Evidence for Excellence in Education

Report

Should I Stay or Should I Go?

NFER Analysis of Teachers Joining and Leaving the Profession

National Foundation for Educational Research (NFER)

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Contents

1 Introduction

Rising pupil numbers, shortfalls of new trainees, and concerns over the proportion of teachers who say they are considering leaving the profession have put teacher recruitment and retention toward the top of the current education policy agenda.

The issues relating to teacher supply are complex, and the wide array of data sources and trends make it challenging to understand what is happening. An accurate picture of the nature and scale of the teacher supply challenge is essential to inform an effective, proportionate, and well-targeted policy response.

This report seeks to explore and reconcile the messages from different data sources, and provides new insights from analysis of the Labour Force Survey. In doing so, our aim is to support the sector as a whole in forming an appropriate response to the critical challenge we face.

2 At a glance

Teacher numbers have been growing in recent years. Although around 10 per cent leave each year, this figure is the same in most years, and slightly greater numbers have been joining. This contrasts with some surveys reporting large numbers of teachers considering leaving the profession.

Pupil numbers are forecast to rise, and so **more teachers will be needed in future**. Despite this, fewer teachers have been entering initial teacher training in recent years.

Secondary schools face particular challenges, **especially in some English Baccalaureate (EBacc) subjects.** They face greater growth in pupil numbers, shortfalls in current ITT entrants, and higher numbers reporting considering leaving the profession.

More than half of teachers that leave take up jobs in the education sector (excluding those who left to retire). A similar proportion of the non-student joiners were already working in the education sector.

Teachers are not leaving for higher paid jobs, at least in the short term, and on average have experienced a ten per cent fall in wages compared to similar teachers who remain teaching.

3 Background

Teacher numbers have been growing steadily

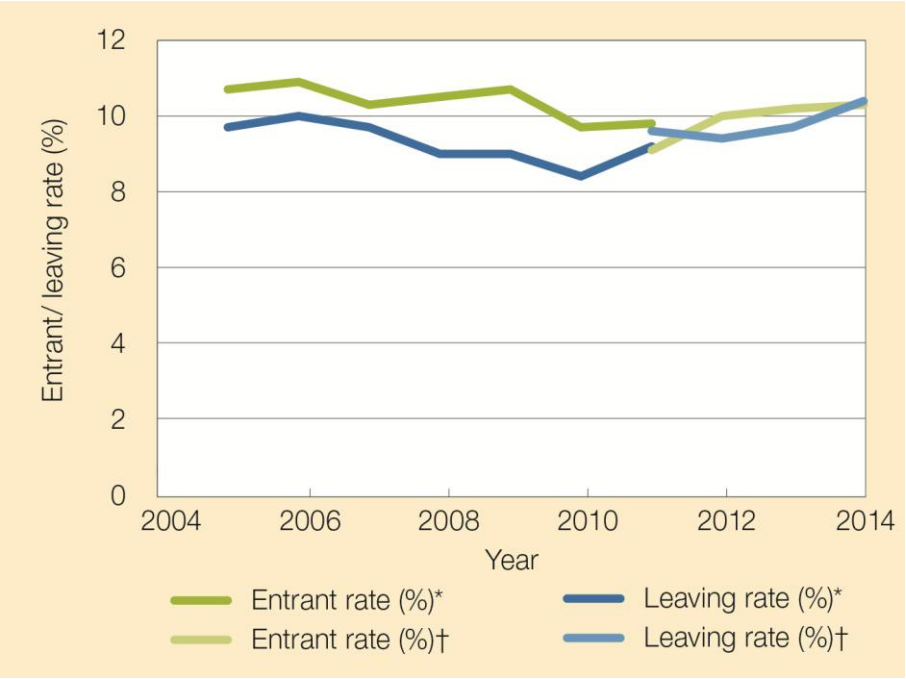
Department for Education (DfE) figures show that 49,120 teachers (10.4 per cent of the teaching workforce) left teaching in the state-funded school sector in England in 2014[1]. Although this represents a 7.5% (3,500 teachers) increase on 2013, the numbers of leavers and joiners appear to be reasonably balanced: 48,900 (10.3 per cent of the teaching workforce) entered teaching in 2014.

Figure A shows that the overall rates of teachers entering and leaving the profession have also been relatively stable over time. Although the leaving rate rose from 8.4 per cent in 2010 to 10.4 per cent in 2014, the entrant rate also increased over the same time period. For most of the past 10 years, the total number of entrants has been slightly larger than the number leaving. The net effect over this period has been a gradual increase in the total number of Full Time Equivalent (FTE) teachers in the state-funded sector.

