of trust cited by childcare apprentices within the employment relationship is missing from discussions with hairdressing apprentices. Hairdressing apprentices, as is also the case with childcare apprentices, describe their relationship with their college as being based on trust, but did not speak of trust when discussing their employer. This seems to fit with the above discussion around the particular characteristics of the sector, the extent to which salons might be perceived as unscrupulous and that hairdressing apprentices become almost socialized into a low pay culture.

Hairdressing apprentices did not count tips in their wages as these were both irregular and very low (20p - £1):

> *"We don't know what we are going to get so we don't add tips into our wage."*
>
> (Year 2 hairdressing apprentice)

Tips typically were given to the stylist and this was a source of contention among apprentices as they claimed they did the hardest jobs:

> *"This customer was in and I did everything for her. I washed her hair, I did the colour, I made her coffee, I brought her magazines...yeah, I did everything. She was in…umm…for about three hours and it came to well over £100.Then along came the stylist…snip, snip, snip [mimes cutting hair quickly]. She got a £10 tip. I got nothing".*
>
> (Year 2 hairdressing apprentice)

However, trainers pointed out this was part of the process, whereby in the sector, hairdressers had to start at the bottom and work their way up, in order to command the tips. This was the same argument utilised by trainers when discussing the nature of tasks apprentices were typically given.

The majority of childcare apprentices were paid for attending out-of-hour meetings. Hairdressing apprentices were expected to cover for absent colleagues but all said they got paid for this or hours in lieu. Breaks for hairdressers were generally often not taken. Despite there being a stipulation that breaks should be taken, most hairdressing apprentices said that they did not feel comfortable being seen sitting about, taking a break:

> *"I tend to hide in a corner and eat my sandwich as fast as possible".*
>
> (Year 2 hairdressing apprentice)

Many said that missing breaks during busy periods was the nature of the sector. Training assessors advised apprentices to go off site, in order to be able to take the time.

First year hairdressing apprentices, although slightly more knowledgeable about their pay rates than the childcare apprentices in Year 1, displayed a lower level of awareness than second year apprentices. In general, however, overall awareness was not high, with the majority of all hairdressing apprentices unsure about apprentice pay rates and their own pay.

A key difference between the hairdressers and childcare trainees was that around half of all hairdressing apprentices interviewed said that they discussed their pay with friends or with the college and some were even able to explain how to go online and check on the relevant website. This suggested that, even if awareness of actual pay amounts was limited, these apprentices at least were aware of the need to check their pay and had some mechanisms in place to do so. Childcare apprentices did not appear to have this knowledge. Similarly, some awareness in hairdressing apprentices was also noted by trainers and training assessors.

Apprentices in their second year tended to be more confident around broaching the subject of pay with their employer. Employers at salons where apprentices were trained at the local college also noted a greater likelihood of awareness of pay rates:

> *"They'll come to me and say 'I'm 19 next week'. They are quite savvy".*
> (Employer C)

Interestingly, the age of apprentices and its impact on awareness of pay seems to be an additional concern from the employer side, as apprentices tend to start their training later than in the past. In terms of pay, this is of note since, as one employer argued, older apprentices cost more and need to be paid a higher wage in their second year, which makes wage bills higher:

> *"Schools are encouraging them (young people who become apprentices) to stay later and then they realize that they aren't cut out for academics. So they come to us at eighteen. [...] This (hairdressing) used to be a default rather than a chosen career".*
> (Employer B)

The focus groups with apprentices revealed a number of mixed responses from employers during conversations around pay:

> *"I mentioned it to my manager (that the apprentice had turned 19 and, therefore, need to have her pay increased) and she got funny".*
> (Year 1 hairdressing apprentice)

> *"My boss is new to this [...] she said I had to get in touch with payroll".*
> (Year 1 childcare apprentice)

> *"When I told my boss that I was going to be 21, she wasn't sure whether this would mean that my pay should go up so she….well, it took some time to sort out….but I'm like the oldest apprentice there and I think I am one of the first so she wasn't sure."*
> (Becky, 2nd year hairdressing apprentice)

The above comments suggest that not all employers are completely aware of the correct pay rates for apprentices. College trainers also were in consensus that employers may be unsure about how much to pay apprentices:

> *"Without us (giving information), they wouldn't get it right".*
> (Hairdressing trainer)

"Employers find this (apprentice pay information) hard to understand".
(Hairdressing trainer)

And finally, employers themselves admitted that understanding the legislation around pay was often difficult to grasp:

"Some hairdressers ignore paperwork … […] any modern salon that can hold its head up should be aware (of pay rates).
(Employer C)

But the employers interviewed to date were clear that they knew where to go to find the relevant information:

"I can always lean on other people, such as payroll or the Hairdressing Federation"
(Employer C)

"The Hairdressing Federation is pretty conversant and we get regular updates".
(Employer A)

Most salons and childcare employers use an accountant to deal with issues around pay. Therefore, we wondered whether any non-compliance in pay may be the result of mistakes made by an accountant who was not fully conversant with the legislation. An interview with an accountant who works for a hairdressing salon has been booked for February in order to ask about this.

Aside from the need to pay older trainees more money discussed above, interviews with salon staff suggest that there is some resentment amongst salon owners that they are expected to release apprentices for training and are, therefore, paying for valuable lost working time. Early employer interviews suggest that there may be some truth in this:

"I get the impression that colleges expect our sole focus to be on training the apprentice".
(Employer A)

From the initial employer interviews it also seems that salons also feel pressured by legislation around NMW and the Living Wage:

"Whilst I agree obviously that people have to be paid a decent wage, it squeezes us small salons. Wages go up but the public won't pay. [...] I say fifty pounds for a haircut and out of this the stylist earns x pounds but then the customer won't pay fifty pounds. […] Lots more small salons are going to go out of business".
(Employer C)

Aside from issues around awareness of pay rates, knowledge of training hours was also vague. Most apprentices needed to confer to check how many hours training they had at college. Answers differed amongst hairdressers for the amount of time devoted to training given in the salon.

