Teacher workload and professional development in England's secondary schools: insights from TALIS

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**Research area:
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Acknowledgements

About the Education Policy Institute

The Education Policy Institute is an independent, impartial and evidence-based research institute that aims to promote high quality education outcomes, regardless of social background.

Education can have a transformational effect on the lives of young people. Through our research, we provide insights, commentary and critiques about education policy in England - shedding light on what is working and where further progress needs to be made. Our research and analysis will span a young person's journey from the early years through to higher education and entry to the labour market. Because good mental health is vital to learning, we also have a dedicated mental health team which will consider the challenges, interventions and opportunities for supporting young people's wellbeing.

The core research areas include:

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- Teacher Supply and Quality
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Contents

Foreword

The Education Policy Institute is an independent, impartial, and evidence-based research institute that aims to promote high quality education outcomes for all, through analysis that both informs and influences the policy debate in England and internationally.

Much education policy debate focuses on issues such as school structures, accountability and the curriculum. Arguably, there has been rather less policy and analytical focus on those people who actually deliver education – teachers – and how we recruit, retain and develop them. These are clearly major issues for any education system, but there are particular challenges which have recently been identified in England, relating to teacher recruitment, workload, and opportunities for professional development.

To help shed light on these issues, this Education Policy Institute report looks at data about teacher experiences from the Teaching and Learning International Survey (TALIS). TALIS is a survey that offers an opportunity for secondary school teachers and leaders in OECD and partner jurisdictions to report experiences of: the learning environment, appraisal systems, teaching practices, development and support, school leadership and job satisfaction. The findings reflect the views of over 100,000 teachers in 36 jurisdictions surveyed across 2012 to 2014.

Our Report seeks to compare the experiences of teachers in England with those in the 35 other jurisdictions, and explore differences across teachers within England. We have particularly focused on issues around workload and professional development. The insights from this report are invaluable for understanding what some of the drivers of higher workload may be, and also for rejecting some hypotheses which are not supported by data. The report highlights how England differs from other nations in these areas - sometimes starkly - and what the lessons for English policy makers and school leaders could be.

The Education Policy Institute intends to undertake a major programme of work over the next few years on the issue of teacher recruitment, retention and development. We welcome comment on the analysis and conclusions of this report, and this will help inform our future work in this area.

Rt. Hon. David Laws
Executive Chairman, Education Policy Institute.

Executive summary

The Education Policy Institute has undertaken an in-depth analysis of the OECD's Teaching and Learning International Survey (TALIS). This rich, international dataset has enabled us to benchmark teaching practices and experiences in England's secondary schools against 35 other developed countries or jurisdictions. It covers working hours, teaching approaches, career experiences, job satisfaction, professional development and many other issues.

This report is based on TALIS 2013, which is the most recent iteration of the survey, and draws on responses from over 100,000 lower secondary school teachers in 36 jurisdictions. Our analysis builds on research already published by the Department for Education (DfE) using TALIS 2013 and uses questions developed specifically for the England survey, but focuses in more detail on teacher workload, professional development and retention issues for classroom teachers in secondary schools.[1] The latest estimates of teacher working hours for 2016 are expected to be published by the DfE later this year, but these will not come with as much contextual information about teachers and their beliefs as is used here. A detailed description of the method used in this report can be found in the Appendix.

The OECD will next issue the TALIS survey in 2018 and the Education Policy Institute will undertake a similar analysis to look for any changes or emerging issues affecting England since 2013.

Key findings

Workload and continuing professional development

Our analysis finds that **teachers in England are working, on average, longer hours than in most other jurisdictions**. Full time teachers in England reported working, on average, 48.2 hours in the sampled week, including evenings and weekends. This is 19 per cent longer than the average elsewhere of 40.6 hours. Only Japan and Alberta reported longer average working hours than teachers in England. **It is common to work long hours in England: half of full time teachers work between 40 and 58 hours, and overall a fifth of teachers work 60 hours or more.**

These relatively long working hours are hindering teachers' access to continuing professional development (CPD). **Of the 36 jurisdictions in the dataset, England ranked 30th in terms of the average number of days spent in a year on certain types of professional development.[2]** Teachers in England spent only an average of 4 days on these CPD opportunities (including courses, observational visits, seminars and in-service training), compared with an average of 10.5 days. In Shanghai, by contrast, teachers reported spending an average of 40 days in the year on these forms of CPD – ten times more than teachers in England. Of the categories not included in this calculation, it is only mentoring for which England has an above average *rate* of participation, and this is likely to be principally a result of our induction system rather than a prominent form of CPD.

Workload represents a significant barrier to accessing professional development according to 60 per cent of teachers in England. Only six other jurisdictions reported higher levels of agreement to this statement.

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[1] Micklewright, J., Jerrim, J., Vignoles, A., Jenkins, A., Allen, R., Ilie, S., Bellarbre, E., Barrera, F., and Hein, .C (2014), 'Teachers in England's Secondary Schools: Evidence from TALIS 2013'.

[2] For other types, the duration of time spent participating was not recorded.

Teachers in England who feel very well prepared for various aspects of teaching are 20 to 22 per cent less likely to complain of finding their workloads unmanageable than those who do not feel well prepared. This suggests the impact of workload on CPD may be creating a vicious cycle.

The possible causes of higher workload

Although the time that teachers in England spend teaching lessons is around the average, **it is time spent planning lessons, writing assessments, marking and other functions that is driving long working hours in England**.

However, the time that teachers in England spend planning lessons relative to the time spent teaching lessons is in line with many other jurisdictions – an average of 24 minutes per hour of lessons – and significantly lower than, for example, Shanghai's 35 minutes per hour.** It is how that time is used that seems more worthy of policy attention than the volume. England's school system is more diverse and inclusive than that of many other jurisdictions. Its teachers deal with a more heterogeneous pupil composition and are more likely to give differentiated work to their pupils. So it may even be appropriate for teachers in England to be able to spend more time planning, rather than less.

In a given week, as teachers in England carry out additional responsibilities, such as management functions or student counselling, their teaching time remains broadly constant (i.e. they still teach the same number or volume of classes). This results in an increase to their total hours rather than a re-balancing of teaching and non-teaching time, and this could result in a disincentive for teachers to take on more responsibilities including promotion to middle-leadership roles.

The analysis suggests few specific practices to encourage or avoid in improving workload management. **However, teachers who have pupils use ICT for class projects in all or nearly all lessons for the class considered work 4.6 hours less per week than those who at most occasionally adopt this approach.** It is likely that this reflects wider factors associated with ICT use by teachers, as it is not driven by a relationship with planning or marking time specifically.

Within England, we do not find a clear relationship between schools' teacher numbers relative to the number of pupils and average working hours for teachers. **In addition, we find no evidence that additional classroom assistants mean lower working hours for teachers**.

We do, however, find that teachers in larger schools work slightly fewer hours. This could be a result of economies of scale and the ability of larger schools to employ more dedicated staff to carry out non-teaching functions, but further work is needed to identify accurately the magnitude of the school size effect and its causes given the modest number of schools included in the survey.

Whilst we might expect that teachers would have more manageable working hours when being led by a senior and experienced leader, our analysis finds that **there is no correlation between the experience of head teachers (or whether they hold an NPQH qualification) and the proportion of their teachers citing their workload as unmanageable**. If school heads' approaches are important it does not show up clearly using samples of teacher hours within each school.

77 per cent of England's secondary school teachers disagreed with the notion that the accountability system did not add significantly to their workload. However, those agreeing that poor performance in their school would lead to dismissal worked only slightly more hours than others (1.2 more per week), and there was no noticeable association between hours and the perceived threat of other material sanctions (e.g. pay).

Teachers in outstanding schools (defined by the most recent Ofsted inspection at the time) tend to work the same number of hours as teachers in other schools but, when compared to satisfactory or inadequate schools, they are less likely to report their workload as 'unmanageable'. This suggests that outstanding schools could be better at supporting teachers to manage their workload or that they are simply attracting teachers who have a greater tolerance for longer hours.

While there is a higher turnover rate for teachers in deprived schools, their teachers tend to work fewer hours and are less likely to consider their workload 'unmanageable'. **Teachers in the most deprived schools work, on average, 3.6 hours less per week than teachers in the most affluent schools**. Again, we cannot pinpoint why this trend emerges but a possible explanation could be that the additional money that disadvantaged schools receive could be enabling them to remove some of the burdens from teachers.

Teacher pay, recruitment and retention

Teachers who struggle with their workload express poorer job satisfaction. **42 per cent of teachers who strongly agreed that their workload is unmanageable disagreed that "the advantages of being a teacher clearly outweigh the disadvantages", compared with 8 per cent of those who did not cite unmanageable workload.**

When comparing teachers' pay to that of similarly educated workers in the wider economy, teachers in England receive pay that is below average. However, this difference from the national average is similar to that seen for teachers in other countries. That is to say, England is typical in having teachers paid less than other workers of similar qualification levels. However, in England the ratio between teachers' working hours and the average for the whole economy is 17 per cent greater than the ratio in the other countries assessed.

In 2014, the average starting salary for lower secondary teachers in England was 16 per cent lower than the average for OECD jurisdictions, but the typical salary after 15 years was 4 per cent greater.[3] Fast progression in pay over the first years of teaching, generated by previous pay regulations in the state funded sector, have meant that **whilst young teachers take on slightly more hours than others, their pay has tended to be considerably worse.**

That combination may be driving turnover rates and the demographics of the teaching workforce in England. England had one of the fastest reductions in the proportion of teachers aged over 50 in secondary education between 2005 and 2014.[4] **Meanwhile, England has one of the highest proportions of teachers under 30, and only 48 per cent of its teachers have more than ten years' experience compared with an average of 64 per cent across jurisdictions.** The relatively young teaching workforce in England may therefore be a signal that teachers are experiencing 'burn-out', before they even step in to leadership roles.

This evidence suggests that whether or not a teacher can cope with long working hours is likely to have as great if not a greater influence on whether they remain a teacher for the duration of their career as their effectiveness in the profession. Combined with extremely low levels of CPD, which might otherwise improve the efficacy of teachers who need support to improve, this does not suggest a labour market that is likely to work effectively for pupils.

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[3] OECD (2016), 'Education at a Glance 2016: OECD Indicators', OECD Publishing, Paris.
[4] Ibid.

Policy conclusions

Previous research, and the views of the workforce, has already established that many teachers in England work long hours. The analysis in this report highlights that this should be a cause for concern for professional development and teaching quality as well as for the wellbeing of teachers themselves.

Consistent with other research, we find that while time spent teaching is comparable with other jurisdictions, teachers in England are spending significantly more time on non-teaching activities which are contributing to excessive working hours. This analysis suggests that DfE are right to focus on planning, marking, and administrative issues in their response. With pupil numbers in secondary schools set to increase, it is unlikely that teaching timetables can be reduced without an increase in class sizes should teacher numbers not keep pace.

With respect to lesson planning, consistency with international norms would suggest that the focus should be on making better use of lesson planning time rather than reducing the overall amount. This is in line with the views of many teachers responding to the Workload Challenge.

The use of ICT in schools and teachers' proficiency in using technology should be explored from the perspective of teacher working conditions as well as the direct impact on pupil outcomes.

The DfE should monitor the implementation of new pay freedoms, which offer an opportunity to achieve a better balance in relative pay across a teacher's career, and encourage multi-academy trusts to learn from and spread good practice within their chains.

The DfE and multi-academy trusts should support, promote and monitor implementation of the new Standard for Teachers' Professional Development.[5] This was published in 2016 and, in developing it, the Teachers' Professional Development Expert Group recognised the role teacher development can play in managing workload.

As well as considering pay incentives and CPD opportunities, policy makers may also want to consider whether other structural and practice-related reforms might help. We find some evidence to suggest teachers in larger schools tend to work slightly fewer hours. Creating economies of scale through multi-academy trust arrangements or school capital policy may help to ease teacher workload.

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[5] Department for Education (2016), 'Standard for teachers' professional development'.

Introduction

The Government's workload diary surveys since the turn of the century have shown that classroom teachers in secondary schools work, on average, around 50 hours per week (Deakin et al., 2010). In 2014, the OECD published findings of the Teaching and Learning International Survey 2013 (TALIS), including England in the second iteration of the study. That showed that its lower secondary (key stage 3) teachers worked significantly longer hours than their counterparts in most other jurisdictions (OECD, 2014a).

In response, the then Secretary of State for Education Nicky Morgan launched the 'Workload Challenge' in 2014. This obtained views from over 40,000 school staff on the causes of, and solutions to, the problem of unnecessary workload (Gibson et al., 2015). In response to the concerns raised, the Government announced a new protocol to prevent hasty implementation of curriculum changes (Department for Education, 2015b), and Ofsted provided guidance to make clear that they did not expect teachers to be carrying out specific and burdensome activities for the sake of satisfying inspectors (Ofsted, 2015). It also launched three profession-led policy reviews into lesson planning, marking policies and data management. These reported in March 2016 with recommendations for school leaders on good practice in preventing unnecessary workload.

Another commitment was to track workload over time in parallel with TALIS, and a teacher survey carried out in spring 2016 is due to report later this year. It will provide new estimates of the hours worked in primary and secondary schools, but will contain less contextual information than TALIS. This study revisits the rich TALIS dataset to build further understanding of what might be driving high workloads in England, which teachers work the longest, and what the implications are. This will help policy makers, teachers, schools and multi-academy trusts decide how to respond to the latest figures.

The report builds on the analysis in England's national report of TALIS 2013 (Micklewright et al., 2014), employing similar techniques but extending them to new policy questions. It is focused only on lower secondary school classroom teachers, though covers their work time across all key stages taught. It uses a combination of international comparisons to benchmark the working lives of England's teachers and domestic analyses to improve understanding of how our teacher labour market is working. The research benefits from the inclusion of four new jurisdictions in the dataset since the OECD's 2014 report: Shanghai, Russia, Georgia and New Zealand, whilst Cyprus and Iceland have been omitted. More detail on the method and data is provided in the Appendix.

The report is organised as follows: **Part 1** establishes the position of England's teachers' working hours internationally and explores how it varies across demographic factors; **Part 2** identifies the tasks contributing to high working hours using international and domestic comparisons; **Part 3** considers how far working hours are influenced by school characteristics and accountability; **Part 4** looks at the impact of workload on continuing professional development; **Part 5** examines the relationship between workload, job satisfaction and teacher retention; and **Part 6** considers the association between educational performance, school intake and teacher workload. The report concludes with policy recommendations.

Part 1: Do teachers in England's secondary schools work long hours?

International comparisons of working hours

England's secondary school teachers work relatively long hours. When asked about their most recent complete calendar working week (one uninterrupted by absence), the average lower secondary school (key stage 3) teacher in TALIS said that they spent 45.9 hours on tasks related to their job as a teacher, including weekends and evenings.[6] This is 7.2 more than the average across the other 35 jurisdictions in the study.[7]

These comparisons are affected by variation in the proportion of teaching staff working part time, which is slightly lower in England, at 14 per cent, than the average across the jurisdictions of 18 per cent. Figure 1 therefore compares average working hours separately for full and part time teachers. Among full time staff, England's teachers have the third highest weekly working hours, at 48.2, and this is 7.6 hours, or 19 per cent, more than the average of other jurisdictions (40.6 hours).[8] There is also significant variation across jurisdictions; at the other end of the scale Italy's full time teachers only reported working an average of 30.4 hours in the selected week.

Three of the top eleven regions on the full time measure are East Asian (Japan, Singapore and Malaysia). However, teachers in Shanghai (a high performer in international tests) do not report relatively long hours (their average of 39.7 hours ranks them 20th), and nor do those in South Korea. Meanwhile, five of the top eleven are predominantly English-speaking regions (Alberta, England, the USA, Australia and New Zealand).

England's part time teachers work an average of 31.1 hours per week, the 11th highest of the group, although this may to some extent reflect differences in contracted working patterns rather than prevalence of overtime.[9]

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[6] Includes "teaching, planning lessons, marking, collaborating with other teachers, participating in staff meetings and other tasks related to your job at this school".

[7] Using a simple average of each jurisdiction's mean rather than a teacher-weighted mean.

[8] The differences between that and Singapore and Russia's averages below are not statistically significant at the 1 per cent level.

[9] The survey allows us to define full time staff as those reporting their employment status as "Full time (more than 90% of full-time hours)".