If you remove those retiring, only 35,980 left teaching in 2014, and of the joiners 17,350 were returning to the profession having previously taught in English state schools. As shown in Figure B, in combination these figures imply a much lower net loss of teachers to other parts of the labour market.

The relative stability in the number of teachers overall suggests that the current supply of teachers is meeting current demand, at least until recently. Indeed, although the total number of vacancies has increased in recent years, as a proportion of the overall workforce the vacancy rate was still only 1.1 per cent in 2014[2].

Figure A The number of teachers leaving and joining has been relatively balanced over time, at around 9-10 per cent every year

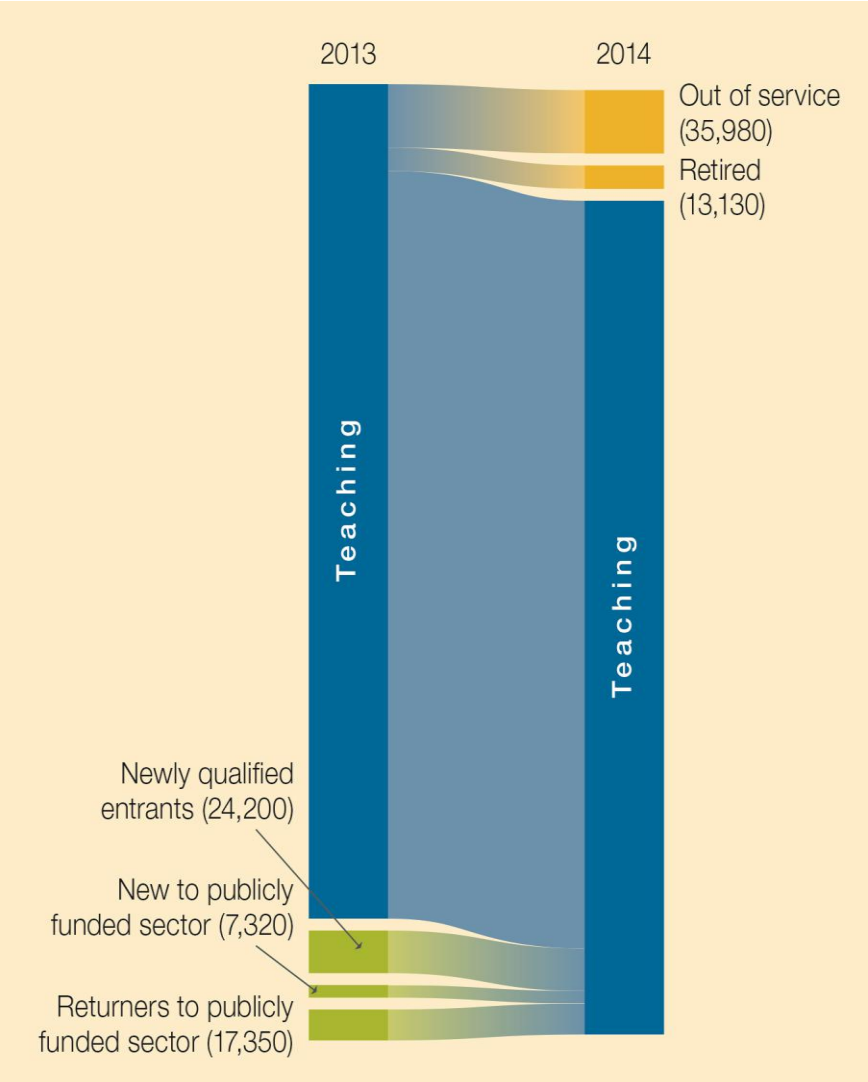


Source: School Workforce in England 2014, Table C1a

* Headcounts from Database of Teacher Records 2004/05-2010/11

† Headcounts from School Workforce Census 2010-2014

Figure B Flows in and out of the teacher labour market

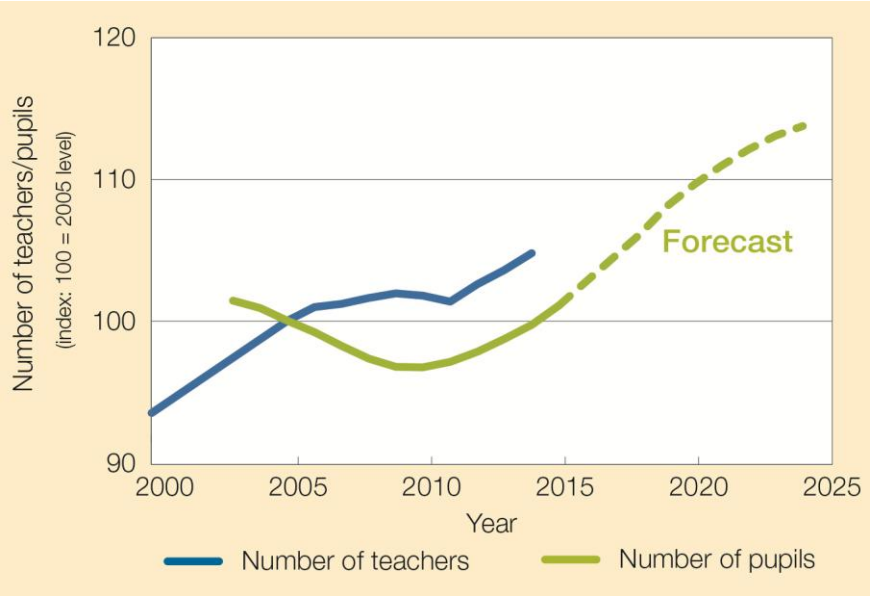


Source: School Workforce in England 2014, Table C1a

But we will need more teachers in future

Maintaining the number of teachers at the current level will be an insufficient target for the future, given the predicted rise in pupil numbers[3]. Figure C shows how the number of teachers has evolved over time compared to the number of pupils. Between 2000 and 2010 the number of teachers increased relative to the number of pupils, and since then the number of teachers has kept pace with the number of pupils. All else being equal, the overall number of teachers will need to rise to deal with the expected 13 per cent rise in pupil numbers between 2015 and 2024.

Figure C More teachers are needed to meet future demand



Sources: Teachers School Workforce in England 2014, Table 1. Total regular FTE teachers in state-funded schools. Pupils
National pupil projections: trends in pupil numbers - July 2015. FTE number of pupils in state-funded schools

The challenges are greater than it first appears

Looking beyond these headline figures indicates that the nature of recruitment and retention has changed, and that both may be making teacher supply more challenging.

There are not enough new teachers training