Some apprentices said their salon found it difficult to get release for training, as employers wanted them to cover. One of the college assessors indicated that, in some cases, employers may even prevent apprentices from taking a day out for college:

> *"Many apprentices can be kept back from college during busy periods; however, we would intervene if the apprentice was being disadvantaged in their learning by this."*
>
> (College training assessor)

The three employer interviews, conducted to date, claimed that employers were supportive of the apprentices' training but, as the above comment from Employer A illustrates, there are some tensions regarding releasing apprentices for training at peak times. Moreover, there seems to be a difference between employers' understanding of whether on-the-job training is included in training and that of the colleges. According to the college all training done in the salon is part of the apprentices' paid work:

> *"Training that takes place in the salon must be part of the apprentices working day. If it takes place after working hours this must be taken into account of their working week".*
>
> (College training manager)

Nevertheless, from the employer-side, apprentices are getting some in-salon training time, but a large amount of learning is carried out independently and this is unpaid:

> *"They've (apprentices) got a training plan and depending on what they are doing – colouring, foils – it might 3 or 4 hours or less if they are starting out and its basic stuff. But anything else is up to them. I'm happy for them to stay in the salon and they can use the head blocks or sometimes they bring in a model – their mum or a friend – and they get their hair done".*
>
> (Employer B)

How colleges monitor on-the-job training varied between training providers, but one college asks students to complete a training portfolio which they can use to monitor in-salon training (on-the-job training).

Perceptions around the quality of training provided varied and, to a large extent, this seemed to depend on the attitude of the employer towards college training. Employers who did not send apprentices to college were more likely to suggest that high quality training was only available if training was done in-house. Employers who did use the college saw some aspects as being positive, but still argued that some of the key skills, especially for hairdressers, could only be learned through on-the-job training.

From the apprentice point of view, college-taught hairdressing apprentices were very positive about their college experiences. As highlighted above, there were mixed responses to the question of how much training apprentices received. The hairdressers who received regular in-salon training perceived this to be of great value and enjoyed the opportunity to have this. From the small number of childcare apprentices we interviewed, these respondents valued their on-the-job training as being of greater value than the time spent in college.

As it has been indicated already, relationships between the apprentice and the college, the apprentice and the employer and the employer and the college are of significance. It is clear from the research so far that, where the college has a positive relationship with both the apprentice and the employer, awareness and good practice seem to be more evident. Older apprentices seemed to be more confident in raising the issue of pay with an employer.

Apprentice interviews suggest that older apprentices are more likely to be confident enough to approach their employer if there was an issue, for example, with being paid the wrong wage and this has been confirmed, to some extent, by the employer interviews to date. First year apprentices, both childcare and hairdressing, preferred to seek support from the college. Apprentices clearly had expectations that the college and their tutors would look after their interest and this was also noted in the relationship between the trainers and the apprentices. Throughout the focus groups, it was clear that the relationship between the college and the apprentices was perceived as strong and supportive by the apprentices. Similarly, trainers and training assessors stated that they had a close relationship with their apprentices:

> *"They know they can come to us and we'll help to sort out the problem".*
> (Childcare trainer)

It had been suggested that there was some disconnect between the colleges, apprentices and employers. In our sample, as it has been noted already, we did not find this to be the case. However, from interviews with salon employers who had completed an apprenticeship previously, it became clear that the quality of training, as well as the extent to which the college provides support differs from college to college:

> *"I had lots of problems during my apprenticeship and I didn't find my college was a lot of help".*
> (Recently qualified stylist)

Hence, it seems that we visited institutions that had very good practice. Colleges we visited had a protocol in place that involved employers being vetted and followed up with checks to make sure that policy on pay and training was being followed, as well as to discuss any /Bath area, we are trying to set up interviews with colleges in more rural parts of the South-West.

It had also been suggested that colleges would not welcome debates around apprentice pay rates being discussed with their trainees. On the contrary, trainers used the interviewer's presence as a lead into checking wages and discussing good practice. In one college, the interviewer's presence was very much welcomed as a way to check with first year apprentices if their salaries were right and if they remembered what they had learned about wages.

3.3 Discussion

The lack of knowledge about training hours suggests APS was correct to focus on total paid-for hours. The responses from childcare suggest little on-site training, and hairdressers are very confused about the amount of hours spent training; both of these might explain the low numbers in the 2011/2012 APS. Of more concern perhaps is that breaks and training seem to be residuals for hairdressers, taken when work allows it.

The qualitative study does raise concerns again about pay data in the APS: apprentices seem relatively incurious about the detail of wages, so responses might be inaccurate. This may explain the much higher compliance rate when using payslips, suggesting perhaps that the payslip measure is the better one. These results may also explain the fact that awareness of the NMW or NMWAR did not mean 100% compliance: the ethos, particularly in hairdressers, seemed to be that low pay generally is part of the price paid for starting one's career; a few pounds one way or another isn't going to make a difference.