Figure 1: International comparison of average working hours
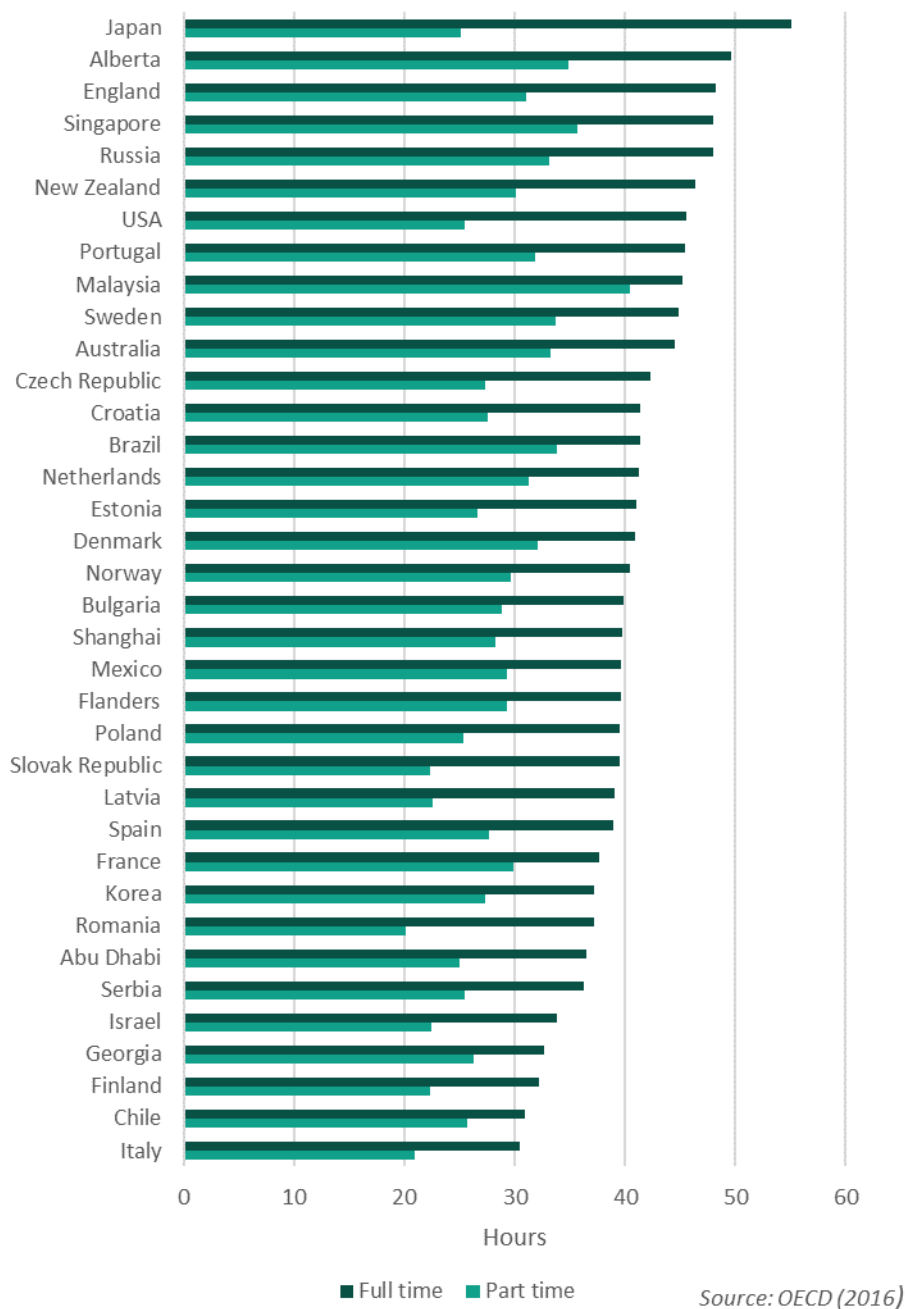
Figure 2 shows the distribution of hours within each jurisdiction for full time teachers, plotting the interquartile range. It is common to work long hours in England: half of full time teachers work between 40 and 58 hours, and a quarter work longer. Overall, around a fifth of teachers in England work 60 hours or more. The interquartile range in England is around the average, at 18 hours. Sweden, Denmark and Norway have the greatest equity in hours on this measure, with interquartile ranges of 8, 7 and 7 respectively.

Within the survey, though, there are some very high and low hours reported. For instance, the 5th percentile number of hours for England is 22, whilst the 95th percentile is 70. In several jurisdictions, the range of outliers is more extreme. This may reflect respondent error, for instance weeks

including absences being recorded, and creates 'noise' of uncertain cause that makes modelling workload difficult.

Figure 2: Distribution of hours for full time teachers by jurisdiction (25th, 50th, and 75th percentiles)

Quarter 2 (25th to 50th percentile) ■ Quarter 3 (50th to 75th percentile)

Source: OECD (2016)
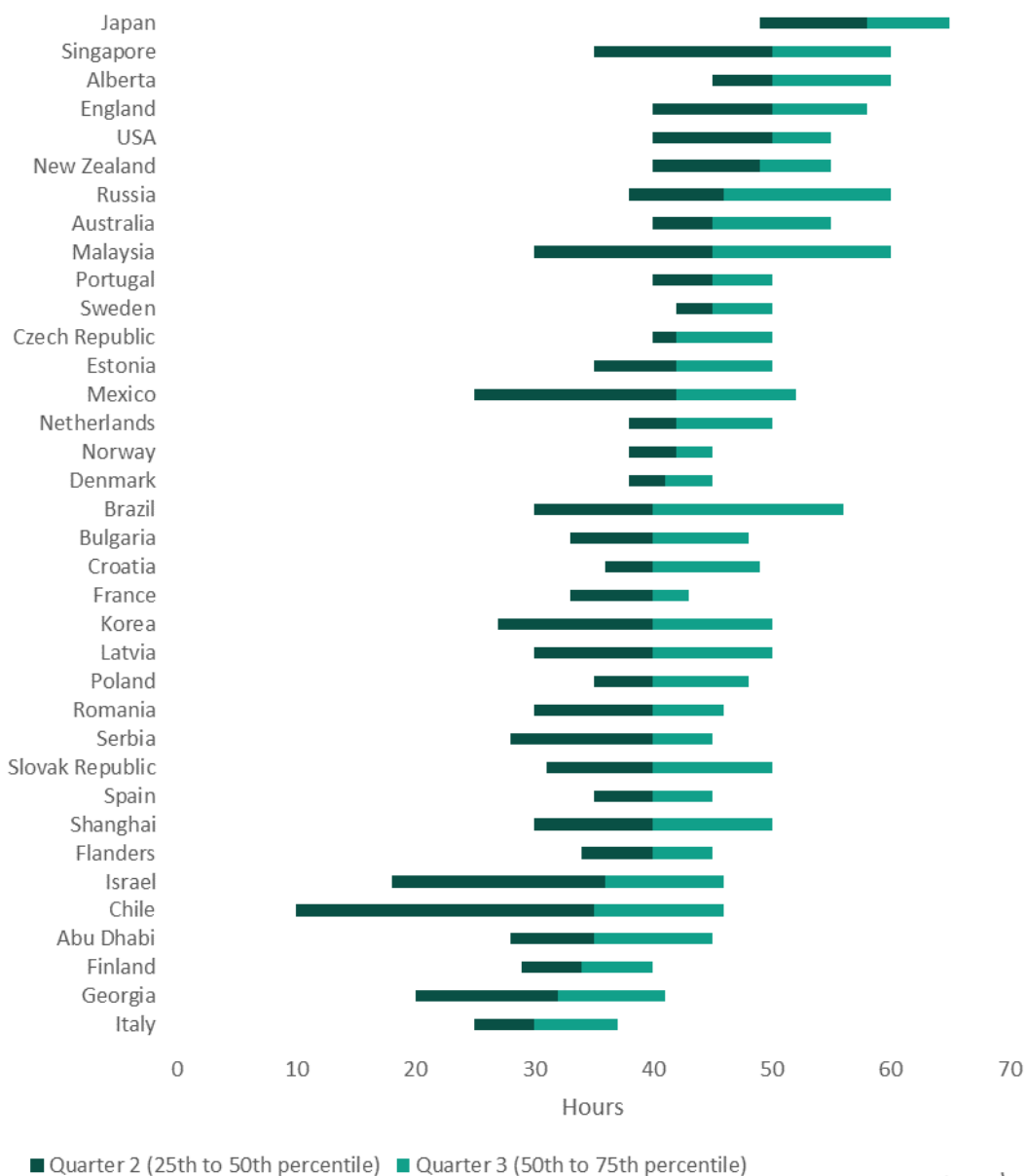
Do teachers find these hours manageable?

England's version of the TALIS survey featured some additional questions which were not included elsewhere. When asked about the extent to which they agree with the statement "My workload is unmanageable", 38 per cent of teachers agreed and 13 per cent strongly agreed, whilst only 3 per cent strongly disagreed.

Figure 3 breaks this down by gender, showing responses across groups of teachers organised by quartiles of working hours among full time teachers, with those for part time teachers shown separately. As highlighted by Micklewright et al. (2014), those working longer hours were more likely to find their workload unmanageable. For those in the top quarter:

- men were 23 percentage points more likely to agree or strongly agree with the statement; and
- women were 39 percentage points more likely to agree or strongly agree with the statement;

than those below the bottom quarter – this is statistically significant. Part time teachers appear less likely to find their workload unmanageable when compared with full time teachers working relatively long hours.

It is important to note that nearly half of England's teachers do not report unmanageable workloads despite the prevalence of relatively high working hours. Similarly, many teachers might prefer to work shorter hours without feeling that their current hours are "unmanageable".

For those working full time and more hours than the lowest quarter, women appear more likely to find their workload unmanageable than men, although the gender differences are not statistically significant except in the case of those working at least 58 hours.

Figure 3: Percentage of teachers agreeing their workload is unmanageable by employment status and hours worked[10]

Source: DfE (2014)
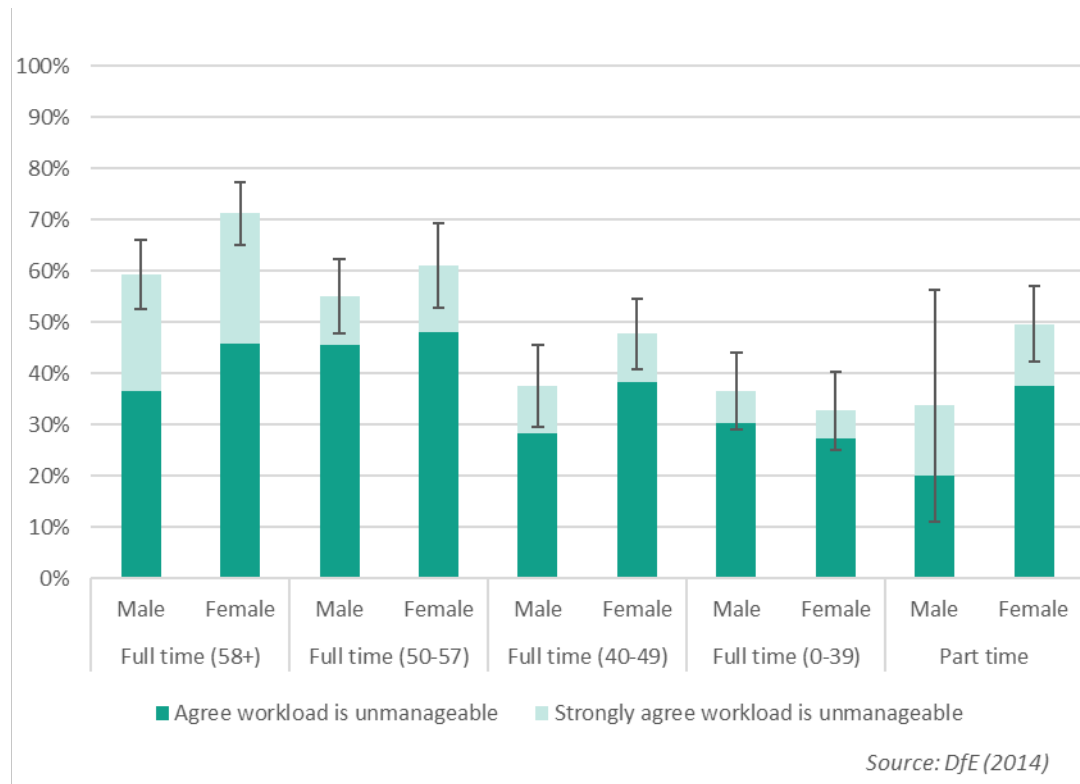
Do working hours vary by demographic factors and school type?

England's TALIS 2013 national report examined differences in hours worked and the proportion citing unmanageable workload across demographic groups and school types. It found:

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[10] Error bars represent 95% confidence intervals around the central estimate, as elsewhere in this report.

- Men work on average 2 more hours than women, but this is because women are more likely to work part time. When comparing on a full time basis only there was no statistically significant difference.
- The youngest teachers, those under 25, work an average of 51 hours. They also had the highest proportion citing unmanageable workload (58 per cent agreeing or strongly agreeing, compared to the next highest category of 30-39s with 53 per cent). In contrast, those aged over 60 worked 38 hours a week. The age groups in between had only small variations, of between 45 and 47 hours.
- For women only, average working hours vary depending on whether or not teachers have children: compared to those without children in the home, those with 0-4 year olds work 7.8 hours less on average, but still worked 39.1 hours per week. Those with children aged 5-15 worked on average 4.7 hours less than those without children.
- Apart from those in community schools working 2 hours fewer than others, average working time does not differ greatly between schools of different types (including academies, maintained and independent schools) (Micklewright et al., 2014).

TALIS also provides information about the experience of teachers, as measured by number of years in the profession. Figure 4 compares average hours for full time teachers, and proportion citing unmanageable workload, for teachers with different levels of teaching experience. The differences across levels of experience are small and generally not statistically significant, but those with the least experience work slightly longer hours – 1.6 hours more than the rest.[11] This group are not, though, more likely to cite unmanageable workload. With Micklewright et al. (2014) finding that the youngest age group were most likely to cite workload problems, this suggests that the experience of workload of those joining the teaching profession at different points in their careers vary, with older starters finding the demands easier to cope with. Only 55 per cent of postgraduate trainee entrants are aged under 25 according to the latest Initial Teacher Training census (Department for Education, 2015a).

Those with between 20 and 29 years of experience work on average 2.6 hours longer than others. This may partly be a result of these experienced classroom teachers taking on additional responsibilities.[12]

Figure 4: Workload and propensity to find it 'unmanageable' by teaching experience

Teaching experience (years)	Mean hours for full time teachers	% with 'unmanageable' workload (all)
0-4	49.6	48%
5-9	47.6	53%
10-14	47.2	53%
15-20	48.0	54%
20-29	50.7	52%
30+	47.2	49%

Source: DfE (2014)

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[11] This is statistically significant at the 5 per cent level only.
[12] It should be remembered that those remaining in teaching for longer than 20 years are not a random selection – they may be more or less likely than others to be willing to work longer and able to cope with it.

Part 2: What tasks contribute to high workloads?

International comparisons

In response to the DfE's Workload Challenge, teachers most frequently cited lesson planning and policies, assessment and reporting administration as the main causes of unnecessary workload – with at least one of these issues mentioned by 82 per cent of respondents (Gibson et al., 2014). In particular, the majority highlighted recording, inputting, monitoring and analysing data (56 per cent) and excessive/depth of marking (53 per cent). Often the level of detail in the tasks, or duplication, was cited as a problem in these tasks, and many noted that the volume of requirements was too great for them to be completed within contracted hours, rather than that the work was unproductive. In response, the Department carried out specific policy reviews on planning and resources; marking policy; and data management, and reported findings with recommendations for schools in March 2016 (Department for Education, 2016b).

The TALIS dataset provides an international perspective on these issues. In addition to the question relating to total hours in a recent week, teachers were asked to break down their work time into the following specific categories:

- Individual planning or preparation of lessons either at school or out of school;
- Team work and dialogue with colleagues within this school;
- Marking/correcting students' work;
- Student counselling (including student supervision, virtual counselling, career guidance and delinquency guidance);
- Participation in school management;
- General administrative work;
- Communication and co-operation with parents or guardians;
- Engaging in extra-curricular activities (e.g. sports and cultural activities after school); and
- Other.

For each jurisdiction and considering only full time teachers for ease of comparison, Figure 5 provides the average total hours recorded, using the separate question responses for total hours of work and not the sum of parts, and the average for each task category.[13] The average across all regions, and England's rank for each column, is given at the foot of the table.

The balance of tasks for teachers varies across jurisdictions, but the amount of time spent teaching does not vary greatly from the average in most cases. Exceptions to this are Brazil, the USA, Alberta, Mexico and Chile, which report averages of over 27 hours. It tends to be other categories that are the source of high average hours; high PISA-performers Japan and Singapore, and also Malaysia – all of which have high total hours – report below-average time spent teaching. Shanghai, another strong performer in international assessments, reports the lowest hours spent teaching despite

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[13] The total of the hours recorded for these categories was on average around 2 hours different to the answer given for the total hours worked, reflecting some measurement error. This report uses the latter for all analyses which do not require a breakdown by activity. As in Micklewright et al. (2014), if a teacher has a missing value for a task category it is assumed the task time is zero, unless they have missing values for all.

recording total hours that are around the average. Their teachers spend a large amount of time planning, marking, engaging in teamwork and school management, and on student counselling.

England's 20.4 hours spent teaching is exactly in line with the average across all regions,[14] meaning that other tasks are contributing to its teachers' high workloads – but not student counselling, which England's teachers spend less time on than those in most other jurisdictions. No single category appears to be solely responsible for high working hours, but teachers spend a slightly greater amount of time planning lessons (8.0 hours compared with 7.3 on average). The difference is larger for marking (6.2 compared with 5.0) and general administration (4.1 compared with 3.0), with school management also contributing.

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[14] The findings may seem to contradict the estimates provided in the OECD's latest 'Education at a Glance publication' (e.g. Figure D4.3 in OECD, 2016), which suggest that England's teachers spend a relatively large amount of time teaching classes relative to overall statutory teaching time. However, in that comparison most other jurisdictions record their statutory class teaching time, whereas TALIS's actual teaching time is taken for England where no such regulation exists. England's *statutory* work time for teachers (at least applying to teachers in maintained schools) is to be available for 1265 hours across 195 days, which works out at just six and a half hours per day, to be augmented with additional hours "as necessary". This means that the measure employed in 'Education at a Glance' likely overstates the teaching demands of England's teachers relative to overall expected work time.