First, the number of individuals entering initial teacher training (ITT) programmes (excluding Teach First) has fallen from 39,000 in 2010 to 31,700 in 2014[4]. Provisional data suggests there are 32,000 entrants in 2015[5]. The number of teacher trainees is an important indicator of future teacher supply because teacher training is a key pipeline of entrants to the teaching profession. However, it is not the only potential supply of teachers: newly qualified teachers only represent around half of entrants.

The DfE forecasts the likely future demand for teachers with its Teacher Supply Model (TSM)[6]. The model estimates how many new entrants to ITT programmes are likely to be needed to fill future vacancies that arise because of changes in teacher demand and supply. The number of ITT entrants has been below target for the last four years.

Secondary schools face particular challenges

Second, the secondary school sector faces particular challenges. The number of pupils in secondary schools is expected to grow the fastest: by 20 per cent between 2015 and 2024. The number of new entrants to secondary teacher training is further below the recruitment targets set out by the TSM than in the primary sector (91 per cent of target in 2014; primary was 93 per cent of target). Whereas the provisional 2015 figures for primary are looking strong, secondary continues to struggle.

Furthermore, more teachers left secondary schools in 2014 than joined: the leaving rate was 10.4 per cent compared to an entrant rate of 9.6 per cent. This is reflected in the total teacher workforce across the two phases, which in primary schools has increased by ten per cent since 2010, but which has remained constant in secondary schools[7].

Some subjects face greater shortages

Third, trainee entrants to teach some EBacc subjects, such as sciences, languages, and geography, are particularly low compared to target. For example, provisional figures for 2015 show that only 71 per cent of the target number of postgraduate entrants in physics were achieved[8]. DfE figures for 2014 show that a significant number of pupils are being taught by a teacher without a relevant post A-level qualification in their subject[9]. This suggests that even where posts are being filled, headteachers may be finding recruitment more difficult.