Power issues do seem important. First, apprentices are apprehensive of losing their jobs; this suggests employers could exploit that fear. Second, apprentices generally seem to trust employers to do the right thing (or at least are not curious enough to check). This again gives employers opportunities for exploitation, but it also means that if well-meaning employers make mistakes in paying employees, there is not a strong check from the employees to correct the error. No evidence was collected showing that employers are deliberately underpaying their employees, and the apprentices did not give any impression that their employer was being underhand; they didn't like the pay but it seemed to be the general level rather than the detail that exercised them.

Notwithstanding the positive relationship between colleges, employers and apprentices, there does seem to exist a disconnection between perceptions and experience. We were told by trainers that there were no non-compliance problems, and all the apprentices received appropriate training; this is clearly not the case. This suggests an additional area for LPC to consider as a target for an information campaign, although given the experience of the interviewer in getting pay information this is not a simple issue.

Finally, one employer mentioned the issue of late-starting apprentices following extended secondary education, and the fact that this feeds through into apprentice wages very quickly; a hairdresser's might get three years of low paid staff out of a 16-year, but only one year from an 18 with the same qualifications and ability. There is therefore a potential conflict between the plans for apprenticeships and the government plans to encourage staying on at school. We will follow this up with other employers to see if this perception was a one-off or reflects widespread concerns.

4. Conclusion and recommendations

On the quantitative side, we are now confident about the interpretation of the data. ASHE data seems likely to be an underestimate of non-compliance, and so can be taken as a lower bound. The new APS data seems reliable, although the complexity of the wage measures makes it difficult to be certain. The new APS compliance rates should be seen as an upper bound, but closer to the truth than the ASHE data. Our preferred ('central'?) estimate would be the non-compliance rate from the baseline sample where both hours and wages are taken from payslips. In order for this to really be the best estimate, there should be no extra hours worked but not paid (so not appearing in the payslips). The fact that "unpaid overtime" is included in the calculations, means that this is probably not an issue. If there were any extra unpaid hours worked, these would be reported and taken into account.

The multivariate findings on the relationship between wages, compliance and awareness confirms what was suspected from the 2011 and 2012 APS, but with much more confidence. It would be

reasonable to say that we are now confident that non-compliance is robustly associated, in order of importance, with:

- whether the AR applies or whether the apprentice is due to receive an age-related NMW (i.e. second or more year, aged 19 or more)
- the framework
- awareness of the NMW and AR
- job characteristics and attachment to the employer
- the country

The qualitative analysis, while not yet complete, is beginning to shed some light on this. There is strong evidence to suggest that the exact wage rate is not of central important to apprentices, at least those in childcare and hairdressing – that these apprentices' expectations may be low, such that they accept low pay generally as part of the apprentice 'experience' or 'duty', along with being at the bottom of the pecking order.

There is also evidence of a power relationship, with apprentices trusting employers to do the right thing, and trainers accepting the apprentice's word that wages were being paid correctly. While we uncovered no evidence of deliberate abuse, some employers admitted to confusion; and it is easy to see how errors in wages might not be picked up by trusting apprentices or reassured trainers.

The qualitative analysis also raised concerns about apprentices' ability to identify wages and hours correctly, let alone calculate wage rates accurately. This partly underlies our belief that the true non-compliance rate is best estimated by the documented cases, and why we feel that the perceptions of trainers about the treatment of apprentices should be approached with caution. College staff are potentially very powerful levers for the LPC as they appear to be able to build good relationships with apprentices and employers; but their apparent over-confidence may reduce this potential. There is scope to consider how they may be encouraged to help apprentices systematically identify and calculate pay, rather than taking assertions of being paid properly as proof. College staff were keen to engage and help their apprentices.

Recommendations
- APS should be taken as the preferred measure of non-compliance; specifically, the documented (with the use of a payslip) compliance rate is the best estimate, with the baseline APS sample giving the upper bound estimate, and ASHE figures providing a lower bound estimate
- Apprentices have very little idea of what their wage rate is, or should be, and do not explore the internet to look for more information; instead they rely on friends and colleagues; a downloadable mobile phone application (the "app app"?) allowing simple calculations might reach this group
- The message that non-compliance is associated with the idea of 'bad jobs' could be usefully targeted to support bodies such as the Citizen's Advice Bureaux in identifying problematic working arrangements
- There is some evidence that apprentices feel concerned to raise low pay with their employers; hence there may be a role for LPC in helping employees to overcome their fears by, for example, suggesting positive arguments or ways to raise the topic

- College staff should be provided with practical guidelines about apprentices' difficulties calculating wages, and the data that needs to be collected to do this

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Appendix 1: Tables of full results

Table A1 Variable means across the samples – APS 2014

	(1)	(2)	(3)	(4)	(5)
Sample	Whole sample	Payslip sample	Non-payslip sample	Both pay and hours from payslip	Hourly paid
Male	0.58	0.59	0.58	0.64	0.53
White	0.94	0.94	0.94	0.94	0.94
Disabled and/or having learning difficulties	0.01	0.01	0.01	0.01	0.01
England	0.58	0.56	0.60	0.53	0.65
Wales	0.18	0.17	0.18	0.18	0.15
Scotland	0.24	0.27	0.22	0.28	0.20
NVQ Level 2	0.48	0.47	0.49	0.47	0.49
Age	23.60	23.39	23.75	24.11	24.43
Age and year of course					
Age 16-18, Year 1	0.21	0.25	0.19	0.19	0.15
Age 16-18, Year 2 or above	0.05	0.05	0.05	0.05	0.05
Age 19-20, Year 1	0.18	0.19	0.18	0.18	0.20
Age 19-20, Year 2 or above	0.10	0.10	0.10	0.12	0.10
Age 21+, Year 1	0.31	0.29	0.33	0.33	0.37
Age 21+, Year 2 or above	0.13	0.11	0.15	0.13	0.13
Framework					
Business and related	0.11	0.10	0.12	0.01	0.08
Children's Care	0.06	0.08	0.06	0.06	0.07
Construction and related	0.12	0.12	0.12	0.14	0.09
Customer Service	0.05	0.04	0.06	0.03	0.05
Electrotechnical	0.07	0.08	0.07	0.12	0.10