Figure 5: Full time teacher hours by task – international comparison (OECD, 2016)

Jurisdiction	Total time	Teaching	Planning lessons	Marking	Teamwork	Student counselling	School managt.	General admin.	Comms. with parents	Extra-curricular	Other
Japan	55.0	17.8	8.7	4.5	3.9	2.7	3.0	5.5	1.3	7.6	2.4
Alberta	49.6	27.1	7.5	5.5	2.9	2.6	2.0	3.1	1.6	3.4	1.5
England	**48.2**	**20.4**	**8.0**	**6.2**	**3.4**	**1.7**	**2.2**	**4.1**	**1.5**	**2.1**	**2.1**
Singapore	48.0	17.2	8.4	8.6	3.6	2.6	1.9	5.3	1.6	3.4	2.6
Russia	48.0	24.7	10.6	4.9	3.5	2.8	1.4	3.8	2.1	2.8	1.8
New Zealand	46.4	18.6	7.2	5.3	3.6	1.9	2.2	5.1	1.2	2.1	2.2
USA	45.5	27.2	7.2	4.9	3.0	2.3	1.5	3.2	1.6	3.6	6.9
Portugal	45.5	21.0	8.3	9.4	3.5	1.9	1.6	3.5	1.6	2.0	2.1
Malaysia	45.2	17.0	6.5	7.4	4.0	2.9	5.0	5.7	2.4	4.8	4.2
Sweden	44.8	18.6	6.8	4.7	3.5	2.8	0.9	4.5	1.8	0.4	1.6
Australia	44.5	19.3	7.2	5.0	3.6	2.3	3.1	4.4	1.3	2.2	1.8
Czech Rep.	42.3	19.1	8.6	4.8	2.3	2.3	1.2	2.8	1.0	1.3	1.4
Croatia	41.4	20.3	9.8	3.8	2.0	1.6	0.4	2.4	1.4	1.7	1.5
Brazil	41.4	29.2	7.2	5.6	3.0	2.4	1.3	1.6	1.4	2.0	1.8
Netherlands	41.2	19.6	5.4	4.4	3.5	2.4	2.0	2.5	1.6	1.5	3.1
Estonia	41.1	24.0	7.3	4.7	1.9	2.2	0.7	2.3	1.4	1.8	1.3
Denmark	40.9	19.3	8.0	3.4	3.2	1.4	0.9	1.9	1.7	0.7	1.9
Norway	40.5	15.6	6.5	5.2	3.1	2.2	1.3	2.8	1.4	0.7	1.1
Bulgaria	39.9	18.4	7.9	4.3	2.3	1.6	0.8	2.4	1.5	1.7	1.2
Shanghai	39.7	13.8	8.1	7.9	4.1	5.1	3.2	3.6	2.1	1.8	2.0
Mexico	39.6	27.6	6.4	4.4	2.6	2.9	1.8	2.6	2.4	2.0	1.5
Flanders	39.6	20.9	6.4	4.6	2.2	1.3	0.9	2.4	0.6	1.3	1.2
Poland	39.5	20.1	5.6	4.7	2.2	2.1	0.9	2.5	1.3	2.3	1.7
Slovak Rep.	39.5	20.9	7.7	3.6	2.4	1.9	1.1	2.8	1.3	2.0	1.6
Latvia	39.0	20.7	6.6	4.9	2.2	3.3	1.0	2.4	1.5	2.1	1.2
Spain	38.9	19.2	6.6	6.2	2.6	1.5	1.7	1.7	1.5	0.7	1.3
France	37.6	19.3	7.3	5.5	1.9	1.1	0.7	1.2	1.0	0.9	0.9
Korea	37.2	18.7	7.6	3.7	3.0	4.0	2.1	5.7	2.0	2.4	2.1
Romania	37.1	16.9	8.2	4.0	2.7	2.6	0.9	1.5	1.8	2.3	1.7
Abu Dhabi	36.5	21.1	7.4	5.1	3.6	3.0	2.4	3.0	2.4	2.2	1.7
Serbia	36.3	19.2	8.0	3.4	2.2	2.2	0.7	2.3	1.5	2.0	1.8
Israel	33.8	19.6	5.2	4.3	2.7	2.0	2.3	1.9	1.7	1.6	3.7
Georgia	32.7	17.2	7.9	4.4	3.7	4.8	1.8	1.9	2.6	2.7	1.6
Finland	32.2	20.9	4.8	3.0	1.9	0.9	0.3	1.2	1.1	0.5	0.9
Chile	30.9	27.2	5.6	3.9	2.6	2.2	2.1	2.6	1.8	1.6	1.6
Italy	30.4	18.1	5.0	4.2	3.0	1.0	1.0	1.8	1.3	0.8	0.6
Average	**40.8**	**20.4**	**7.3**	**5.0**	**2.9**	**2.3**	**1.6**	**3.0**	**1.6**	**2.1**	**1.9**
England rank	**3**	**14**	**11**	**6**	**13**	**28**	**7**	**8**	**19**	**14**	**10**

Should we aim to reduce the time spent planning and marking?

Pupils require supervision at all times and most lessons – particularly in England – are taught by one teacher. This means that, notwithstanding differences in the length of the school day and proportion of time spent in lessons, the amount of time teachers spend teaching should depend on (a) the number of pupils relative to the number of teachers in a school and (b) the size of classes. A higher pupil:teacher ratio (PTR) is likely to lead to greater teaching timetables, because there are more pupils to teach for the pool of teachers, whilst larger class sizes free up more teachers for other activities at a given point in time because each teacher who is teaching is accounting for a greater number of pupils.

Figure 6 shows this relationship, plotting a jurisdiction's average time spent teaching per week against its average school-level PTR as experienced by teachers divided by average class sizes reported by teachers.[15] This is a proxy for the proportion of the teaching workforce that are teaching at a given point in time. England, Shanghai and Finland are highlighted as notable contrasts: Finland is a relatively high performer in PISA with low overall teacher work times but an average amount of teaching time. In contrast, Shanghai delivers its strong pupil performance via a deployment of teachers which involves large classes and low teaching hours per teacher. Teachers in jurisdictions with higher PTRs relative to class sizes tend to spend more hours teaching, although only around a fifth of the variation in working hours is accounted for by this measure.[16] When compared to a linear line of best fit, however, England's teaching hours do not look unusual.

Figure 6: Pupil numbers, class size and teaching time over a week - international comparison

Source: OECD (2016)

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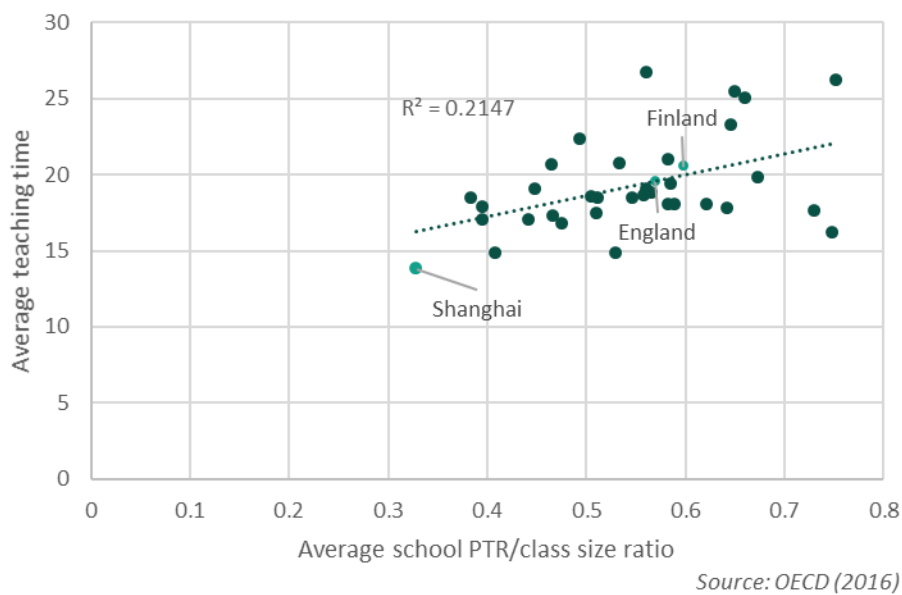
[15] Note that where there is variation across schools, the average pupil:teacher ratio from the perspective of teachers will be lower than that from pupils' point of view – as teachers are disproportionately found in schools with low PTRs. This may be why TALIS-derived estimates of PTRs are generally lower than those reported in the OECD's 'Education at a Glance' publication (OECD, 2016). Class sizes are reported in TALIS as for a sampled 'target class' for each teacher responding, and England's average class size reported there is lower than that estimated in the other publication.

[16] As measured by the 'R²' measure of 0.21 reported on the chart, which identifies the extent to which variation in one variable can be explained by a linear association with the other in this simple case.

This suggests that it is reasonable to focus on other elements besides teaching time in any attempt to reduce teacher working hours. Figure 7 plots the average time spent planning per hour of lessons (derived by dividing teachers' reported time spent planning by the reported time spent teaching) against average teaching time. In jurisdictions with more intensive teaching timetables, teachers appear to spend less time planning each hour of lessons.

Figure 7: Teaching timetable and planning time per hour of lessons - international comparison
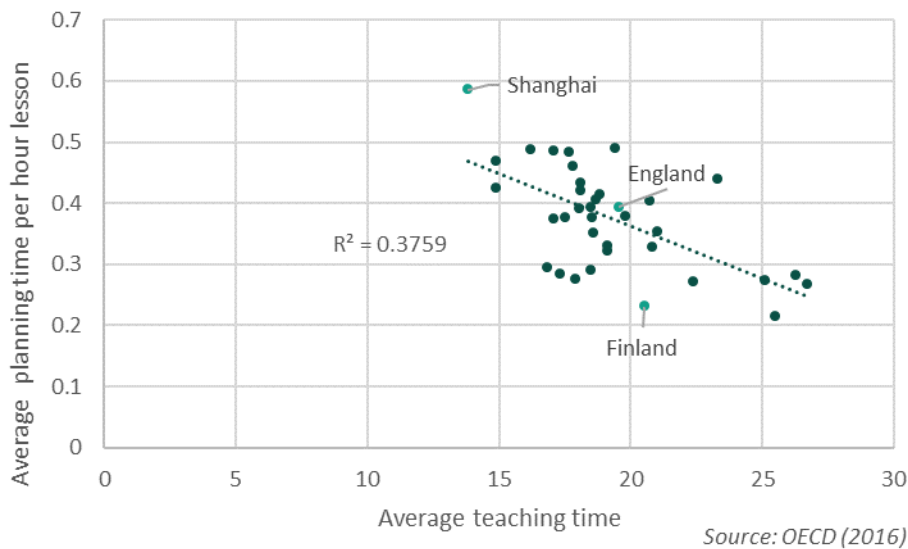

Source: OECD (2016)

The amount of variation in this figure is perhaps surprising: teachers in Shanghai spend on average 35 minutes planning an hour-long lesson, compared with 14 minutes in Finland and 13 minutes in Chile. Viewed from this perspective, the time spent planning by England's teachers is in line with what we might expect – with a figure of 24 minutes close to the line of best fit as well as being around the average of 22.

This suggests that, whilst planning time should be used effectively and in support of learning in lessons, prioritising reducing the total amount of time spent on it would not seem as sensible an objective on the basis of delivering comparability with other jurisdictions. This is consistent with the views of many teachers responding to the Workload Challenge who were concerned about *unnecessary* burdens, rather than the time spent on planning per se.

In fact, there are reasons to expect English teachers to need *more* time than average planning lessons. Our inclusive mainstream system creates highly diverse schools and, depending on school streaming and setting policies, relatively diverse classes. As an example, a bigger proportion of our teachers (67 per cent) than anywhere else considered here (an average of 24 per cent across all jurisdictions) work in schools with more than ten percent of pupils identified as having special needs as estimated by heads (OECD, 2014). Based on questions about a single sampled class, our teachers are more likely than those in all but three jurisdictions to 'frequently' or 'in all or nearly all' lessons give different work to the students who have difficulties learning and/or to those who can advance faster. This may well be associated with specific English teaching cultures and practices, but teachers dealing with a heterogeneous school population and mixed classes might be expected to plan lessons in more detail.

It is more obvious that the amount of time teachers spend marking in England is high. As Figure 8 shows, however, there does not appear to be a clear association between PTRs and average marking time. Shanghai's teachers devote a large amount of time marking pupils' work, with only Portugal's (9.4 hours) and Singapore's (8.6 hours) spending longer on this task. Unless England seeks to spend more of its teachers' time on marking, it would appear reasonable to expect some reduction in the overall time spent on this, though the points made above on heterogeneity among pupils would apply here too.

Figure 8: Pupil:teacher ratios and hours spent marking over a week - international comparison

Source: OECD (2016)
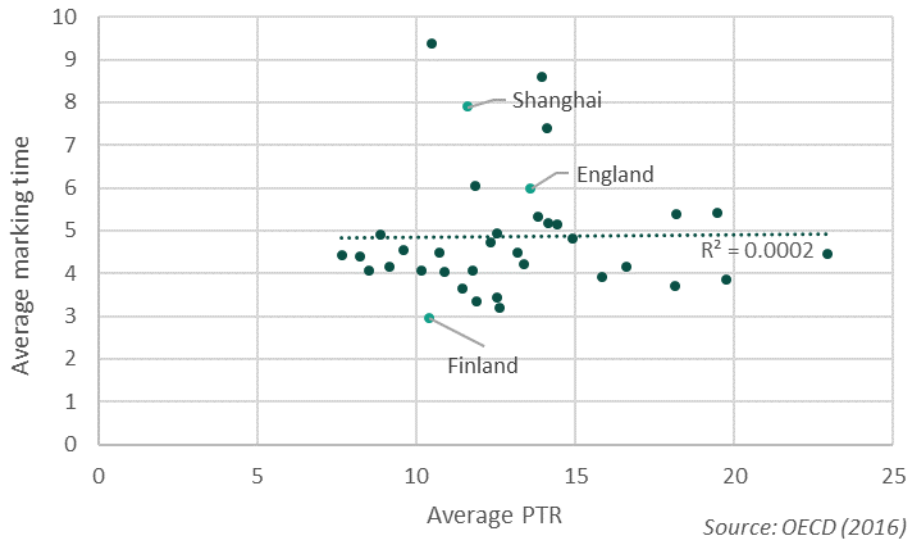
Finally, whilst it is important to identify areas where teachers' time might be sensibly reduced by cutting out unnecessary burdens, it is also vital to ensure that the provision for pupils is not undermined. Figure 9 plots the amount of time spent on student counselling – in which some respondents will have included one-to-one tuition, providing careers advice, and other outside-of-class support including pastoral care – against PTRs. There is a small, positive association between jurisdictions' average time spent on this activity and the number of pupils being notionally provided for by each teacher, but the relationship is not strong. England's teachers spend less time on this activity than in most other cases, although the amount of the activity observed overall is less than 3 hours in most places so these differences do not constitute a large proportion of teachers' time.

Figure 9: Pupil:teacher ratios and 'student counselling' time - international comparison

Source: OECD (2016)
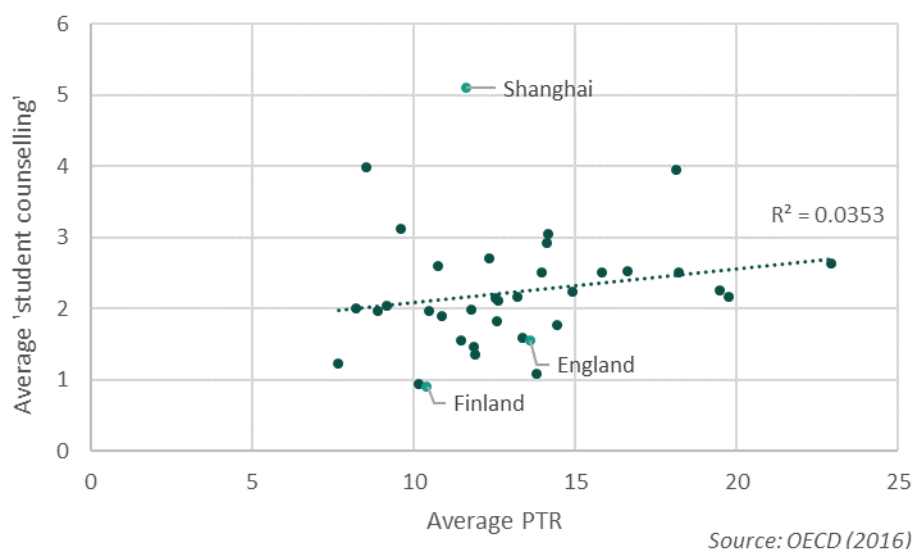
Again, Shanghai is an outlier: dividing average time on this activity by average PTR suggests that children there are receiving more than double the amount of non-class, personal contact with their teachers than the average. It is likely that Shanghai's moderate PTR, combined with high class sizes (35 on average, compared with 24 across all jurisdictions) supports this combination of more heavily planned lessons and more individual focus on pupils outside of classes, though in all jurisdictions non-teaching staff are likely to play a role to varying extents. Whilst this is clearly an extreme example, and replicating greatly increased classes in England might be a particular challenge given the diversity in the mainstream pupil population discussed above, this may be an area for further consideration. This is particularly the case if overall teacher supply proves difficult to maintain.

Do these patterns hold within England?

Whilst an international comparison suggests England's high average working hours are associated with non-teaching tasks, further analysis is needed to determine whether this pattern drives variation in hours worked within our education system. Figure 10 plots the average components of teachers' time in the sampled week (all teachers in England were surveyed during spring 2013), separately for teachers in different deciles of total hours, among full time teachers. This shows that teachers working longer hours in a given week tend to be those reporting more time planning, marking, administration and school management, although there are also increases in teamwork up the scale. The amount of teaching time along the scale is almost constant, resulting in those in the highest decile of hours spending only 28 per cent of their time teaching, compared to 46 per cent for those in the lowest decile. This could be showing a combination of three effects:

- Where teaching time is fixed across the year, these data may be picking up variations *within* the year in many teachers' overall working hours. By chance, some teachers will have been asked for the information after an unusually busy week, whilst the reverse will be true for others. In this case, the implication is that it is non-teaching tasks that create peaks and troughs throughout the year, which could make workloads more difficult to cope with; or

- Comparing different teachers, there are some who have high burdens of non-teaching activity which are consistent throughout the year. This could imply that where teachers take

on additional management responsibility they are not seeing a great reduction in teaching timetable to compensate; or

- Consistent with the variation in measurements explained earlier, the TALIS data on workload is 'noisy', with measurement errors as teachers struggle to recall the amount of time spent on separate tasks. These errors are likely to be less relevant to teaching time, which is timetabled clearly. However, the scale of these differences suggest this is unlikely to be the only explanation.