These difficulties could also have implications for pupil outcomes. On the one hand, in their 2014 review, 'What makes great teaching?', the Sutton Trust concluded that the link between teachers' academic qualifications and student performance are weak[10]. On the other hand, they do also report evidence that subject-specific knowledge is related to performance. Measures to

recruit and retain teachers of certain subjects, with formal training in those subjects, are therefore important.

The picture varies by school and region

Fourth, some schools and regions may struggle to fill their vacancies more than others. There are many potential drivers for this, and their relative importance between regions, and for different types of teachers, needs to be investigated in more depth. Potential drivers include property prices, the cost of living, regional variation of salaries in alternative professions, the size/composition of the overall labour pool, the motivations of different groups of teachers, and the characteristics of individual schools (there is evidence, for example, that staff turnover is highest in schools with the most deprived intakes[11]).

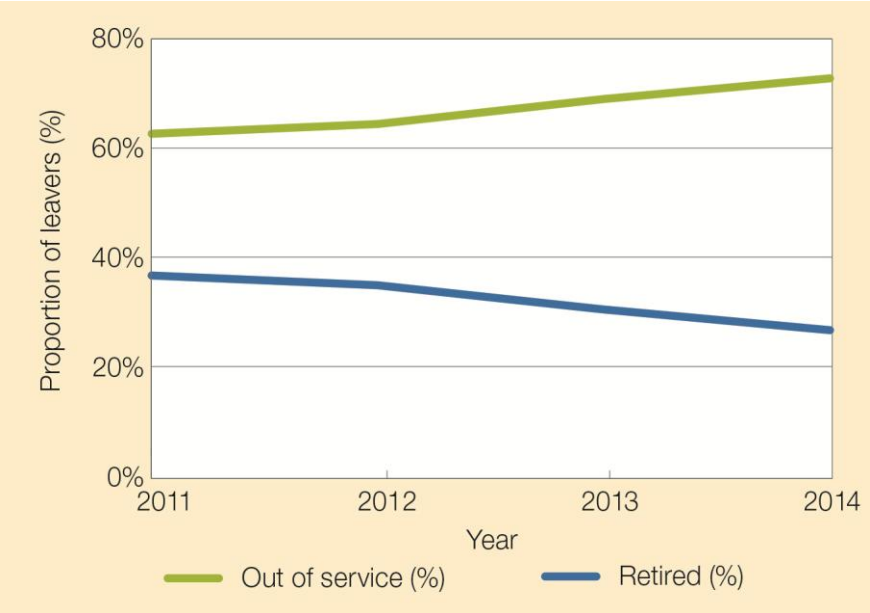
The composition of flows in and out of teaching is changing

Finally, if we examine the composition of those who are leaving teaching, we find this has changed in the last four years. As shown in Figure D, the proportion of leavers retiring has dropped from 37 per cent in 2011 to 27 per cent in 2014, while the proportion no longer teaching in the English state sector has increased from 63 per cent in 2011 to 73 per cent in 2014.

The number of teachers leaving *full-time* teaching in 2014 (typically lower than the proportion of part-time leavers) is at a ten-year high of 9.2 per cent, 2.7 percentage points higher than it was in 2010. This suggests that despite the headline figures remaining stable, there are nevertheless underlying changes in the flows of teachers in and out of the profession that warrant more detailed investigation.

Understanding the motivations of existing and prospective teachers, and the factors that influence flows in and out of teaching, is essential to formulate an appropriate policy response.

Figure D The proportion of leavers that have retired has been decreasing in recent years



Source: School Workforce in England 2014, Table C1a

4 What can teacher surveys tell us about motivations to leave, join and stay in the profession?

Understanding teachers' motivations to join, leave and return to teaching is crucial for formulating an appropriate policy response. Teacher surveys are useful for identifying the main reported motivations for joining and leaving the profession, and who might be especially at risk.

In June 2015 we asked a representative sample of teachers in England, using the NFER Teacher Voice Omnibus Survey, whether they were considering leaving teaching within the next 12 months[12]. The survey found that **20 per cent of teachers were considering leaving teaching**. A quarter of those considering leaving teaching said they planned to retire and ten per cent reported that they would like a different job in the education sector. Half of them were undecided on what they will do next, suggesting many had not made concrete plans, and so ultimately may not end up leaving.

The survey responses also showed that secondary teachers were significantly more likely to be considering leaving than primary teachers. Given that the predicted growth in pupil numbers is forecast to be strongest in secondary schools over the next five years, and the greater recruitment shortfalls, this highlights again that this sector requires particular attention.