Engineering/Manufacturing	0.17	0.19	0.16	0.19	0.13
Hairdressing	0.06	0.06	0.06	0.02	0.07
Health, Social Care and Sport	0.10	0.10	0.11	0.14	0.16
Hospitality and Catering	0.07	0.07	0.07	0.11	0.10
Management	0.05	0.05	0.05	0.05	0.06
Retail	0.06	0.06	0.06	0.09	0.07
Other	0.05	0.05	0.06	0.03	0.02
No contract	0.09	0.08	0.10	0.09	0.12
Permanent job	0.71	0.70	0.72	0.80	0.78
Worked for employer before course started	0.59	0.57	0.60	0.67	0.64
Receives tips	0.10	0.09	0.10	0.09	0.12
Receives bonuses	0.18	0.19	0.18	0.18	0.14
Basic hours	38.57	38.61	38.54	36.59	36.91
Unpaid overtime hours	0.26	0.13	0.35	0.08	0.16
Receives accommodation	0.04	0.03	0.04	0.04	0.04
Using a payslip	0.41	1	0	1	0
Both pay and hours from payslip	0.16	0	0	1	0
Reporting net pay	0.12	0	0.20	0	0.10
Hourly paid	0.08	0	0.13	0	1
Awareness					
Not heard of NMW	0.06	0.06	0.07	0.06	0.06
Heard of NMW	0.29	0.30	0.28	0.34	0.32
Aware of existence of AR	0.37	0.36	0.38	0.35	0.33
Aware of specific value of AR	0.27	0.28	0.27	0.25	0.29
Observations	**6,567**	**2,698**	**3,869**	**991**	**517**

Source: APS 2014 and authors' calculations.
Notes: Unweighted data.

Table A2 The correlates of non-compliance – APS 2014

	(1)	(2)	(3)	(4)	(5)
Sample	Whole sample	Payslip sample	Non-payslip sample	Both pay and hours from payslip	Hourly paid
Estimator	Probit	Probit	Probit	Probit	OLS
Independent variables					
Male	-0.0162	0.0169	-0.0403***	-0.0122	-0.0078
	[0.0104]	[0.0130]	[0.0150]	[0.0176]	[0.0218]
White	-0.0099	0.0036	-0.0155	0.0130	-0.0623
	[0.0156]	[0.0179]	[0.0226]	[0.0087]	[0.0481]
Disabled and/or having learning difficulties	0.0819	-0.0495***	0.2120**	-	0.1513
	[0.0500]	[0.0153]	[0.0844]	-	[0.1219]
Wales	-0.0047	-0.0072	-0.0014	-0.0069	-0.0255
	[0.0103]	[0.0127]	[0.0150]	[0.0083]	[0.0193]
Scotland	-0.0372***	-0.0283***	-0.0438***	-0.0183**	0.0073
	[0.0078]	[0.0092]	[0.0115]	[0.0079]	[0.0296]
NVQ Level 2	0.0474***	0.0191*	0.0715***	0.0029	0.0037
	[0.0086]	[0.0106]	[0.0126]	[0.0089]	[0.0211]
Age	-0.0048***	-0.0033***	-0.0058***	-0.0006	-0.0017**
	[0.0008]	[0.0010]	[0.0011]	[0.0007]	[0.0008]
(Base: Age 16-18, Year 1)					
Age 16-18, Year 2 or above	-0.0445***	-0.0434***	-0.0319	-0.0172***	-0.0255
	[0.0107]	[0.0094]	[0.0195]	[0.0066]	[0.0452]
Age 19-20, Year 1	-0.0405***	-0.0326***	-0.0427***	-0.0240***	0.0480
	[0.0084]	[0.0094]	[0.0131]	[0.0081]	[0.0319]
Age 19-20, Year 2 or above	0.1531***	0.0913***	0.2038***	0.0272	0.2206***
	[0.0212]	[0.0253]	[0.0314]	[0.0190]	[0.0623]
Age 21+, Year 1	-0.0968***	-0.0792***	-0.1037***	-0.0295***	0.0431
	[0.0097]	[0.0117]	[0.0147]	[0.0108]	[0.0290]
Age 21+, Year 2 or above	0.1994***	0.1383***	0.2518***	0.0464	0.0483
	[0.0246]	[0.0352]	[0.0337]	[0.0290]	[0.0375]
(Base: Other framework)					
Business and related	-0.0497***	-0.0371***	-0.0559***	-	0.0084