Figure 10: Average task time for full time teachers by decile of total hours

Source: OECD (2016)
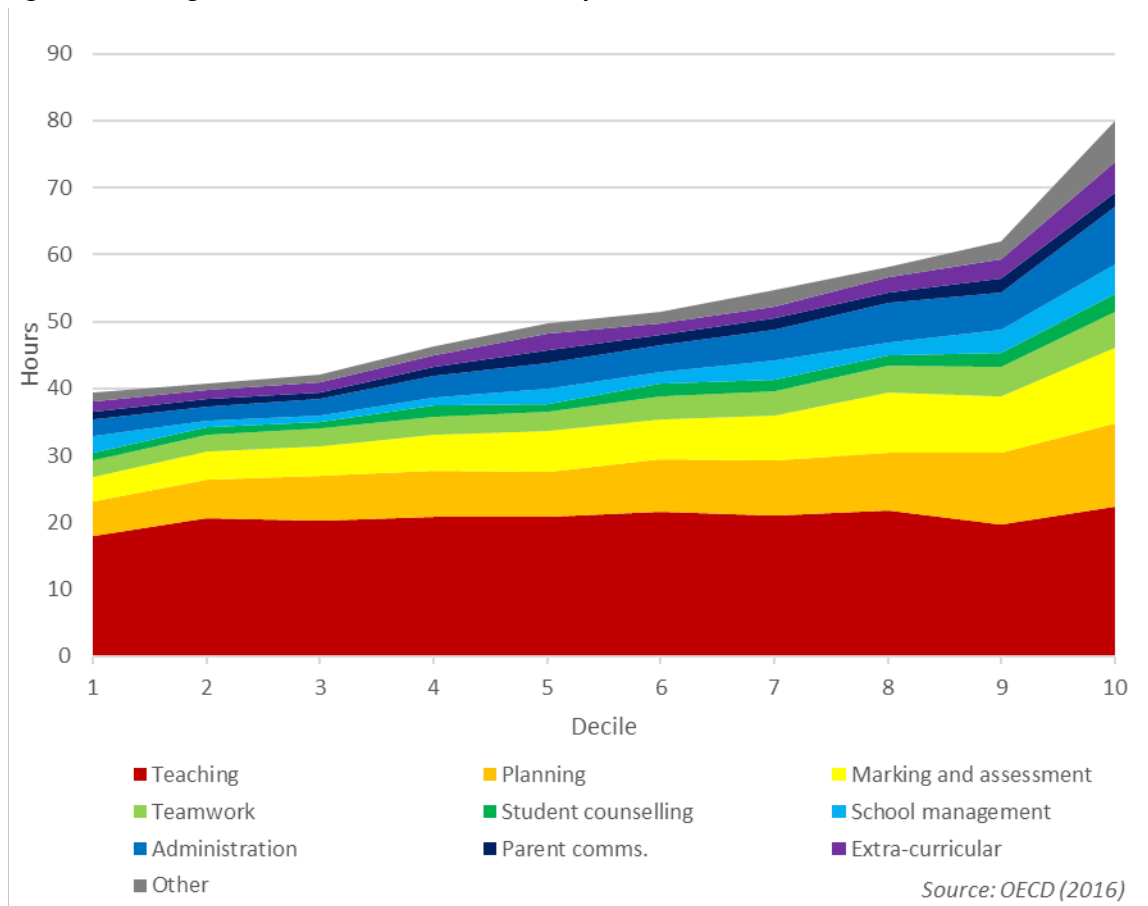
The implication is that where teachers work long hours, it is a result of non-teaching tasks. This may be creating poor incentives to take on additional responsibilities, or variation in hours across the year that could make workload less manageable.

Part 3: School influences on workload - leadership, resources and professional climate

How much difference does the school make?

In order to construct policy responses, it is important to understand the causes of the variation in working hours, and to what extent high workloads are driven by school-level factors as opposed to variation between individual teachers or groups of teachers within schools (e.g. departments). As discussed in Part 2, TALIS provides a snapshot of estimated working hours for a single week for each teacher and this means that some of the measurements will be affected by error, or abnormally high or low working hours in a particular week. This creates additional 'noise' which makes it especially difficult to identify separately teacher-level and school-level drivers where they affect *usual* working hours as opposed to creating sharp peaks or troughs.

Nevertheless, two alternative approaches have been used to assess the proportion of variation in working hours that can be attributed to (a) *school effects* that affect each teacher in that school in the same way, but vary across schools, and (b) *teacher effects* that create differences in hours between teachers of the same school.[17] This models the variation in hours across the 2,124 full time teachers in the sample who provide workload information, who are clustered in 154 schools with between 1 and 23 teachers in each and an average of 14. The total of these two effects make up the overall variation we see in the data, but either estimate may also be reflecting the effects of other levels – for instance subject or department-level effects – which cannot be properly tested for here. The results imply that between 2 and 11 percent of the variation in reported hours is generated by school-level effects.

Whilst the precise balance of sources of variation is uncertain, these data suggest the majority is below the school level, at least when looking at a single week's snapshot. An implication is that *objectively* identifying examples of particularly good or bad practice across a whole school is likely to be very difficult, especially if this is done by assessing teacher working hours and involving a limited sample of teachers in each case. It has proved difficult even using the resource-intensive and rigorously controlled survey approach of TALIS. This has implications for any policy which would require external bodies to take a greater role in scrutinising teacher workload at school level. It also suggests that there should be a focus on the role of middle leaders in determining teacher working conditions in addition to addressing the approaches of head teachers.

Staff resources and workload

Given the above findings, it is unlikely that variations in the staffing of schools will be the source of the majority of variation in working hours measured here, and with a sample including only 154 schools it would be difficult to identify statistically significant differences where they are small in magnitude. With this in mind, the charts in Figure 11 plot school average working time for total full time teachers against various measures of schools' pupil and staff composition, with lines of best fit.

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[17] A 'fixed effects' and a 'random effects' method are employed. See Appendix for further detail.

Having discussed planning and marking time in Part 2, here we consider the time spent on general administration - another source of England's relatively high working time.[18] This suggests:

- **Panel A:** there is a weak positive association between pupil:teacher ratios (PTRs) and overall hours worked, and this is disproportionately driven by a minority of schools with especially high or low PTRs.
- **Panel B:** there is similarly a small association between school size and hours worked, but this is more consistent across the range of values observed.
- **Panel C:** there is no association between average hours and the number of teaching assistants relative to the number of teachers at the school. This is consistent with the observation that England overall has high average workloads despite employing an extremely high number of support staff compared to other jurisdictions (Micklewright et al. 2014).
- **Panels D, E and F:** variation in PTRs, pupil numbers and the ratio of administrative and managerial staff to teachers have no association with time spent on administration by full time teachers.

Overall, there is no evidence here to suggest that staff composition and its relationship with pupil numbers plays a significant role in the current variation in teacher working hours we see in England. Given the fundamental impact that the ratio of teachers to pupils should have on the required amount of teaching time, finding only a small correlation with PTRs suggests that there are enough other activities in a teacher's work schedule that can be compressed in compensation where there would otherwise be a requirement for heavy teaching timetables. It could also mean that school leaders alter school day lengths and the deployment of other types of staff accordingly if they have fewer teachers relative to pupils. There is stronger evidence, however, that teachers in larger schools face slightly lower workloads. This may be associated with economies of scale, and the ability of larger schools to employ dedicated staff to take on some of the roles played by teachers elsewhere. With a larger sample of schools and less 'noise' in measurement – perhaps by asking teachers for information about more weeks – these patterns could be more easily tested in future surveys.

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[18] The graphs show a linear line of best fit. The 'R^2' value indicates how much of the variation in the hours measure is explained by variation in the horizontal axis variable – a figure of 1 suggests a perfect correlation, with a figure of 0 indicating no relationship at all. One school with an extremely low mean working time based on just one observation has been omitted.

Figure 11: The association between staff resources and average working hours for full time staff (green) and average time spent on general administration (turquoise) (OECD (2016)
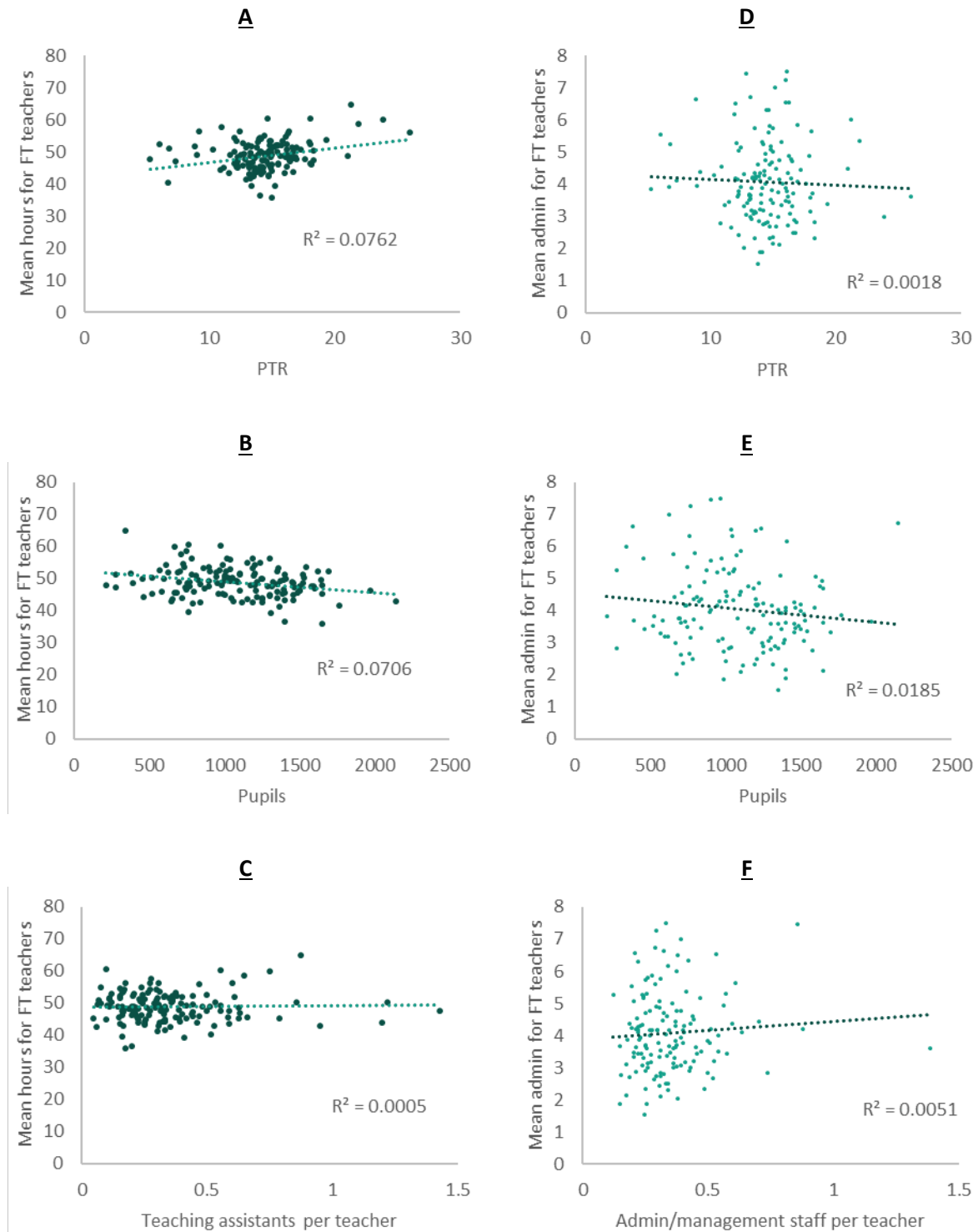
School-level teacher shortages and subject comparisons

TALIS collects information from the head teachers of sampled schools, allowing us to look for links between their beliefs, characteristics and approaches, and the working conditions of their staff. Figure 12 compares average hours for teachers in schools whose heads provide different responses

to questions about whether resource shortages are a hindrance to quality instruction.[19] This includes qualified and/or well performing teachers, those with competence in teaching pupils with special educational needs, support staff and middle leaders. This suggests, if anything, that teachers in schools with greater staff shortages work fewer hours, although these differences are not statistically significant. An equivalent comparison for the proportions of teachers reporting unmanageable workload similarly finds no significant patterns.

Figure 12: Working time and teacher shortages

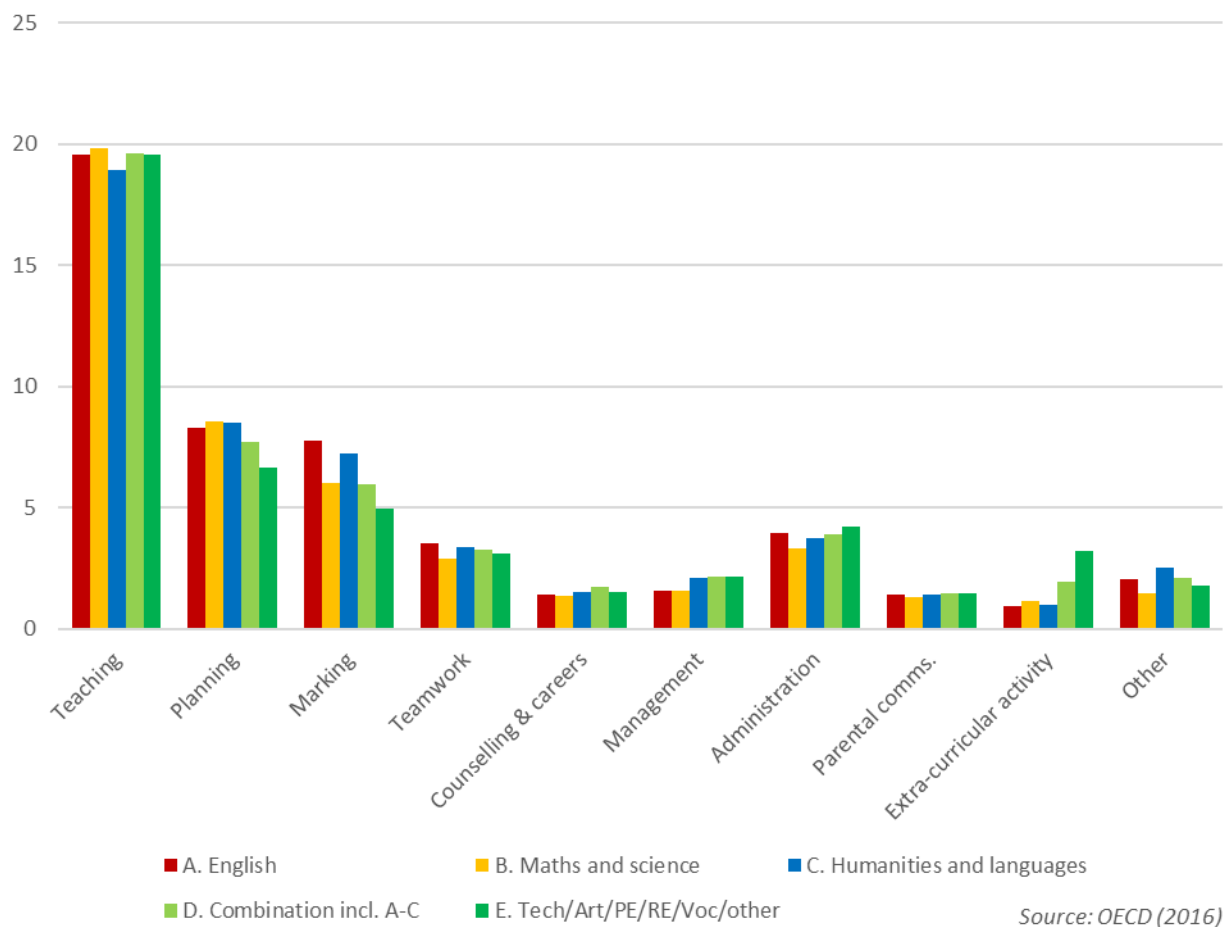| Shortage category	Proportion with heads citing shortage	Mean hours for full time staff by whether head teacher cites shortage as a hindrance to quality instruction		
		Not at all	Very little	To some extent/a lot
Qualified and/or well performing teachers	46%	49.4	48.5	47.9
Teachers with competence in teaching students with special needs	26%	48.1	48.9	47.9
Support personnel	19%	49.3	48.0	47.5
Middle leaders	17%	48.6	48.4	47.6

Source: OECD (2016)

However, this may well mask relationships between teacher supply and workload that are subject or area specific. The previous comparison considered a very general question about staff shortages. With respect to teachers, evidence suggests that where there are difficulties in recruiting staff, it varies across subject for secondary schools. In 2015/16, only 71 and 87 per cent of the secondary school initial teacher training target was achieved for physics and foreign languages respectively. In comparison 113 and 103 per cent of the targets were achieved for history and English respectively (Department for Education, 2015a).

Many teachers in the dataset taught more than one subject and so it is difficult to compare workloads simply. To ensure adequate sample sizes, teachers have been grouped into five categories. These are: (A) those teaching just reading, writing and literature ('English'); (B) those teaching only mathematics and sciences; (C) only humanities, social sciences and foreign languages; (D) any combination of multiple subjects including at least one in (A) to (C); and (E) teachers who only teach other subjects including arts, technology, PE, vocational studies and religious studies. Comparing average hours for full time teachers does not suggest many noticeable differences, except that, on average, those teaching only group E subjects work 2.4 fewer hours, which is just statistically significant at the 1 per cent level.

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[19] Specifically, the question asks "Is this school's capacity to provide quality instruction currently hindered by any of the following issues?" with a series of options including, for example "Shortage of qualified and/or well performing teachers", with the possible answers "Not at all", "Very little", "To some extent" and "A lot".

Figure 13 shows the split of work time across tasks for these different groups, including both full and part time teachers.[20] This suggests only modest differences, and most interestingly there is no substantial variation in the amount of time spent teaching - perhaps the area where we might expect teacher shortages in certain subjects to affect workloads. English and humanities or languages teachers spend 1.8 hours more time marking, whereas on average those in group E spend on average 2.1 hours more on activities other than teaching, planning and marking, both of which are statistically significant. This suggests that the principal responses to difficulties in recruiting staff for particular subjects may include altering subject choices for pupils or increasing particular class sizes, rather than raising particular teachers' timetables.