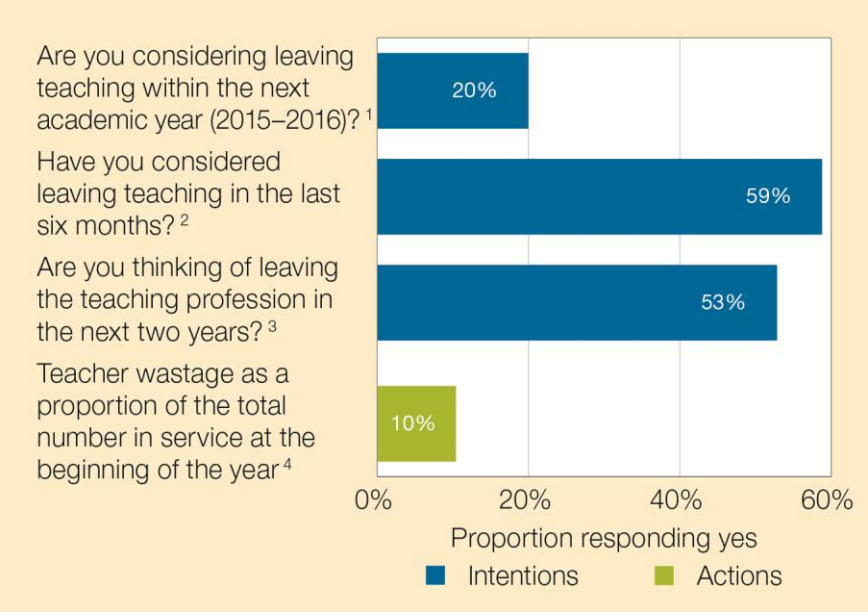
The proportion of secondary school teachers in EBacc subjects such as English (24 per cent), sciences (27 per cent), and languages (30 per cent) were slightly more likely than average to be considering leaving, though the small sample sizes mean we cannot be confident that the proportions are significantly different from the average. However, just ten per cent of secondary maths teachers were considering leaving teaching, significantly less than average.

Surprisingly, the proportion of teachers in schools with the highest level of pupils eligible for free school meals (FSM) that were considering leaving was no different to the proportion of teachers in low FSM schools.

Our survey results contrast with recent surveys commissioned by LKMco/Pearson and NUT, both of which were conducted by YouGov. As shown in Figure E, both of these surveys found that more than half of the teachers surveyed reported that they are considering, or had considered, leaving the teaching profession.

The surveys differed in many ways, which might have affected the results. The questions were different, the methodologies for constructing the samples were different and the preceding questions (which might have influenced responses through 'anchoring' biases) were different.

Figure E Surveys typically report much higher proportions of teachers who have considered leaving, or who are planning to leave, than actually do leave



Sources: [1] NFER Teacher Voice, June 2015; [2] LKMco/Pearson (YouGov), June 2015; [3] NUT (YouGov), October 2015; [4] School Workforce in England 2014, Table C1a.

All three surveys described above report proportions of teachers considering leaving that are higher than the proportion that actually did leave teaching in 2014. Given that the proportion of teachers leaving has remained relatively stable over the last ten years, as shown in Figure A, we would not expect the proportion of teachers leaving the profession to increase to the levels reported by these surveys.

Stated intentions can be an unreliable guide to individuals' actions and therefore teacher surveys can only tell us so much about the true motivations of the teaching workforce. Care should therefore be taken when reporting such figures, especially given the risk that exaggerating the numbers leaving itself could exacerbate the recruitment challenge.

Given this, what is it that drives the 10 per cent to actually leave? Where do they go when they leave, and does that give us clues about their motivations? Do they tend to be paid more, or have reduced hours, in their new jobs? How have these factors changed over time? In the next section we present our new analysis using a source of data that allows us to follow individuals in to and out of the teaching profession.

5 New NFER analysis of job moves in and out of teaching

Our new analysis provides fresh insights on some of the motivations for leaving and joining teaching by analysing the actions of teachers, rather than their stated intentions. We analyse job moves in and out of teaching using the Labour Force Survey (LFS), which tracks individuals' employment over twelve months, and provides a greater level of detail on key aspects of these job moves when compared with the School Workforce Census.