	[0.0118]	[0.0144]	[0.0173]	-	[0.0864]
Children's Care	0.0910***	0.0872*	0.0995**	0.0346	0.0535
	[0.0304]	[0.0460]	[0.0421]	[0.0629]	[0.0868]
Construction and related	-0.0351***	-0.0249	-0.0438**	0.0181	0.0418
	[0.0134]	[0.0172]	[0.0187]	[0.0411]	[0.0934]
Customer Service	-0.0371**	-0.0221	-0.0501**	0.0028	-0.0413
	[0.0156]	[0.0206]	[0.0214]	[0.0377]	[0.0752]
Electrotechnical	-0.0536***	-0.0439***	-0.0604***	-0.0133	-0.0463
	[0.0114]	[0.0122]	[0.0172]	[0.0142]	[0.0837]
Engineering/Manufacturing	-0.0614***	-0.0495***	-0.0689***	0.0148	0.0158
	[0.0110]	[0.0135]	[0.0159]	[0.0363]	[0.0851]
Hairdressing	0.1080***	0.0927	0.1065**	0.0399	0.0927
	[0.0371]	[0.0586]	[0.0474]	[0.0831]	[0.0962]
Health, Social Care and Sport	0.0051	0.0213	-0.0056	-0.0219**	-0.0428
	[0.0197]	[0.0313]	[0.0259]	[0.0107]	[0.0747]
Hospitality and Catering	-0.0373**	-0.0324*	-0.0443**	-0.0113	-0.0240
	[0.0156]	[0.0181]	[0.0219]	[0.0163]	[0.0750]
Management	-0.0439**	-0.0599***	-0.0268	-	-0.0492
	[0.0179]	[0.0099]	[0.0306]	-	[0.0765]
Retail	-0.0186	-0.0134	-0.0237	0.0154	-0.0622
	[0.0186]	[0.0239]	[0.0260]	[0.0429]	[0.0750]
No contract	0.0641***	0.0149	0.0986***	0.0077	0.0311
	[0.0150]	[0.0163]	[0.0222]	[0.0136]	[0.0348]
Permanent job	-0.0521***	-0.0222**	-0.0774***	-0.0044	-0.0266
	[0.0091]	[0.0102]	[0.0138]	[0.0086]	[0.0323]
Worked for employer before course started	-0.0408***	-0.0256***	-0.0503***	-0.0118	-0.0137
	[0.0083]	[0.0099]	[0.0122]	[0.0089]	[0.0288]
Receives tips	0.0002	0.0358	-0.0198	0.0126	-0.0434
	[0.0150]	[0.0277]	[0.0187]	[0.0231]	[0.0386]
Receives bonuses	-0.0237***	-0.0133	-0.0332***	-0.0036	0.0172
	[0.0084]	[0.0102]	[0.0121]	[0.0079]	[0.0290]
Basic hours	0.0055***	0.0043***	0.0061***	0.0009**	-0.0015
	[0.0004]	[0.0005]	[0.0006]	[0.0004]	[0.0009]
Unpaid overtime hours	0.0149***	0.0219***	0.0152***	0.0125***	-0.0005
	[0.0023]	[0.0056]	[0.0029]	[0.0045]	[0.0031]
Receives accommodation	-0.0429***	-0.0295*	-0.0526***	0.0046	-0.0252

	[0.0124]	[0.0154]	[0.0175]	[0.0172]	[0.0585]
Using a payslip	-0.0273***	-	-	-	-
	[0.0082]	-	-	-	-
Both pay and hours from payslip	-0.0700***	-0.0637***	-	-	-
	[0.0078]	[0.0096]	-	-	-
Reporting net pay	-0.0049	-	-0.0065	-	-0.0258
	[0.0104]	-	[0.0122]	-	[0.0270]
Hourly paid	-0.0862***	-	-0.1119***	-	-
	[0.0060]	-	[0.0086]	-	-
(Base: Not heard of NMW)					
Heard of NMW	-0.0129	-0.0065	-0.0160	0.0057	-0.0893
	[0.0131]	[0.0168]	[0.0188]	[0.0152]	[0.0651]
Aware of existence of AR	-0.0466***	-0.0335**	-0.0550***	-0.0066	-0.1376**
	[0.0123]	[0.0154]	[0.0177]	[0.0127]	[0.0648]
Aware of specific value of AR	-0.0250**	-0.0102	-0.0344*	0.0009	-0.1271*
	[0.0125]	[0.0162]	[0.0177]	[0.0141]	[0.0675]
Constant	-	-	-	-	0.3040**
	-	-	-	-	[0.1368]
Observations	**6,567**	**2,698**	**3,869**	**991**	**517**

Source: APS 2014 and authors' calculations.

Notes: For probit models, the table reports marginal effects calculated at the means of independent variables; standard errors in brackets (*** p<0.01, ** p<0.05, * p<0.1).

	(1)	(2)	(3)	(4)
	Whole sample		AR eligible sample	
Dependent variable	Aware of AR	Aware of specific value of AR	Aware of AR	Aware of specific value of AR
Estimator	Probit	Probit	Probit	Probit
Independent variables				
Male	0.0624***	0.0589***	0.0551***	0.0542***
	[0.0165]	[0.0151]	[0.0182]	[0.0168]
White	0.1093***	-0.0098	0.0958***	-0.0333
	[0.0263]	[0.0234]	[0.0300]	[0.0274]
Disabled and/or having learning difficulties	-0.0420	0.0081	-0.0741	0.0297
	[0.0598]	[0.0575]	[0.0676]	[0.0647]
Wales	-0.0555***	-0.0736***	-0.0441**	-0.0732***
	[0.0177]	[0.0144]	[0.0194]	[0.0161]
Scotland	-0.0991***	-0.1574***	-0.0995***	-0.1693***
	[0.0162]	[0.0120]	[0.0195]	[0.0139]
NVQ Level 2	-0.0563***	-0.0099	-0.0746***	-0.0217
	[0.0139]	[0.0129]	[0.0157]	[0.0148]
(Base: Age 16-18, Year 1)				
Age 16-18, Year 2 or above	-0.0182	-0.0608***	-0.0140	-0.0596**
	[0.0300]	[0.0234]	[0.0302]	[0.0241]
Age 19-20, Year 1	0.0485**	-0.0060	0.0426**	-0.0099
	[0.0189]	[0.0169]	[0.0194]	[0.0172]
Age 19-20, Year 2 or above	0.0444*	-0.0155	-	-
	[0.0230]	[0.0203]	-	-
Age 21+, Year 1	-0.0307	-0.1246***	-0.0438**	-0.1372***
	[0.0193]	[0.0156]	[0.0202]	[0.0173]
Age 21+, Year 2 or above	-0.0271	-0.1133***	-	-
	[0.0225]	[0.0165]	-	-
(Base: Other framework)				
Business and related	0.1437***	0.1338***	0.1615***	0.1471***
	[0.0266]	[0.0329]	[0.0290]	[0.0364]
Children's Care	-0.0346	0.0135	-0.0455	0.0194
	[0.0366]	[0.0341]	[0.0410]	[0.0385]