Figure 13: Hours by task for teachers of different subjects

Source: OECD (2016)

Legend:
- A. English
- B. Maths and science
- C. Humanities and languages
- D. Combination incl. A-C
- E. Tech/Art/PE/RE/Voc/other

Head teacher experience, qualifications and their teachers' working hours

Particularly in the case of planning and marking, the DfE's teacher workload policy reviews identified school and department policies as potential drivers of unnecessary workload (Department for Education, 2016b). Work schedules might be driven by particular management approaches, or the confidence of leaders in their staff to decide how to work taking into account conflicting demands. If some of these approaches are developed over a principal's career, it might be expected that there is

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[20] Here, maths and science teachers appear to work slightly fewer hours, in contrast to the finding with the headline hours measure. This is partly due to differing proportions of full and part time teachers, and the discrepancies generally between the sum of individual task times reported and the overall weekly hours figures.

an association between a head teacher's level of experience and the workload of their teachers. As Figures 14 and 15 suggest, there is substantial variation in the proportion of teachers citing unmanageable workload (in many cases these are small clusters of teachers). There is no meaningful correlation between a school principal's years of experience in school management positions and either average working hours in their school or the proportion of their teachers citing unmanageable workloads.[21]

Figure 14: Average full time hours and head's overall management experience (years) (DfE, 2014)

Figure 15: Proportion citing unmanageable workload and head's overall management experience (years) (DfE, 2014)

Comparing the majority (87 per cent) of teachers in schools with heads possessing postgraduate leadership qualifications (including the National Professional Qualification for Headship) with others suggests no difference in hours worked or the proportion citing unmanageable workloads.

School decision making and accountability

Schools where teachers are given a say in key decisions might be expected to manage work schedules better, with policies and practices that better reflect the relevant time and resource constraints as they affect teachers directly. Teachers in TALIS were asked the extent to which they agreed that "This school provides staff with opportunities to participate actively in school decisions". As Figure 16 suggests, there was considerable variation across schools in the proportion who agreed or disagreed with this statement. This will be due in part to the small number of teachers responding in some schools, but it does not look like there is any association with working hours or the proportion of teachers finding their workloads unmanageable.

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[21] There is a negative association in both cases, but the low R^2 figures suggest this is not explaining much of the variation in the data and is likely to have been observed by chance.

Figure 16: Average full time hours and response to question on participation in school decisions (DfE, 2014)
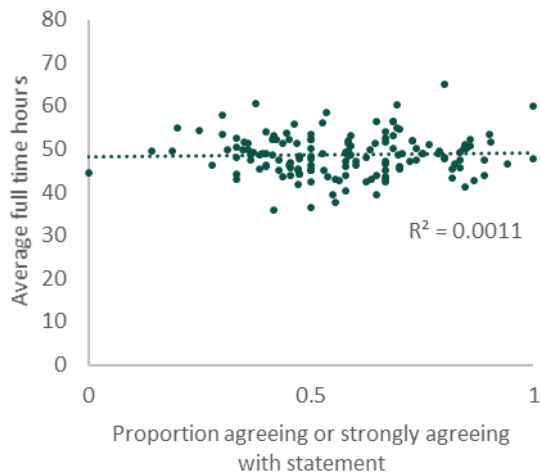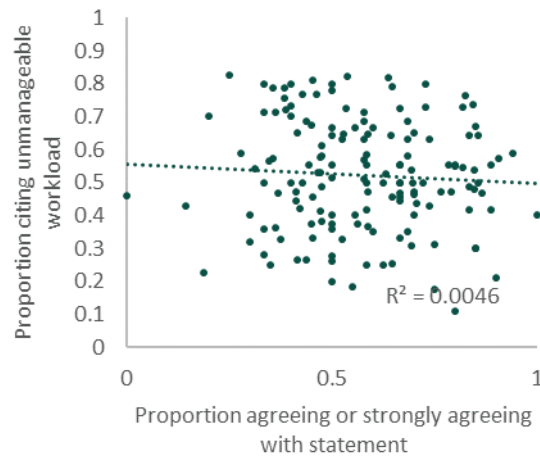

Figure 17: Proportion citing unmanageable workload and response to question on participation in school decisions (DfE, 2014)

Teachers in England associate external accountability with work pressures. Whilst an equivalent question was not put to teachers in other jurisdictions in the survey, 37 per cent of teachers in England's secondary schools disagreed with the statement "The accountability system (Ofsted, league tables, etc.) does not add significantly to the pressure of the job" and 48 per cent strongly disagreed. 50 per cent disagreed that "The accountability system does not add significantly to my workload" while 27 per cent strongly disagreed. There was a high degree of overlap in responses to these questions.

There is some evidence that variation in the strength of individual accountability *within* schools also plays a role, but a small one in quantitative terms. Teachers were asked whether they thought that consistent underperformance would lead either to dismissal or material sanctions. As Figure 18 illustrates, those agreeing with the statement in the case of dismissal worked slightly more hours. The difference in hours between those agreeing or strongly agreeing and the rest was 1.2 – just statistically significant at the 5 per cent level. England has a relatively high proportion of teachers with this perception, although it is fewer than half of all teachers, at 43 per cent compared to an average of 33 per cent across all jurisdictions included. Interestingly, this proportion varies substantially among jurisdictions with high average workloads: Japan and Malaysia have less than 20 per cent responding in this way while the USA and Singapore have more than 40 per cent. For material sanctions (which could include missing out on pay uplifts) there were no significant differences in hours worked within England.

Figure 18: Average full time hours and agreement with statement that consistent underperformance would lead to dismissal or material sanctions

Source: DfE (2014)
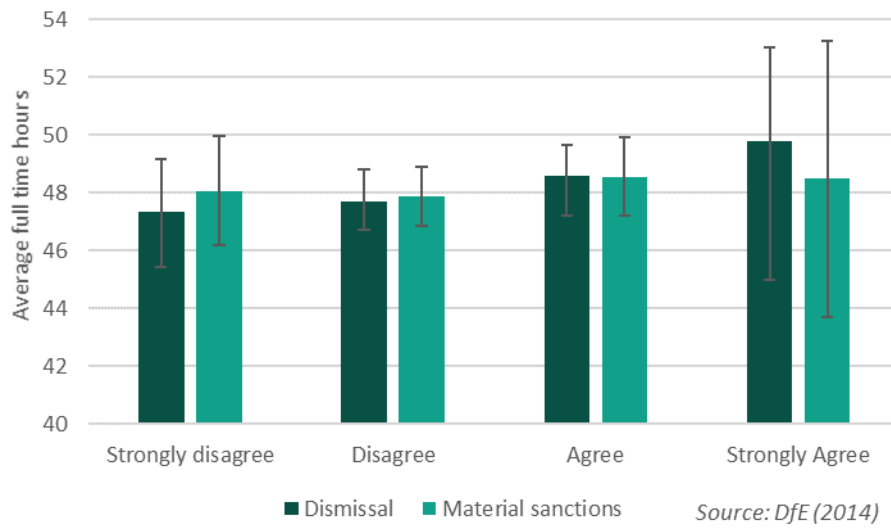
Part 4: Workload, professional development and practices

England's low levels of teacher CPD

Evidence overwhelmingly suggests that the effectiveness of individual teachers matters greatly for pupil outcomes (Sutton Trust, 2011). Recent research by the Institute for Public Policy Research (Hood, 2016) suggested that in England's case, there is a shortage of expert teachers in part due to a lack of incentives to participate in training and development. Moreover, it argued that much of the continuing professional development (CPD) undertaken is of poor quality, and the significant investment involved could be much better spent. Estimates in TALIS suggest that England's secondary school teachers tend not to rate very highly the development activity they experience. Micklewright et al. (2014) noted that, for most topics covered, a lower proportion than in high performing jurisdictions reported a moderate or large impact on their teaching.

However, a reassessment of the CPD data in TALIS suggests that the basic issue of quantity would need to be addressed for any improvement in quality to have a significant impact on teacher effectiveness. Micklewright et al. (2014) showed that England's participation rates (over the previous year) across nine types of CPD are relatively high, at 92 per cent overall, but for the five categories where the number of days was recorded, the number of days involved is relatively low.

Figure 19 lists these participation rates by jurisdiction, with the definitions of CPD categories below. (those for which the number of days was collected are denoted with an asterisk). The first column shows the average number of days taken across the five measured types, combining participation rates and duration for those participating. England has the 7th lowest volume for these categories, with only 4.0 days spent on average. This compares with an average of 10.5, figures of over 20 in Mexico and Brazil, and 40.0 in Shanghai. It is lower even than the number of non-contact days stipulated in the School Teachers Pay and Conditions document (Department for Education, 2016c), although it should be noted that strong performers in international assessments Japan, Netherlands and Finland also report fewer than 7 days on average.

Of the non-quantified categories, the only one for which England's participation rate is above average is mentoring or peer observation. However, this is likely to be a reflection of mentoring being a compulsory part of statutory induction, rather than being a frequent component of CPD. Micklewright et al. (2014) showed that 67 per cent of under 25s were mentees, compared with less than 17 per cent of all age groups over 29.

Figure 19: Participation rates over last 12 months in types of professional development and total days spent in categories A to E

Jurisdiction (ranked by total days)	Ave. days (A to E)	Proportion participating in last 12 months by category								
		A*	B*	C*	D*	E*	F	G	H	I
Shanghai	40.0	89%	80%	56%	9%	10%	19%	55%	54%	83%
Brazil	26.5	66%	39%	12%	16%	38%	37%	26%	47%	35%
Mexico	24.1	90%	39%	11%	12%	19%	43%	41%	49%	21%
Russia	17.5	80%	52%	59%	14%	14%	12%	60%	72%	39%
Romania	16.5	52%	29%	33%	12%	16%	38%	50%	39%	39%
Korea	15.3	78%	45%	32%	10%	14%	19%	55%	43%	53%
Spain	15.3	67%	24%	9%	8%	8%	21%	28%	41%	21%
Abu Dhabi	14.4	82%	50%	28%	29%	32%	17%	45%	49%	61%
Chile	13.1	55%	30%	9%	9%	8%	17%	22%	33%	14%
Singapore	12.1	93%	61%	24%	21%	17%	10%	53%	45%	65%
Georgia	12.0	50%	20%	18%	7%	16%	11%	29%	30%	12%
Portugal	11.9	67%	40%	17%	39%	13%	29%	19%	37%	13%
Estonia	11.9	82%	51%	31%	16%	23%	19%	51%	34%	22%
Israel	11.9	76%	45%	14%	7%	5%	26%	40%	26%	32%
Latvia	11.4	89%	60%	52%	21%	9%	13%	37%	29%	17%
USA	10.0	84%	49%	13%	7%	15%	16%	47%	41%	32%
Poland	9.0	81%	52%	12%	9%	16%	31%	41%	38%	45%
Serbia	8.6	70%	60%	15%	12%	11%	8%	33%	32%	28%
Alberta	8.5	85%	74%	20%	8%	21%	11%	63%	49%	35%
Malaysia	8.2	91%	33%	20%	19%	24%	10%	56%	25%	35%
Netherlands	6.7	78%	46%	16%	20%	23%	20%	30%	38%	34%
Australia	6.4	86%	56%	15%	14%	24%	10%	51%	37%	44%
Bulgaria	6.3	60%	40%	15%	7%	24%	49%	22%	23%	31%
Czech Republic	6.3	70%	22%	14%	18%	14%	18%	17%	16%	34%
Japan	6.3	60%	56%	51%	6%	5%	6%	23%	23%	30%
Croatia	6.1	79%	79%	7%	6%	7%	6%	63%	35%	20%
New Zealand	5.8	86%	40%	21%	13%	14%	9%	60%	44%	57%
Italy	5.3	51%	31%	12%	5%	3%	10%	22%	46%	12%
Denmark	4.7	73%	36%	6%	12%	5%	10%	41%	19%	18%
England	**4.0**	**75%**	**29%**	**20%**	**6%**	**22%**	**10%**	**33%**	**27%**	**57%**
Slovak Republic	3.8	39%	25%	4%	2%	4%	23%	34%	11%	40%
Sweden	3.6	58%	45%	14%	10%	7%	10%	41%	10%	18%
Finland	3.6	60%	35%	20%	16%	9%	11%	21%	8%	5%
Norway	3.6	64%	40%	8%	8%	4%	18%	38%	15%	32%
Flanders	3.5	79%	23%	8%	9%	11%	16%	23%	19%	13%
France	2.8	54%	20%	9%	5%	3%	6%	18%	41%	13%
Average	**10.5**	**72%**	**43%**	**20%**	**12%**	**14%**	**18%**	**39%**	**34%**	**32%**
England rank (of 36):	**30**	**19**	**29**	**14**	**33**	**8**	**30**	**22**	**25**	**4**

Source: OECD (2016)

A*   Course/workshops
B*   Conferences/seminars
C*   Observation visits to other schools
D*   Observation visits to businesses/public orgs./NGOs
E*   In-service training in businesses/public orgs./NGOs
F   Qualification programme (e.g. degree)
G   Teacher professional development network
H   Individual or collaborative research
I   Formal mentoring or peer observation

Across many jurisdictions, work schedules are seen by teachers as a barrier to professional development. This is especially so in England, where 44 percent of teachers agreed and 16 per cent strongly agreed that this was the case. As shown in Figure 20, this is one of the highest proportions and compares with an average of 49 per cent, although teachers in Japan, Korea and Portugal are especially likely to cite this issue.

Figure 20: Proportion of teachers agreeing that their work schedule represents a barrier to professional development
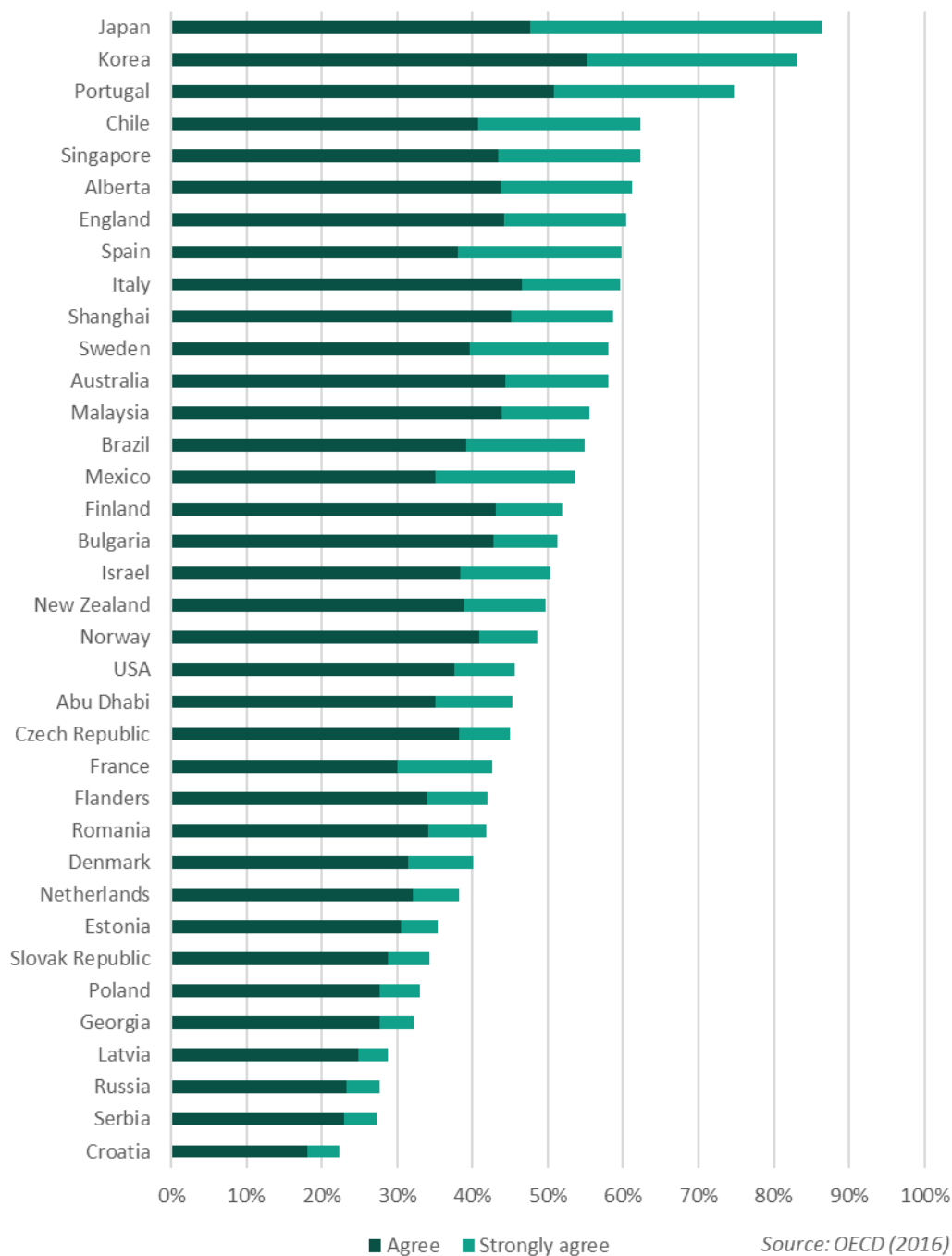

Source: OECD (2016)

Figure 21 illustrates that, within England, work schedules are a dominant barrier to professional development – cited more frequently than a lack of incentives or employer support. It should be noted, however, that teachers in England were much less likely than those elsewhere to say they felt

they needed professional development in most areas. There are clearly issues of demand, possibly related to poor experiences of CPD. Interestingly, far fewer teachers report a lack of time due to family commitments than cite work schedules as a barrier. This is likely to be associated with England's relatively young workforce – a topic considered in Part 5.