The LFS is a quarterly household survey of the employment circumstances of the UK population, conducted by the Office for National Statistics. It is a longitudinal survey which tracks individuals over five consecutive quarters (i.e. one year). Each quarter a representative sample of UK households is questioned about their employment status, occupation, place of work, pay and hours worked. We analysed a sample of 6,896 teachers, including 936 that left teaching and 774 that joined teaching over a 14 year period (2001-2015). The methodology appendix provides further details on the data, definitions, analysis and limitations.

The unique contribution that analysis of LFS data is able to make to the teacher recruitment and retention issue is to describe the destinations of leavers, and origins of joiners, including their occupation and wages. We are also able to compare the characteristics of those that leave, join and stay in teaching.

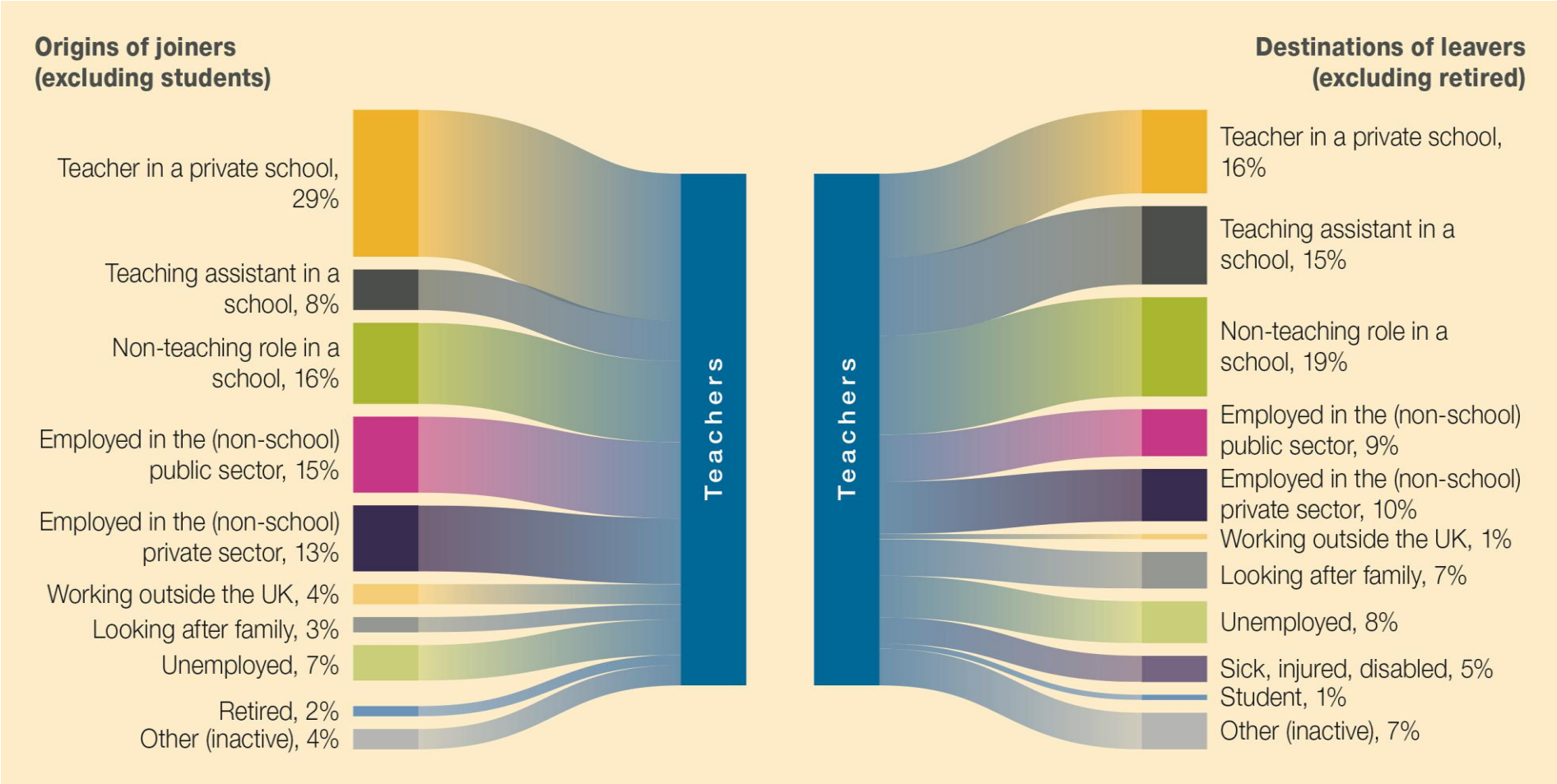
More than half of teachers that leave take up jobs in the education sector