Construction and related	0.0156	-0.0137	0.0134	0.0044
	[0.0313]	[0.0286]	[0.0352]	[0.0333]
Customer Service	0.0338	0.0285	0.0370	0.0436
	[0.0354]	[0.0357]	[0.0385]	[0.0398]
Electrotechnical	0.0386	-0.0093	-0.0049	-0.0130
	[0.0346]	[0.0316]	[0.0463]	[0.0398]
Engineering/Manufacturing	0.0429	-0.0067	0.0540	0.0079
	[0.0293]	[0.0274]	[0.0330]	[0.0319]
Hairdressing	0.0010	0.0159	-0.0019	0.0055
	[0.0371]	[0.0352]	[0.0411]	[0.0388]
Health, Social Care and Sport	-0.0916***	-0.0878***	-0.0789**	-0.0869***
	[0.0338]	[0.0263]	[0.0374]	[0.0301]
Hospitality and Catering	-0.0170	-0.0226	0.0018	-0.0038
	[0.0347]	[0.0314]	[0.0375]	[0.0359]
Management	-0.0224	-0.0338	0.0116	0.0062
	[0.0377]	[0.0343]	[0.0411]	[0.0413]
Retail	-0.0406	-0.0700**	0.0067	-0.0452
	[0.0364]	[0.0296]	[0.0392]	[0.0353]
No contract	0.0125	0.0249	0.0173	0.0278
	[0.0206]	[0.0196]	[0.0235]	[0.0227]
Permanent job	0.0055	-0.0115	0.0124	-0.0112
	[0.0146]	[0.0131]	[0.0168]	[0.0151]
Worked for employer before course started	-0.0093	-0.0532***	-0.0188	-0.0580***
	[0.0142]	[0.0128]	[0.0165]	[0.0150]
Total hours	0.0005	0.0002	0.0009	0.0004
	[0.0006]	[0.0006]	[0.0007]	[0.0007]
Using a payslip	-0.0040	0.0202*	-0.0113	0.0298**
	[0.0126]	[0.0118]	[0.0145]	[0.0136]
Hourly paid	-0.0155	0.0489**	-0.0289	0.0641**
	[0.0231]	[0.0227]	[0.0266]	[0.0265]
Observations	**6,567**	**6,567**	**5,017**	**5,017**

Source: APS 2014 and authors' calculations.
Notes: The table reports marginal effects of probit models calculated at the means of independent variables; standard errors in brackets (*** $p<0.01$, ** $p<0.05$, * $p<0.1$).

Table A4 The determinants of basic hourly pay – APS 2014

Dependent variable	Log of basic hourly pay
Independent variables	
Male	0.0620***
	[0.0135]
White	-0.0282
	[0.0209]
Disabled and/or having learning difficulties	-0.1421***
	[0.0472]
Wales	0.0249*
	[0.0143]
Scotland	0.0571***
	[0.0126]
Age	0.0085***
	[0.0008]
NVQ Level 2	-0.1172***
	[0.0117]
(Base: Age 16-18, Year 1)	
Age 16-18, Year 2 or above	0.1375***
	[0.0234]
Age 19-20, Year 1	0.1483***
	[0.0165]
Age 19-20, Year 2 or above	0.3390***
	[0.0185]
Age 21+, Year 1	0.3601***
	[0.0182]
Age 21+, Year 2 or above	0.4471***
	[0.0205]
(Base: Other framework)	
Business and related	0.0955***
	[0.0282]
Children's Care	-0.1801***
	[0.0324]
Construction and related	0.0177
	[0.0287]
Customer Service	0.0997***
	[0.0320]
Electrotechnical	0.0930***
	[0.0323]
Engineering/Manufacturing	0.0986***
	[0.0270]
Hairdressing	-0.1716***
	[0.0339]
Health, Social Care and Sport	-0.0441

	[0.0295]
Hospitality and Catering	0.0602**
	[0.0303]
Management	0.2490***
	[0.0354]
Retail	-0.0202
	[0.0307]
No contract	-0.0973***
	[0.0169]
Permanent job	0.1162***
	[0.0125]
Worked for employer before course started	0.1010***
	[0.0125]
Receives tips	-0.0541***
	[0.0196]
Receives bonuses	0.0691***
	[0.0128]
Basic hours	-0.0144***
	[0.0009]
Unpaid overtime hours	0.0020
	[0.0035]
Receives accommodation	0.0199
	[0.0371]
Using a payslip	0.0455***
	[0.0123]
Both pay and hours from payslip	0.1017***
	[0.0164]
Reporting net pay	0.0021
	[0.0162]
Hourly paid	0.0565***
	[0.0161]
(Base: Not heard of NMW)	
Heard of NMW	-0.0188
	[0.0235]
Aware of existence of AR	0.0541**
	[0.0227]
Aware of specific value of AR	-0.0044
	[0.0235]
Constant	1.6188***
	[0.0527]
Observations	6,565
R-squared	0.4457

Source: APS 2014 and authors' calculations.
Notes: The table reports OLS estimates; robust standard errors in brackets (*** p<0.01, ** p<0.05, * p<0.1).