Figure 21: Proportion of teachers in England agreeing that that the listed issues present barriers to participation in professional development

Source: OECD (2016)
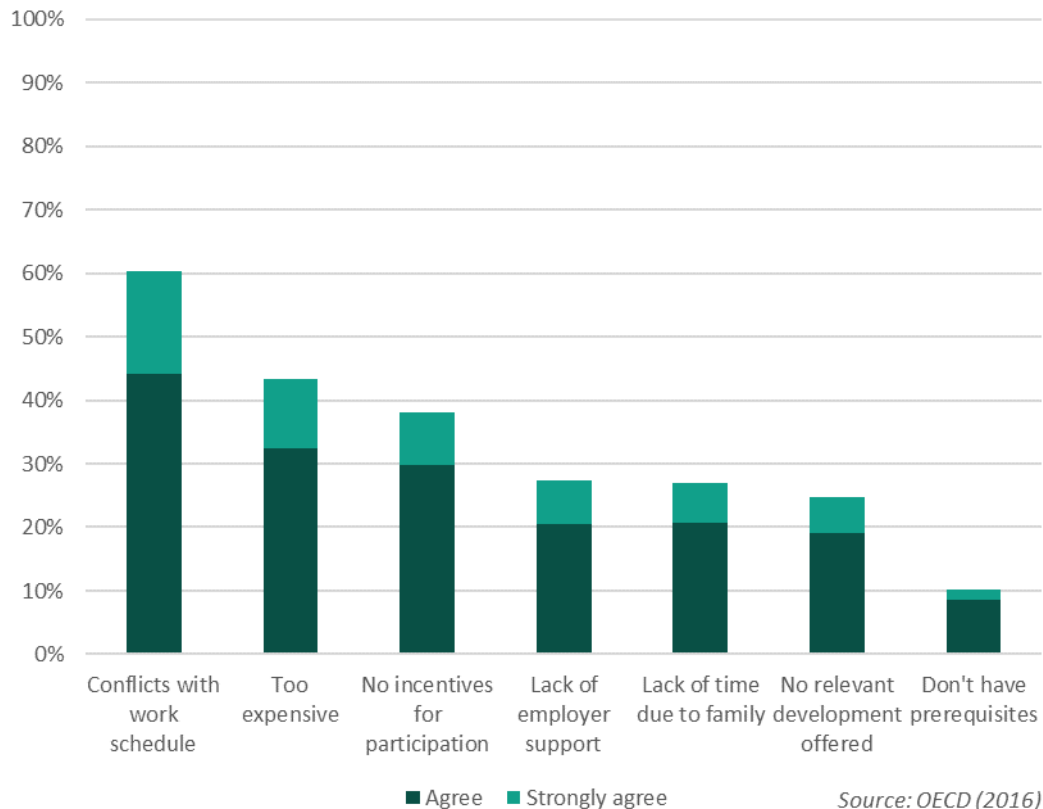
A vicious cycle for CPD and workload?

Heavy work schedules are clearly hampering teachers' professional development in many cases. However, evidence in TALIS suggests that a lack of good quality teacher development could also be worsening the impact of high workloads. Figure 22 compares average working hours with teachers' responses to a question about how well they felt prepared for certain aspects of teaching. This shows a small reduction in hours for teachers with more confidence in subject content, but this is not statistically significant. There are no associations for pedagogy or classroom practice.

However, Figure 23 shows that teachers feeling best prepared in these areas are 20 to 22 percentage points less likely to feel their workload is unmanageable than those who feel 'not at all' or 'somewhat' prepared. This pattern could be showing that confident teachers may find their workloads easier to manage, with a greater ability to plan work around other commitments, but it could also come with an enthusiasm that means that this does not result in fewer hours being worked overall. Whilst in many respects this could create positive outcomes for pupils, an industry where those who are successful tend to be those who struggle less with a generally high workload is likely to prevent many potentially high-quality candidates moving to and staying in it (teacher retention is covered in more detail in Part 5).

Figure 22: Average full time teacher hours and feeling prepared for teaching elements
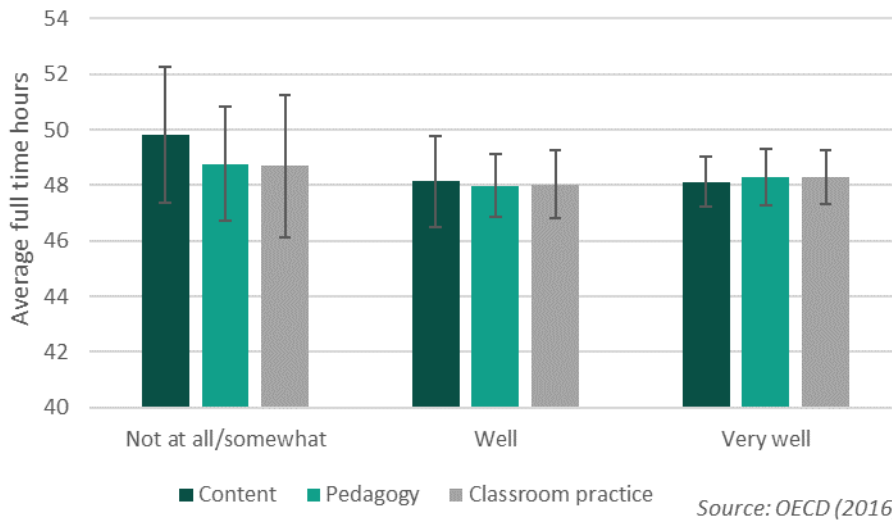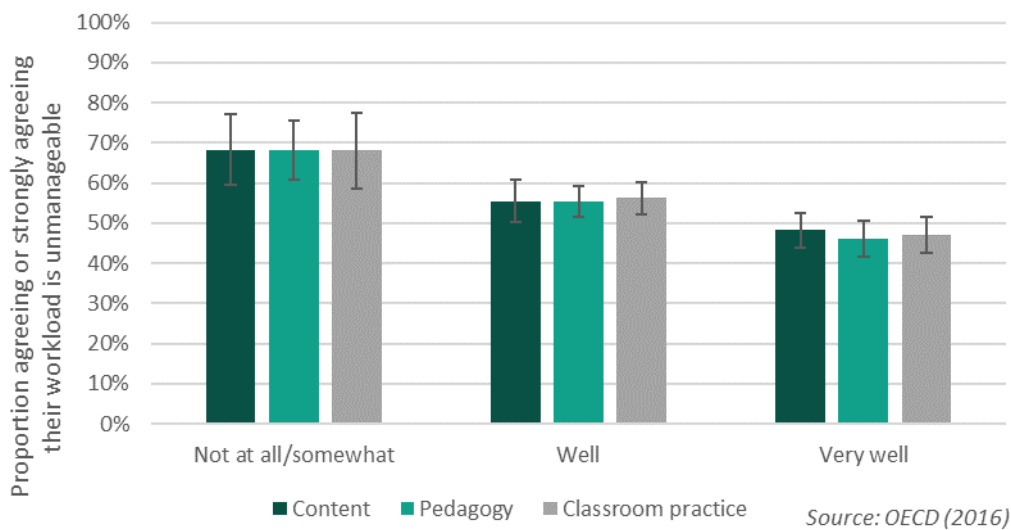

Source: OECD (2016)

Figure 23: Proportion citing unmanageable workload and feeling prepared for teaching elements

Source: OECD (2016)

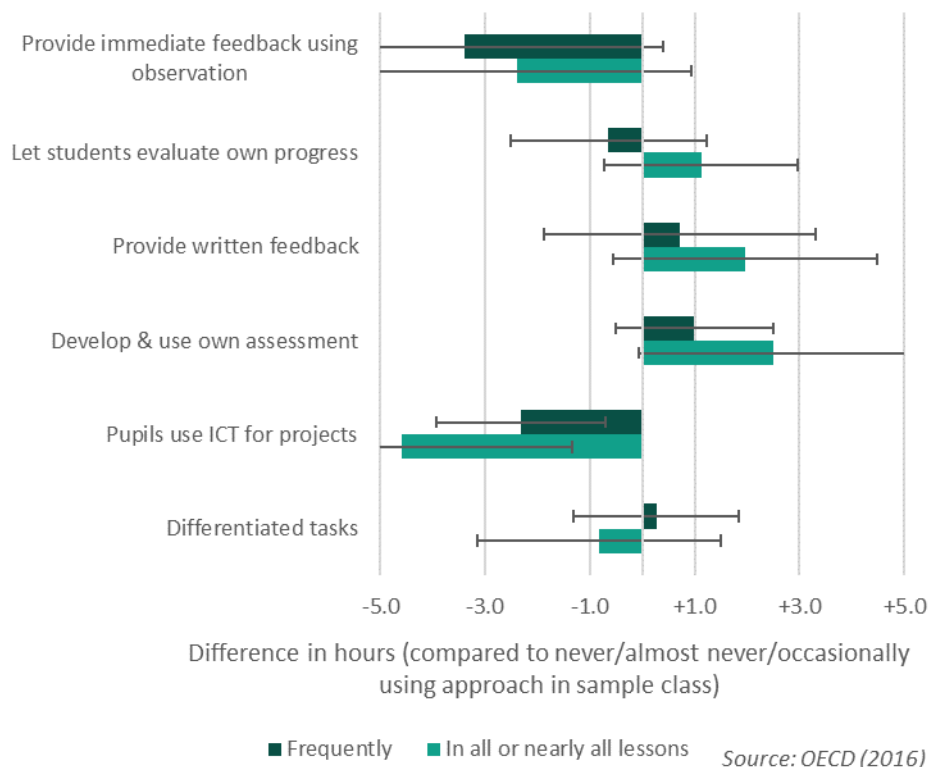## Would promoting particular teaching approaches help break the cycle?

TALIS asked teachers to report the frequency with which they used particular approaches for a single 'target' class. The results highlighted, for example, that England's teachers are more likely than others to use differentiated tasks and provide written feedback (ASCL, 2014). As noted in Part 2, the former may be associated with the level of diversity in mainstream schools. With the question only covering one class, the dataset does not give a complete account of the way teachers work. Nevertheless, Figures 24, 25 and 26 show the difference in overall working time, lesson planning and marking between teachers who 'frequently' or 'very frequently' use certain approaches in the target class. In some cases, the proportions that do not often use these methods are small, making comparisons prone to error (reflected by wide 95% confidence intervals represented by error bars). This suggests:

- Teachers who more regularly provide immediate feedback to pupils work fewer hours. Grouping together those doing this frequently or in all or nearly all lessons (not shown in

chart), those outside of this group work on average around 3 more hours, but they represent a small minority and this difference is not statistically significant.

- In contrast, and unsurprisingly, those who provide written feedback most frequently spend over an hour longer marking, but there is not a significant relationship with overall working time.
- There is no clear evidence that those more often letting students evaluate their own progress work fewer hours or spend less time planning or marking.
- There is an indication that teachers that often develop and use their own assessments might work longer hours overall, but this is not associated with planning or marking time and when grouping all teachers who frequently or for all/nearly all lessons do this the association is not statistically significant.
- Compared to teachers who occasionally or less often have pupils use ICT for class projects, those who frequently use this approach work an average of 2.3 hours less per week, whilst those who take this approach in all or nearly all lessons work 4.6 hours less overall (both are statistically significant, though the magnitude of the relationship is not estimated with much precision here). It is likely that this is picking up wider factors associated with ICT use by teachers, as it is not driven by a relationship with planning or marking time specifically.

Figure 24: Association between average hours for full time teachers and use of teaching practices[22]

Difference in hours (compared to never/almost never/occasionally using approach in sample class)

■ Frequently ■ In all or nearly all lessons   *Source: OECD (2016)*

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[22] Lower boundaries of some confidence intervals are outside the chart's range. The lower bounds for frequently providing immediate feedback and doing so in all or nearly all lessons are -7.2 and -5.7 respectively. That for pupils using ICT for projects in all or nearly all lessons is -7.8.

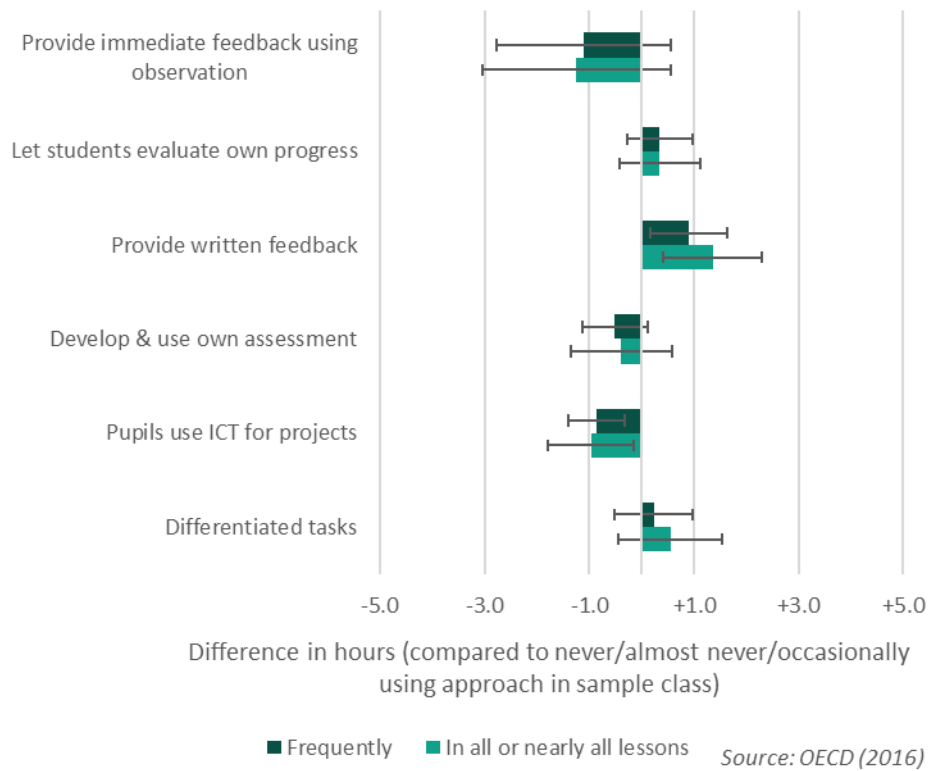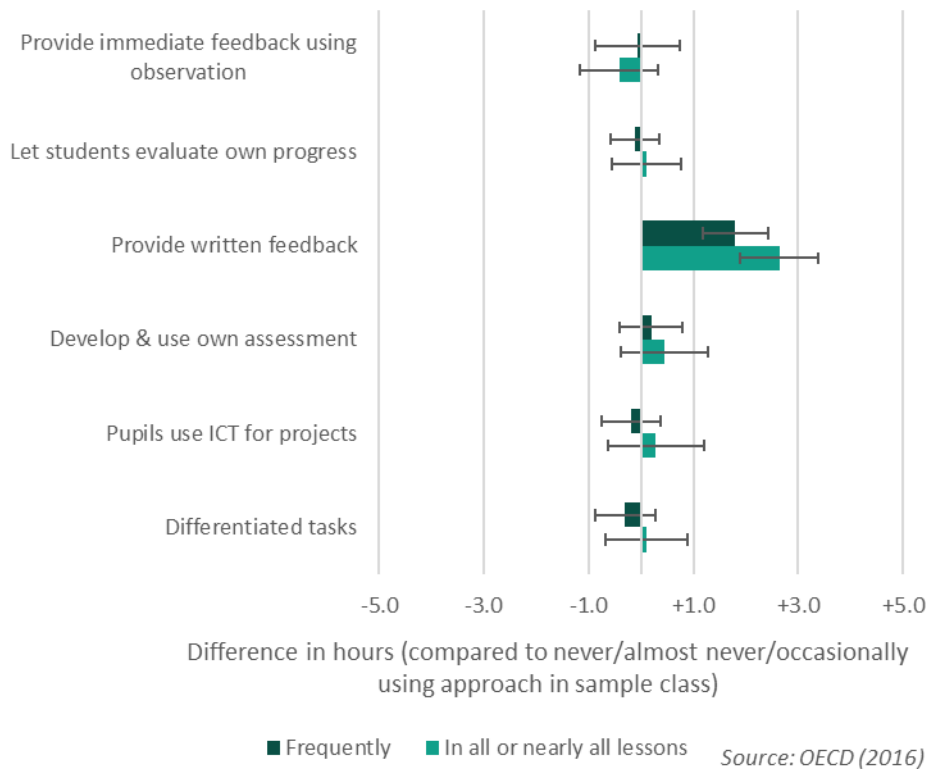**Figure 25: Association between planning hours for full time teachers and use of specific practices**

Difference in hours (compared to never/almost never/occasionally using approach in sample class)

■ Frequently ■ In all or nearly all lessons   *Source: OECD (2016)*

Figure 26: Association between marking hours for full time teachers and use of specific practices

Difference in hours (compared to never/almost never/occasionally using approach in sample class)

■ Frequently ■ In all or nearly all lessons   *Source: OECD (2016)*

These findings do not highlight any particular teaching method that, if carried out more often and by more teachers, could reduce workloads dramatically. They do, however, suggest that the

relationship between teachers' use of and proficiency with ICT and work pressures should be further researched. The lack of association with marking time, and the small correlation with planning time, suggests that this information could be proxying wider uses of technology by teachers. According to the survey, ICT skills for teaching is one of a minority of areas for which a substantial proportion of England's teachers feel they need moderate or high levels of professional development (Micklewright et al., 2014). A previous study of the Transforming School Workforce Pathfinder Project in 2002 (Selwood and Pilkington, 2005) attributed a reported reduction in teacher working hours in part to greater access to, and use of, ICT, although the authors acknowledged that the one-year time frame of the intervention may not have been sufficient for the full benefits of investment in time and training to be reaped. The programme consisted of a variety of measures designed to reduce workload and therefore the precise impact of the increased use of ICT in comparison to other actions taken is not clear.

TALIS also asks teachers how often they exchange teaching materials with colleagues. 71 per cent of teachers in England do this at least 1-3 times per month. Compared to those doing so up to 5-10 times per year, those doing so 1-3 times per month work 2.8 hours longer on average overall, and those doing so weekly work 4.4 hours more. Both comparisons are statistically significant. It might have been expected that exchanging lesson plans and pupil assignments reduces the time spent designing materials from scratch, but this finding might suggest that, in practice, the approach is taken as a way of collaborating to improve learning by those who are willing and able to add it to their schedule. It might also reflect higher scrutiny of lesson plans which might encourage more effort to be put in. There are not substantial differences in the proportions finding their workloads unmanageable between these groups.

Part 5: Workload, pay and teacher retention

In their survey of teachers leaving the profession in 2002, Smithers and Robinson (2003) found workload to be by far the most important factor driving the decision. Whilst there have been few comprehensive studies in the meantime, in a recent survey for the Guardian one in five teachers claimed they intended to leave the profession because they felt overworked (The Guardian, 2016) and recent research by the National Foundation for Education Research (2016) found workload to be "at the centre" of why some interviewed teachers were considering leaving. This section considers evidence on the relationship between workload, job satisfaction and teacher attrition.

Unmanageable workloads and job satisfaction

It is unsurprising to see a strong correlation between job satisfaction and workload issues. Figure 27 compares the proportion of respondents in TALIS who say that they either disagree with positive statements about their profession or school, or agree with negative ones, across those who disagree, agree or strongly agree that their workloads are unmanageable.