The most common destinations of those that left teaching in the state-sector were jobs in the school sector. Excluding those that left to retire, just over half (51 per cent) left to one of several destinations in the wider school sector. These included teaching in private schools (16 per cent), becoming teaching assistants (15 per cent) and taking up a non-teaching role in a school (19 per cent). Relatively few teachers that left took up new jobs outside the school sector (19 per cent) and 40 per cent of those took up jobs in further or higher education (see Figure F). These findings are consistent with previous NFER and Centre for Education and Employment Research (CEER) surveys of leavers' destinations[13].

The employment origins of individuals that join teaching are somewhat similar. Excluding student entrants, more than half of those joining (or returning to) teaching in the state education system were working in the school sector (53 per cent), either teaching in private schools (29 per cent) or in a non-teaching role in the school sector (24 per cent). If most leavers of working age remain in the education sector, then their future transition back to teaching in the state-sector is likely to be easier.

The fact that many of those joining teaching came from jobs similar to those who were leaving suggests that a lot of the flows in and out of teaching counterbalance each other. However, despite coming to and from the same destinations and origins, it is possible that those joining are quite different to those leaving. For example, if those joining do not already have a teaching qualification, then this turnover of staff still represents an overall cost to the system from training new teachers.

Figure F More than half of non-student joiners come from jobs in the school sector; more than half of non-retiring leavers go to jobs in the school sector



Source: NFER analysis of Labour Force Survey data

Teachers are not leaving for higher paid jobs

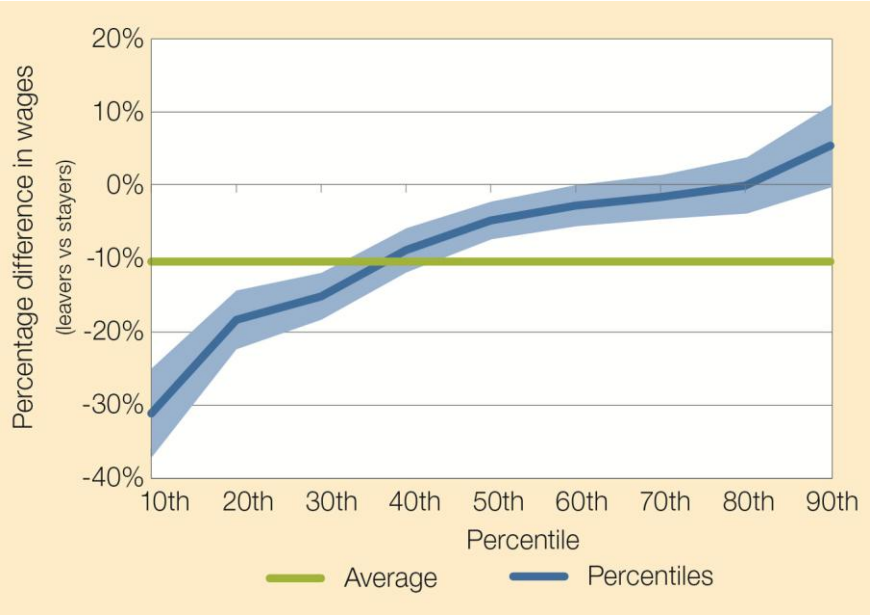
On average, the wages of teachers that left for another job were ten per cent lower than those that stayed in teaching. This drop remained after taking account of different characteristics among leavers and stayers, such as their initial pay level, whether they had management responsibilities, the phase of education they taught in, and their age.

As shown in Figure G, there was no sign of a significant minority of teachers leaving for better paid positions outside teaching in the state sector. In fact, the reverse was true, with a significant minority experiencing a drop in wages of more than 20 per cent.

The change in the wages of teachers that left differed considerably according to their destination. The difference in wages between teachers that stayed in teaching compared with teachers that left to work in a private school, who took up a non-teaching role in a school or who took up a private sector job outside the school sector, was not statistically significant. However, those that left to become teaching assistants or who took up a job in the public sector (many of which were in further or higher education) saw a drop in their wages of around 25-30 per cent compared to similar individuals that stayed in teaching.

An individual's decision to leave teaching in favour of a lower paid job may be motivated by a number of factors, which could include personal factors, the employment circumstances of other family members, or factors associated with their previous job.