Table A5 Variable means by framework (pooled APS 2011, 2012, and 2014 data)

	All	Business	Children's care	Construction	Customer service	Electrotechnical	Engineering	Hairdressing	Health	Hospitality	Management	Retail	Other
APS 2011	0.42	0.38	0.46	0.36	0.49	0.43	0.32	0.45	0.40	0.45	0.48	0.47	0.46
APS 2012	0.27	0.27	0.29	0.24	0.29	0.29	0.21	0.31	0.24	0.27	0.31	0.27	0.33
APS 2014	0.30	0.35	0.25	0.40	0.21	0.27	0.46	0.24	0.36	0.28	0.21	0.26	0.21
England	0.71	0.72	0.74	0.59	0.74	0.76	0.65	0.75	0.71	0.69	0.72	0.74	0.71
Wales	0.14	0.14	0.11	0.18	0.12	0.11	0.14	0.10	0.16	0.16	0.15	0.10	0.16
Scotland	0.16	0.15	0.15	0.22	0.14	0.14	0.21	0.15	0.13	0.15	0.13	0.16	0.13
Hourly pay	6.09	5.95	4.74	5.12	6.88	6.65	6.26	3.41	6.76	6.07	10.07	6.44	5.66
Non-compliance	0.18	0.15	0.28	0.24	0.08	0.20	0.16	0.50	0.09	0.10	0.03	0.07	0.25
Male	0.51	0.28	0.05	0.98	0.37	0.99	0.96	0.08	0.20	0.47	0.41	0.38	0.70
White	0.94	0.93	0.91	0.98	0.92	0.98	0.96	0.98	0.90	0.95	0.92	0.94	0.94
NVQ Level 2	0.50	0.56	0.31	0.59	0.63	0.06	0.30	0.74	0.54	0.70	0.38	0.76	0.45
Age 16-18, Year 1	0.19	0.24	0.24	0.29	0.13	0.14	0.22	0.41	0.07	0.15	0.01	0.12	0.20
Age 16-18, Year 2+	0.06	0.02	0.04	0.12	0.01	0.09	0.09	0.19	0.01	0.01	0.00	0.01	0.08
Age 19-20, Year 1	0.16	0.24	0.20	0.18	0.16	0.10	0.16	0.15	0.09	0.17	0.04	0.20	0.18
Age 19-20, Year 2+	0.10	0.05	0.07	0.16	0.02	0.29	0.21	0.11	0.02	0.03	0.00	0.03	0.11
Age 21+, Year 1	0.35	0.35	0.32	0.14	0.57	0.09	0.14	0.09	0.60	0.52	0.77	0.53	0.31
Age 21+, Year 2+	0.14	0.10	0.13	0.11	0.12	0.30	0.18	0.04	0.21	0.11	0.18	0.11	0.13
Worked for employer	0.66	0.57	0.61	0.52	0.81	0.50	0.41	0.61	0.85	0.86	0.98	0.87	0.59
Hourly paid	0.19	0.11	0.23	0.13	0.18	0.26	0.14	0.12	0.28	0.30	0.15	0.35	0.14
Hours of work and training	37.37	36.34	34.85	41.72	34.41	42.15	41.61	38.74	34.08	35.48	37.85	29.74	38.47
Any overtime	0.58	0.40	0.55	0.55	0.53	0.74	0.60	0.39	0.64	0.65	0.69	0.72	0.54
Receives tips	0.13	0.01	0.00	0.07	0.07	0.07	0.03	0.80	0.00	0.38	0.07	0.03	0.08
Receives bonuses	0.22	0.19	0.08	0.23	0.28	0.20	0.37	0.20	0.09	0.15	0.26	0.36	0.22
Observations	24,042	2,334	1,855	2,278	1,785	1,951	2,675	1,856	2,117	1,843	1,674	1,768	1,906

Source: APS 2011, 2012, and 2014 data pooled together and authors' calculations.
Notes: Unweighted data.

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Table A6 Non-compliance differences between hairdressing and other frameworks – Full results of probit models

	(1)	(2)	(3)
(Base: Hairdressing)			
Business and related	-0.1603***	-0.1594***	-0.0857***
	[0.0043]	[0.0043]	[0.0048]
Children's Care	-0.1079***	-0.1067***	-0.0000
	[0.0064]	[0.0064]	[0.0112]
Construction and related	-0.1294***	-0.1271***	-0.0858***
	[0.0054]	[0.0055]	[0.0050]
Customer Service	-0.1755***	-0.1744***	-0.0902***
	[0.0035]	[0.0035]	[0.0044]
Electrotechnical	-0.1379***	-0.1374***	-0.0914***
	[0.0050]	[0.0049]	[0.0046]
Engineering/Manufacturing	-0.1617***	-0.1598***	-0.1069***
	[0.0045]	[0.0046]	[0.0045]
Health, Social Care and Sport	-0.1758***	-0.1741***	-0.0817***
	[0.0037]	[0.0037]	[0.0054]
Hospitality and Catering	-0.1713***	-0.1697***	-0.0860***
	[0.0037]	[0.0037]	[0.0045]
Management	-0.1900***	-0.1885***	-0.1055***
	[0.0031]	[0.0031]	[0.0036]
Retail	-0.1807***	-0.1794***	-0.0851***
	[0.0034]	[0.0034]	[0.0052]
Other	-0.1214***	-0.1207***	-0.0559***
	[0.0057]	[0.0057]	[0.0069]
(Base: APS 2011)			
APS 2012		0.0624***	0.0967***
		[0.0079]	[0.0078]
APS 2014		0.0199***	0.0125**
		[0.0064]	[0.0051]