Figure 27: Statements about job satisfaction by whether teachers agree that their workload is unmanageable

Source: DfE (2014)
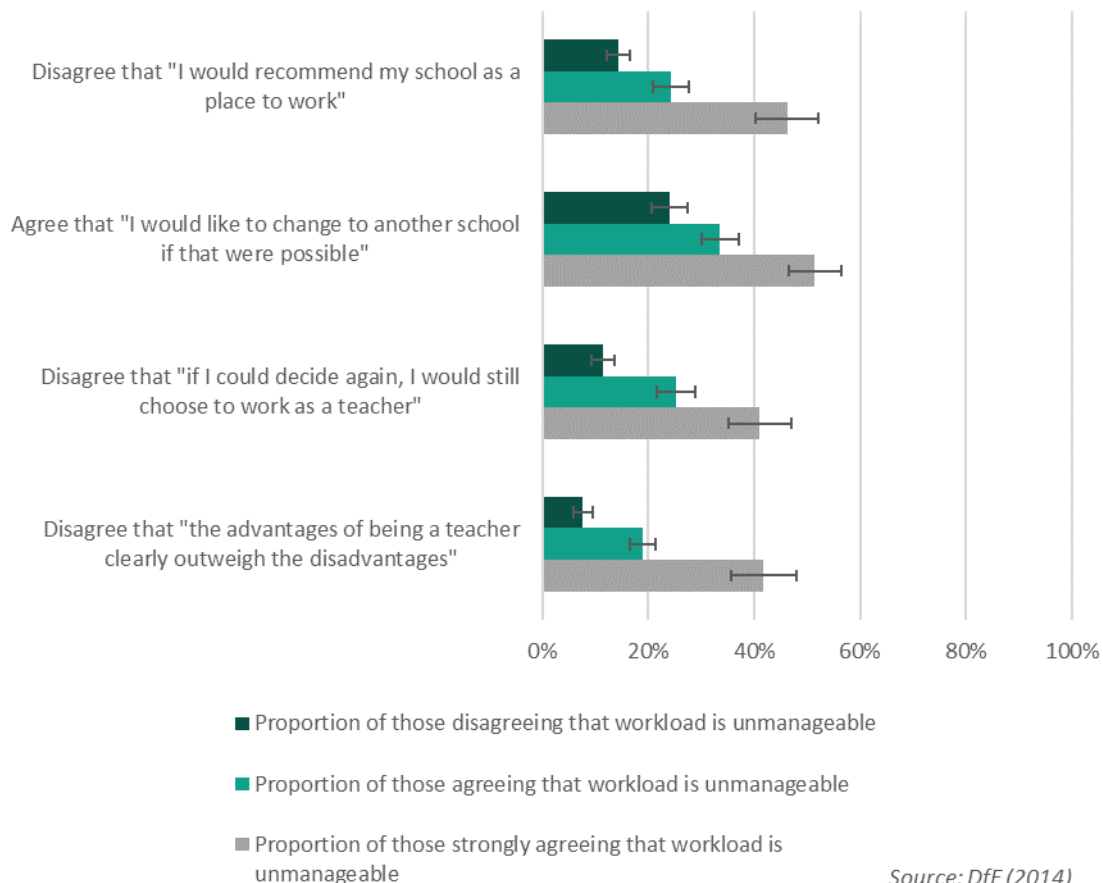
The correlations are stark for questions associated with satisfaction both with the teacher's school and with the profession more widely. For instance, 42 per cent of teachers who strongly agreed that "their workload is unmanageable" disagreed that "the advantages of being a teacher clearly

outweigh the disadvantages", compared with 8 per cent of those who did not cite unmanageable workload.

73 per cent of respondents agreed or strongly agreed with the statement "Teachers are underpaid compared to other qualified professionals with similar levels of responsibility", whilst a smaller proportion, 47 per cent, disagreed that "My own pay is fair given my performance". Micklewright et al. (2014) found that those working longer hours were more likely to cite dissatisfaction with pay, controlling for demographic characteristics, family structure, teacher views of their school, and the characteristics of their target class.

This dissatisfaction with pay and with working hours is more likely to translate into retention problems if teachers perceive there to be other options that could improve their circumstances overall, considering all facets of a job.[23] This will include the amount of paid holiday, which is clearly relatively high for teachers but may not be assumed to be a like-for-like trade-off in terms of hours across a year, with high peaks and troughs likely to be difficult to reconcile with home commitments.

In other sectors, England's workers may also work longer hours than others. As teacher pay has traditionally been highly regulated and consistent across schools for a given level of experience, if we assumed that the teacher labour market is competitive we would also not expect to see large differences in working conditions across schools. Those failing to meet common standards would struggle to recruit. This might explain why we do not see large differences in working hours across schools, even when examining factors that might be important in international comparisons.

Figure 28 plots the relationship between relative pay of teachers and their relative working hours for the 14 economies with consistent data available. This uses:

- Estimates from the OECD's 2015 'Education at a Glance' publication with data for 2013 (the relevant year for TALIS) on the ratio between average lower secondary teacher salaries (aged 25 to 64) and those of similarly educated workers (Graph D3.1, OECD, 2015); and
- The ratio between average full time teacher working hours reported in TALIS and the average typical weekly working hours for full time workers across the whole economy (UK in this case), reported by the OECD using Labour Force Survey data for 2013 (OECD.Stat, 2016). It is unlikely these two measures are directly comparable, so – with any systematic discrepancy applying to all the countries analysed – a comparison of the relative hours across countries is more informative than the absolute value of this ratio.

For all countries assessed except Denmark, teacher salaries were, in 2013, below those of similarly educated workers – the data points are below the horizontal line. For those in the bottom right quadrant, teachers also look likely to work longer hours than those in other sectors. This group includes teachers in Netherlands, Sweden and Norway who do not have high average hours compared to teachers elsewhere. England had around the average level of relative pay (at 82 per cent of other workers' pay) but, apart from Sweden, had the highest level of relative hours.

This suggests that England's teachers in 2013 were as underpaid in relative terms as those in several other countries compared, but they tended to be more greatly overworked in relative terms – with the ratio of teacher hours to others' hours 17 per cent greater than the average of other countries

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[23] The classic theoretical treatment of the relationship between pay and other job conditions in competitive labour markets is given by Rosen (1986).

included here. As the School Teachers' Review Body's 2016 report highlights, the relative pay of classroom teachers compared to other gradate professionals has worsened since that point (School Teachers' Review Body, 2016) due to successive pay awards of 1 per cent, so it is unlikely that the situation has improved.

Figure 28: Relative pay and relative working hours for full time teachers (2013)
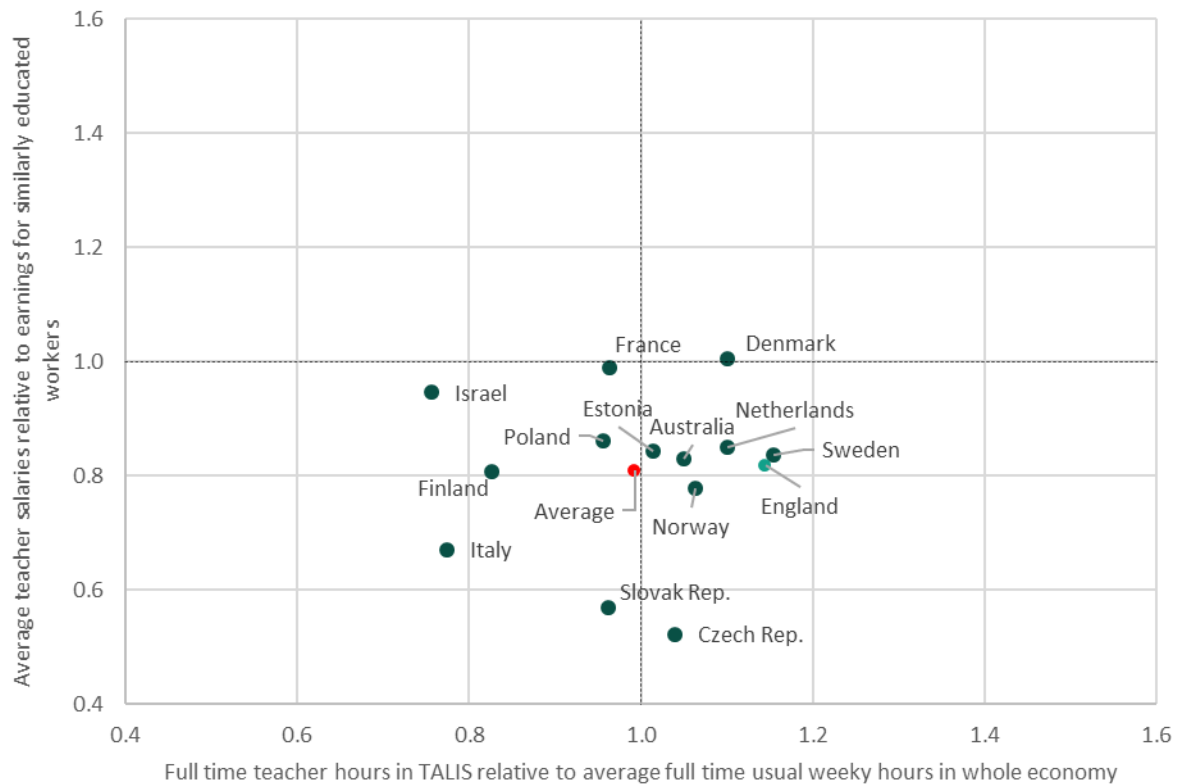
This suggests that, taking into account both pay and working hours, conditions for England's secondary school teachers are relatively difficult. In 2014, the average starting salary for teachers in England was 16 per cent lower than the average for OECD jurisdictions, but the typical salary after 15 years was 4 per cent higher (OECD, 2016). Fast progression in pay over the first years of teaching, generated by previous pay regulations in the state funded sector, have meant that whilst young teachers take on slightly more hours than others, their pay has tended to be considerably worse. This may not be an efficient distribution of salaries from the point of view of teacher retention; it remains to be seen whether the introduction of further pay freedoms for schools will change this.

England's young and inexperienced teacher workforce

There are no robust comparisons of teacher turnover across countries and it is difficult to assess objectively whether leaving rates in the teaching profession are 'too high'. However, with a majority of teachers entering the school system through initial teacher training, and most of them entering before the age of 30, it is to be expected that increases in leaving rates will put downward pressure on the age and levels of experience of teachers.

According to the OECD (2016) the UK has one of the highest proportions of secondary school teachers under 30, with 24 per cent at lower secondary level compared to an OECD average of 11

per cent. Of 24 jurisdictions compared, it also had the fastest decline in the proportion of teachers over 50 in secondary education between 2005 and 2014. As Figure 29 (based on the TALIS dataset) shows, this reflects a relatively inexperienced profession. Only 48 per cent of England's lower secondary school classroom teachers have more than 10 years' experience, compared with an average of 64 per cent. The highest levels appear to be found in Eastern and Central European jurisdictions. Only Singapore has lower proportions with over 10 and over 20 years' experience.

Figure 29: Teachers' experience by jurisdiction (ranked by proportion with more than 10 years' teaching experience)

Source: OECD (2016)
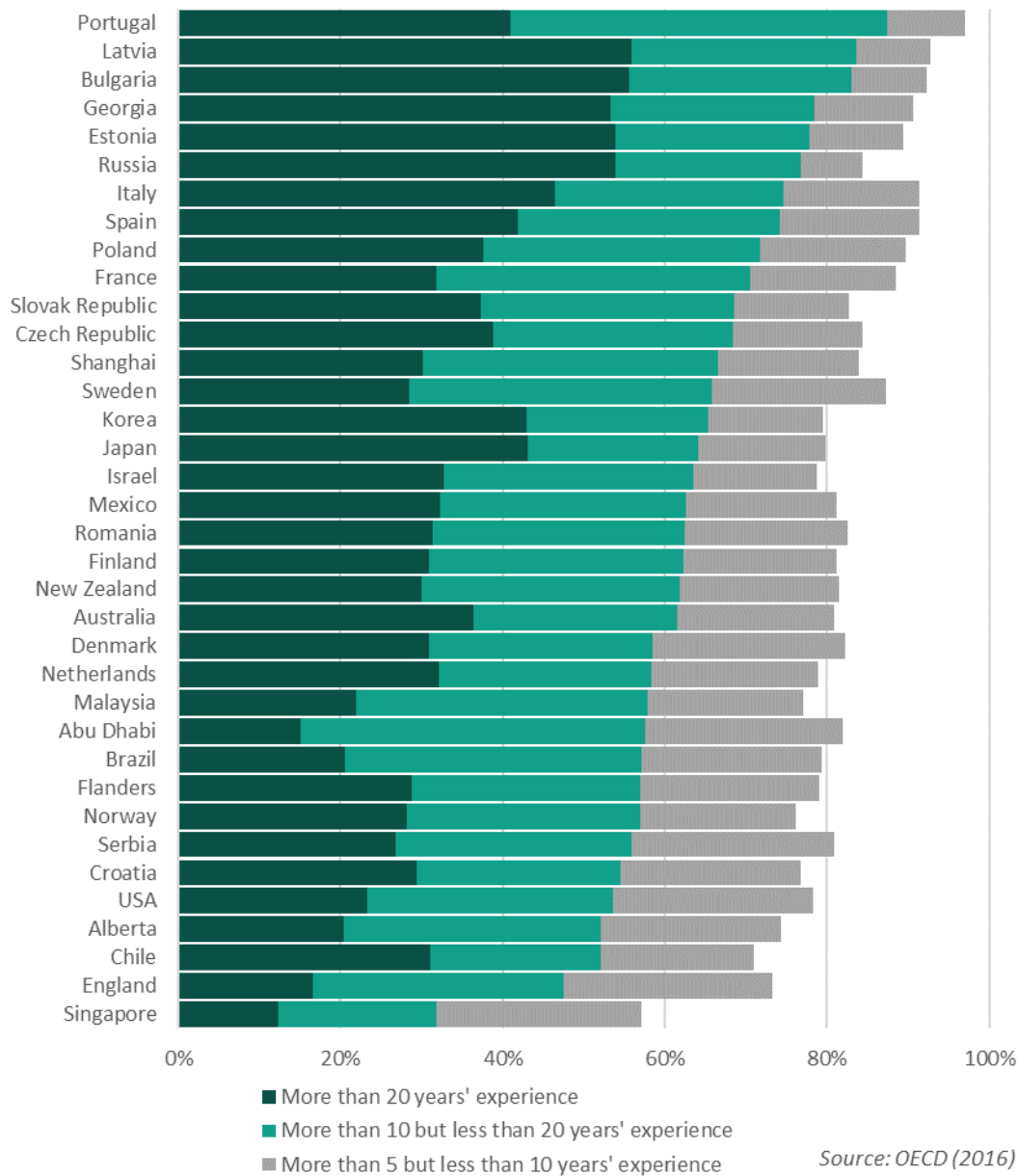
The implications for teaching quality

An obvious implication of high rates of turnover, and short teaching careers, is that the substantial resources invested in initial teaching training will involve significant amounts of waste. If those resources could be allocated better to the teachers who stay for longer, through raising the levels of

effective CPD undertaken later in careers, overall teaching quality might be raised and more might stay.

However, another mechanism through which teacher turnover driven by workload may be harming teacher efficacy is selection. Some potentially outstanding teachers will be unable to join or remain in the profession because of family circumstances, or unwilling to because of their preferences for leisure time, with pay prospects becoming less generous over time as well. As noted in Part 1, female teachers with children tend to work fewer hours; where that is incompatible with the teaching jobs available, some may simply be unable to teach. Part-time working is not as widespread as might be expected for a disproportionately female workforce. This might explain why, according to TALIS data, only 2.9 per cent of teachers in England are living with children but not as a couple, whereas 4.1 per cent of all people in employment aged 16 to 64 were lone parents in 2013 according to the Office for National Statistics (Table P, ONS (2016)).

In contrast to this and as noted in Part 3, fewer than half of teachers in England believe that consistent underperformance results in dismissal in their school. Taken together, this means that whether or not a teacher can cope with long working hours is likely to have as great if not a greater influence on whether they remain a teacher for the duration of their career as their effectiveness in the profession. Combined with extremely low levels of CPD, which might otherwise improve the efficacy of teachers who need support to improve, this does not suggest a labour market that is likely to work effectively for pupils.

Part 6: Workload, system improvement and equity

Is high teacher workload necessary for strong educational performance internationally?

In a system where workload is an important driver of staff wellbeing and job satisfaction, an important question is whether England's high working hours and the challenges they create are necessary for educational performance.

Micklewright et al. (2014) identified nine of the original TALIS participants as 'high performers' based on the results of international tests (PISA, TIMSS and PIAAC): Japan, Korea, Singapore, Estonia, Finland, Flanders (Belgium), The Netherlands, Alberta (Canada) and Australia. They highlight that England has higher working hours than six of these jurisdictions, and five of them have average hours that are lower than 40. This is broadly consistent with the rankings for full time teachers only in Part 1, with England reporting longer hours than most of these jurisdictions and the high performers spread throughout the hours distribution. The 2016 database has since been updated to include Russia, Georgia, New Zealand and – the top ranked region in PISA across reading, mathematics and science – Shanghai. As we've seen, Shanghai's lower secondary school teachers work around the average hours, and for full time staff 8.5 hours less than England's. This demonstrates that long weekly hours for classroom teachers are not a prerequisite for strong educational performance.

Is there a stronger relationship within England?

Taking a national perspective there are other, dynamic reasons why it is important to know whether there is an association between performance and working hours. Firstly, if the only teachers that are successful, or seen to be successful, are those that work long hours, then entry to and retention in the school system will be restricted and many potentially high quality candidates will be prevented from teaching. Secondly, if high workloads are genuinely unnecessary for strong educational performance, but we see that the schools delivering the best pupil outcomes are only doing so through exceptional working hours, it is likely that our model for school improvement is missing the things that really work.

TALIS does not contain objective information on teacher performance, but the national dataset contains linked variables from administrative databases. This allows us to compare working conditions across schools with different Ofsted ratings (under the categories used in the latest inspections of the time). Micklewright et al. (2014) found that, generally, the proportion of teachers citing unmanageable workloads increased as the Ofsted category, or key stage 4 results, of the school worsened.

In Figure 30, we compare the composition of schools across three groups (combining satisfactory and inadequate schools), based on the proportions of full time teachers reporting or not reporting unmanageable workload and whether or not they worked over 50 hours. This suggests that the identified trend is not due to teachers in lower-performing schools working longer hours – among those working fewer than 50 hours, a greater proportion cite unmanageable workloads. Overall, including part-time teachers, the proportion citing this issue is 9 percentage points higher in the third category than in good schools, whilst average working hours are no different. Hours for full-

time teachers in outstanding schools are estimated to be only on average of 1.5 hours higher than in satisfactory or inadequate schools, and this is not statistically significant.

These findings could suggest that successful schools are those that are better at supporting teachers to cope with high work demands, that teachers find long hours easier to bear if they feel it is leading to positive outcomes for their school, or that successful schools are those that are able to attract teachers who are better able to cope with long hours.

Figure 30: Working long hours and citing unmanageable workload by Osted category


Source: DfE (2016)
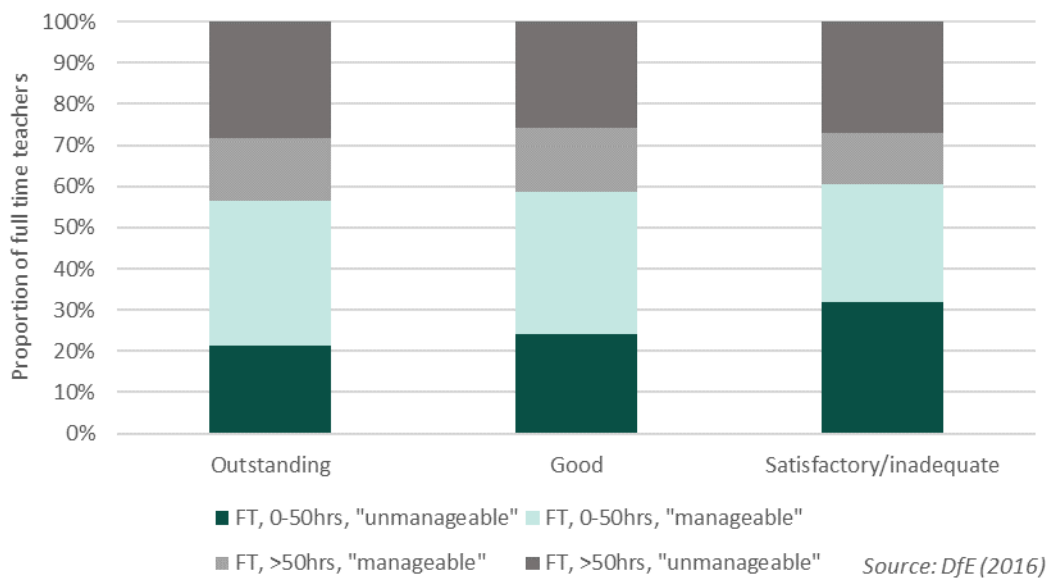
Workload and challenging schools

Recently published statistics suggest that schools in deprived areas and with economically disadvantaged pupils face higher levels of staff turnover (Department for Education, 2016d). For this report, a similar analysis to that above has been carried out to compare schools across four groups, based on quartiles (in the national distribution) of the proportion of pupils on free school meals. As Figure 31 highlights, the differences are more substantial than those seen when comparing Ofsted categories. These retention issues do not appear to be a direct consequence of working hours or workload problems being any worse than elsewhere. On average, teachers in highly disadvantaged schools work fewer hours (a difference of 3.6 hours between the top and bottom quarter of schools on this measure, which is statistically significant), and do not disproportionately tend to be dealing with unmanageable workloads. There is not a consistent pattern across the groups, but teachers in the most disadvantaged quarter (group 4) of schools are 9 percentage points less likely to cite unmanageable workloads compared to those in the next most disadvantaged group (group 3) when part time teachers are included, and this is statistically significant. This could suggest:

- A positive consequence of the additional resources provided to schools with deprived intakes – as the new DfE statistics show, more disadvantaged schools have lower pupil teacher ratios;
- Disadvantaged schools being less able to attract teachers willing or able to work as long hours; or

- Disadvantaged schools having management approaches that better help teachers manage work-life balances.

Figure 31: Working long hours and citing unmanageable workload by quartile of FSM %

Source: DfE (2016)
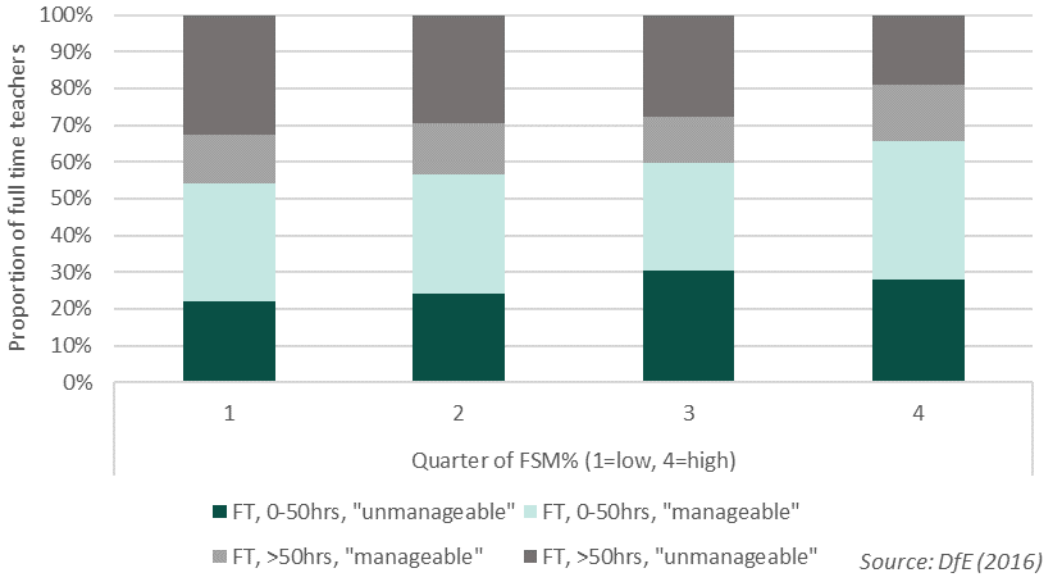
Looking at this issue from the perspective of the prior attainment of school intake, grouping according to quartiles (of the national distribution) of average key stage 2 point scores, suggests a similar pattern to that for economic disadvantage – shown in Figure 2. The magnitude of variation is smaller though, and there are not significant differences in average hours for full time staff across the groups.

Figure 32: Working long hours and citing unmanageable workload by quartile of average key stage 2 points score

Source: DfE (2016)
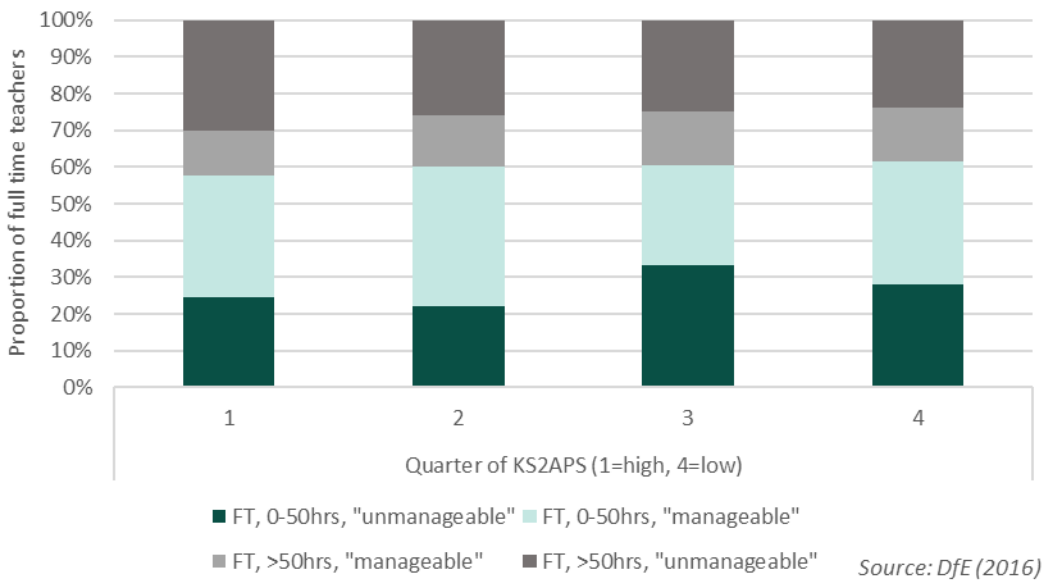
The implications for equity in the school system

Overall, these findings suggest that higher performing schools have teachers who work, at most, only slightly more hours, but have fewer teachers expressing problems dealing with workload than do poor performing schools. Despite having greater levels of turnover, schools with high proportions of disadvantaged pupils have teachers working lower hours. This could indicate the benefits for staff of the more generous funding (and so staff numbers) given to deprived schools, more effective approaches to managing workload, or – more negatively from the pupils' perspective – that schools with disadvantaged pupils do not attract as many teachers willing or able to work long hours. It also means that workload is not the only issue that needs to be addressed if localised recruitment and retention challenges are to be met.

Conclusions and policy implications

Previous research, and the views of the workforce, had already established that many teachers in England work long hours compared with their counterparts in other developed jurisdictions. This report suggests that teachers in England are more likely to feel underpaid and overworked than their counterparts elsewhere, and low starting salaries may be a significant factor. This has obvious implications for teacher well-being. However, the analysis in this report also highlights that the current long-hours culture among teachers in England is restricting access to continuing professional development, the amount of it undertaken on average is very low, and that confidence in teaching skills is associated with more manageable workloads. These factors are likely to be contributing to the trend of teachers leaving the profession at an early age in England – and the result is that we have one of the youngest and least experienced teaching workforces in the developed world.

These long working hours appear to be driven, not by time spent teaching in the classroom, but by other activities including marking, planning and administration. Other jurisdictions, including some which perform consistently highly in international rankings, appear able to avoid this, and in England teachers do not work much longer hours in outstanding schools.

The DfE are right to focus on planning, marking, and administrative issues in their response. On the former, it should be cautious in introducing further curriculum reforms, as transitional impacts may have contributed to complaints voiced in the Workload Challenge of unproductive time spent planning lessons. On the basis of international comparisons, the focus should be on making better use of lesson planning time rather than reducing the overall amount. Some other jurisdictions' teachers spend more time planning each lesson, and in Shanghai – a high performer in international tests – this is accommodated through high class sizes which create smaller teaching timetables for each teacher. If teacher recruitment fails to keep pace with pupil numbers, it is likely that increases in class sizes would be required to prevent teaching timetables and workloads increasing.

There is little evidence, to date, that the structure of the school or its staffing composition has an impact on overall teaching workload in the current system in England. But there is a small correlation between the size of school and number of hours worked, suggesting that teachers in larger schools tend to work slightly fewer hours. There may be a case for further research on whether larger-scale operations, such as multi-academy trusts, can create economies of scale or embed more pro-active collaboration and efficiency policies that ease the workload of individual teachers.

The DfE and multi-academy trusts should support, promote and monitor implementation of the new Standard for Teachers' Professional Development (Department for Education, 2016e). This was published in 2016 and, in developing it, the Teachers' Professional Development Expert Group recognised the role teacher development can play in managing workload.

This report does not identify teaching approaches that should be adopted as simple ways to reduce workload dramatically. However, the association between use of ICT in class and overall working hours suggests that the use of ICT in schools and teachers' proficiency in using technology should be researched from the perspective of teacher working conditions as well as the direct impact on pupil outcomes.

Teachers frequently perceive that the accountability system contributes to stress and workload, and it is plausible that a 'high-stakes' approach to raising performance has created a long-hours culture in a highly competitive school system. If the focus of that competition is on short-term outcomes, what is individually rational for teachers, department heads and head teachers may ultimately not be constructive for pupil outcomes in the long term. That is not to say that accountability-driven improvement is inappropriate, but that the risks for long-term teacher development should be understood and acted upon by policy makers, even in a school-led system. This report highlights that more needs to be done in order to sustain the teaching workforce and enable it to flourish.

Appendix: Methodology and references

Methodology

Statistical methods and data

The majority of the analysis in this study is based on statistics derived from the 2013 version of the OECD's Teaching and Learning International Survey (TALIS), the first results of which were published in 2014 (OECD, 2014a). TALIS 2013 was a survey of over 100,000 teachers from 34 jurisdictions conducted in late 2012 or early 2013. A further four jurisdictions administered the survey in 2014 and were not included in the main report.

The survey collected information from a sample of head teachers about their demographic characteristics, career experience, training, development needs, leadership approaches, perceptions of challenges, and the pupil and teacher composition of their schools. For each of these heads' schools, a random sample of lower secondary (key stage 3 in England) classroom teachers were asked to complete a separate survey. This covered similar topics, but in addition obtained information about a sample class they taught, working hours, teaching approaches used and professional beliefs.

International comparisons are made using the public use file, obtained in 2016 (referred to in figures as 'OECD, 2016'). This contains data from the original participants included in the 2014 report, excluding Iceland and Cyprus, but with the four added jurisdictions which administered the survey later: Russia, Georgia, Shanghai and New Zealand. England-only analysis is generated using the anonymised dataset produced for England's national report of 2014 (referred to in figures as 'DfE, 2014'). This contains additional variables based on questions not asked in other participating regions, and school level data linked from administrative sources. England's sample contains 2,496 teachers from 154 schools, academies and maintained schools of the various types, and a small number of independent schools. This represents a good response rate: 75.1 per cent of sampled schools and 83.4 per cent of responding schools' teacher samples. However, most analyses are affected by the omission of some questions' responses for each teacher. The dataset is used with permission from the DfE. More information on the TALIS survey methodology is provided by OECD (2014) and Micklewright et al. (2014).

As the survey featured a complex sampling design, with stratification in some regions and teachers clustered in schools, the OECD provide final weights to take into account survey design and response, at teacher level and at school level, and a set of 100 replicate weights for the computation of variances of estimates using balanced repeated replication (BRR) with Fay's method (OECD, 2014b). Following the approach of Micklewright et al. (2014), estimates of means and proportions are produced using these weights in Stata (StataCorp, 2009) via the 'svy brr' command with the 'MSE' option set. This allows estimates derived from the survey to be used to make inferences about the wider population of teachers. Percentiles are computed using the 'table' or '_pctile' commands, using the 'pweight' option for specifying probability weights - there is no option for replicate-based variance estimation in this case.

Variance components and multi-level modelling

For Part 3, two alternative approaches are taken to decomposing the variation in estimated working hours for full time teachers in England. The first, simpler, approach treats each school in the TALIS sample as a fixed factor, to which we would like to attribute a specific 'effect', without wanting to

make generalisations to the wider set of schools not sampled for the study. A simple form of this 'fixed effects' model involves estimating a linear regression model with a specific variable to capture each school's impact as an indicator (0 or 1) variable. This was implemented here using the 'svy brr: regress' command, with school identifiers used to create a set of dummy variables. Taking the crude 'R-squared' measure of the proportion of variation explained by this basic model suggests 11 per cent of the variation is at school level. With no adjustment for the fact that controlling for the specific effect of every school is likely to attribute some of the variation to school effects by chance, this should give at least an upper bound estimate of the true proportion as it affects the wider population.

An alternative approach, 'random effects', is more suitable for extrapolating findings from the sample at hand to the wider processes involved. Doing so requires assumptions about the underlying distribution of teacher-level effects, though, and there are various approaches to implementing it in the context of survey data with sampling weights. Random effects estimates of variance were computed assuming the linear random intercept model. To enable the incorporation of weights, following Rabe-Hesketh and Skrondal (2012) the 'gllamm' programme was used to generate pseudo-maximum likelihood estimates. In conducting multilevel modelling with survey weights, level 1 'within group' (rather than final) weights need to be computed and, for consistent estimates with varying cluster sizes, rescaled within each cluster (Pfeffermann et al., 1998). There are several ways of doing this. Here, rescaling weights using the final estimation sample (allowing for missing data), estimates were made using both methods proposed by Pfefferman et al. (1998) and also with no weights. Using the gllamm programme with no covariates generated results for the proportion of variance at school level of between 2 and 3 percent across these methods. This is likely to represent a lower bound of the 'true' population effect, and good estimates of this will be hampered by some small clusters of sampled teachers here.

Given some correlations at school level were found elsewhere in the analysis it is thought the random intercept model used is not representing the data well, so a best estimate is that the true proportion of variance in the population at school level is taken to be between this and the 11 per cent found for the fixed effects model.

Similarly, attempts to fully model the drivers of working hours using teacher and school variables did not produce well fitting models - with typically only 5 to 10 percent of variation explained (based on comparisons of likelihood with the basic model). The sign of parameter estimates were generally in line with the associations seen in basic comparisons, but it appears to be difficult to model this variable effectively and obtain any great predictive power. This may be a result of key variables omitted from TALIS, the noise inherent in a snapshot of one week's hours, some small clusters of teachers, and a low number of schools sampled relative to the heterogeneity in secondary school teachers (given the range of subjects taught and roles held). As such, failing to control for several relevant factors means the associations identified in this study cannot be assumed to be directly causal, even if they are statistically significant.

For the 2018 survey, including a question to check how representative that week's hours were, or asking for an estimate of 'usual' working hours, and sampling more schools could make it easier to model the drivers of teacher workload. Analysis of primary school teachers with, perhaps, less variation in roles may be more fruitful – they will be surveyed in England in TALIS for the first time in 2018.

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Teacher workload and professional development in England's secondary schools: insights from TALIS

This report looks at data about teacher experiences from the TALIS survey. TALIS is the international survey that offers an opportunity for teachers and school leaders to report experiences of: the learning environment, appraisal systems, teaching practices, development and support, school leadership and job satisfaction. The findings reflect the views of over 100,000 teachers in 36 jurisdictions surveyed across 2012 to 2014.

The report compares the experiences of different teachers in England and compares them with those elsewhere, focusing particularly on workload, professional development and retention.

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