(Base: England)

Wales	-0.0144*	0.0115
	[0.0079]	[0.0071]
Scotland	-0.0091	-0.0213***
	[0.0075]	[0.0055]
Male		-0.0054
		[0.0063]
White		-0.0104
		[0.0104]
NVQ Level 2		0.0685***
		[0.0051]

(Base: Age 16-18, Year 1)

Age 16-18, Year 2 or above	-0.0252***
	[0.0070]
Age 19-20, Year 1	-0.0501***
	[0.0049]
Age 19-20, Year 2 or above	0.1574***
	[0.0123]
Age 21+, Year 1	-0.1419***
	[0.0053]
Age 21+, Year 2 or above	0.1502***
	[0.0113]
Worked for employer before course started	-0.0708***
	[0.0053]
Hourly paid	-0.0870***
	[0.0040]
Hours of work and training	0.0062***
	[0.0002]
Any overtime	-0.0215***
	[0.0045]
Receives tips	0.0346***
	[0.0092]
Receives bonuses	-0.0225***
	[0.0048]

Observations	20,018	20,018	20,018

Appendix 2: Deriving earnings and hours in APS 2014

The purpose of this Appendix is to describe the survey structure and questions related to earnings and hours in the 2014 APS. The most basic difference in the questionnaire routing among the APS respondents is between those who can provide information from a payslip and those that cannot. We thus first categorize respondents into these two categories and then describe any differences in the questionnaire within each category.

Note that we only describe here the survey structure and questionnaire concerning the core APS questions. IFF Research has produced a series of extremely useful derived variables, some of which were used in our own analysis. These are not described in the following. IFF Research (2014), as well as the 'Technical Report' and 'SPSS User Guide' for APS 2014 provided with the publicly available dataset, present all details concerning these derived variables.

Payslip respondents (question c3g=1 or c3h=1)

1) Those paid same amount each week

Earnings: question c6 asks respondents to provide gross pay from payslip (excluding any bonuses, commissions, or tips). The response can be in an amount that is weekly, fortnightly, four weekly, monthly or other (question c5 records the payment period the payslip covers).

Hours: question c8 asks respondents to record their weekly hours of work. These do not come from the payslip, and include unpaid overtime. In c9 the same respondents are asked to record any extra weekly training hours that they did not include in c8. The sum of c8 and c9 gives the total working and training hours.

2) Those that their weekly pay varies depending on hours

Earnings: question c11 asks respondents to provide total gross pay from payslip (total amount shown on payslip, apart from any bonuses, commissions, or tips). The response can be in an amount that is weekly, fortnightly, four weekly, monthly or other (question c5 records the payment period the payslip covers).

Hours: We have two groups of respondents here.

a) *If payslip shows amount of hours* (question c13=1): question c14 asks respondents to record the hours of work recorded in payslip, which can be the total for any payment period. Paid overtime is included. In c17 the same respondents are asked to record any extra weekly training hours not recorded above. Finally, c19 and c20 are used to report if any of the above stated hours are paid at a higher rate.

b) *If payslip does not show amount of hours* (question c13=2): question c16 asks respondents to record their weekly hours of work. Paid overtime is included. In c17 the same respondents are asked to record any extra weekly training hours not recorded above. The sum of c16 and c17 (c18sum) gives the total. Finally, c19 and c20 are used to record if any of the above stated hours are paid at higher rate.

For both the above groups, (a) and (b), c22 and c23a (and c23b) are used to record any extra hours that were unpaid during the payment periods used by respondents in their answers. These questions thus cover unpaid overtime working.

Non-payslip respondents

Earnings: question e1 asks respondents if they can provide their pay as a gross or a net amount. Then, we have two groups of respondents:

a) Gross pay: e2 asks about the payment period that will be reported (annual figure, monthly, four weekly, fortnightly, weekly, daily or hourly). Then, e3 records pay. No overtime, bonuses, commissions, or tips are included.
b) Net pay: e4 asks about the payment period that will be reported (annual figure, monthly, four weekly, fortnightly, weekly, daily or hourly). Then, e5 records pay. No overtime, bonuses, commissions, or tips are included.

Hours: questions d1 and d2 ask respondents to record their weekly hours of work and extra training (if any) respectively, for their last full working week. Overtime is excluded. The total hours are given by d1d2_sum. If the above hours are not the usual hours worked in a typical week by the respondents, they are asked to record the total amount of typical hours in d5. Again, no overtime is included. The option is given in d6 to record average weekly hours, if usual/typical hours cannot be given. Overtime incidence and hours are recorded in d7 and d8 (last full working week), d10 (typical/usual, if different from last), and d11 (average, if typical/usual is not known). Finally, variable d1_tot_usualhrs counts total hours including overtime, based on the previous series of questions. Note here that with questions e6 and e7, the respondent reports how many of the overtime hours are paid and the average rate for these.

All respondents

After the above core earnings and hours questions, all respondents are asked if they know their gross hourly (standard) pay rate (question e10) and, if yes, what it is (question e11). Questions e15, e16, e18, e19, e20, e21, and e22, are a series of questions concerning receipt and amount of any tips and bonuses. Finally, questions e23, e24, e25, and e26, are concerned with accommodation provision and charges (if any).