Figure G The wages of teachers that leave compared to those that stay varies widely, but almost all saw their wages fall



Note: The green line shows the average wage difference between leavers and stayers. The blue line shows the distribution, reflecting the fact that not all teachers will have experienced the same wage difference. The blue area shows the 95 per cent confidence interval around these estimates[14].

Source: NFER analysis of Labour Force Survey data.

Of course, a job move may not result in a rise in pay in the short-term. The LFS only follows up individuals for one year, so we were only able to look at the pay of teachers that left over the short-term. The short-term pay benefits from a career move may be limited by the need to prove value to new employers and develop skills for a different career. The prospect of higher pay in the longer-term may still have been a motivation for some teachers who left teaching.

On this basis, it is possible that career-changers from other professions experience a similar fall in wages and this phenomenon is not likely to be unique to teaching. It would be possible to explore this issue further using the LFS, although it was beyond the scope of the current analysis.

Secondary school teachers are at greatest risk of leaving

Our analysis shows a greater proportion of secondary teachers leaving than primary, even when taking into account their other characteristics. This is particularly concerning because the number of secondary school pupils is expected to grow the most over the next decade, and the recruitment shortfalls are the greatest.

However, our analysis also found that over the fifteen years considered, individuals were more likely to *join* secondary teaching than primary (although school workforce data from the past four years shows an opposite trend). This suggests that the underlying story may be one of higher *turnover* of secondary staff, rather than simply about more teachers leaving. Nonetheless, high turnover is still a challenge for senior leaders as turnover makes workforce planning more difficult and may be disruptive for pupils' education.

We also found that part-time teachers and teachers aged over 50 are more likely to leave, whereas teachers with leadership positions are less likely to leave. Each of these is consistent with previous DfE analysis of the characteristics of teachers that leave, using administrative data sources[15]. Similarly, part-time teachers are more likely, and senior leaders are less likely, to *join* teaching.

The influence of wider economic conditions is complex

Our analysis followed movements in and out of teaching between 2001 and 2015. This period covers very different macroeconomic and labour market conditions, from the economic and public sector pay growth of the early- and mid-2000s to the 2008 recession, and the modest economic growth and public sector pay restraint that followed.

A review of how economic conditions influence teachers' career decisions by Hutchings found that there is a relationship between the economic cycle and recruitment, and a somewhat weaker relationship with retention[16]. The review found that the strongest relationship is between applications to teacher training and the economic cycle.

In contrast, our analysis of teachers in the LFS found that the proportion who left the state sector when the UK unemployment rate was high was a little higher than the proportion who left when the unemployment rate was low, though the relationship was not statistically significant. Likewise, the rate of joining was not significantly related to the unemployment rate.

There are a number of possible explanations. The LFS is a longitudinal household survey, so does not track individuals when they move house. Therefore, the analysis may be disproportionately missing important sub-groups of job movers, particularly students entering teaching, because they are much more likely to have also moved house. DfE data shows students make up around half of

new entrants to teaching, yet only 15 per cent of entrants in the LFS were students.

Our LFS analysis is also based on fairly small sample sizes in each year (around 500-600 teachers per year), which limits the precision with which we can analyse changes over time. The evidence on the relationship between teacher flows and the economic cycle is largely based on total numbers from administrative data, which are more reliable than sampled data. The research literature on the influence of wider economic conditions on teacher flows in and out of teaching suggests that the current economic situation, characterised by low unemployment and modest economic growth, is one in which schools will face the greatest challenges to recruit and retain staff.

Further evidence on individuals' intentions to leave

The LFS asked those in employment whether they had looked for a different or additional job in the last week, intending to reveal "something more than simply feeling dissatisfied with the present job but beyond the respondent deciding whether he or she was looking for work"[17]. The data revealed that 6.3 per cent of teachers had looked for a job. This is lower than the proportions considering leaving, reported in the previous section, and is similar to the proportion that actually left and took up new jobs. However, the responses did not make a good predictor of those who did leave: only 9.5 per cent of those that left teaching and took up a new job had indicated they were looking for a different or additional job before they left (at least, the week before their LFS interview).

Nonetheless, the phrasing of the question is interesting. By asking about very recent activity, which is likely to be clearer in respondents' minds, and focusing on tangible job search activities, it could inform the design of surveys that aim to better measure teachers' intended actions.

6 Discussion

In recent years the numbers of teachers leaving and joining the profession in England have been largely balanced, and have even contributed to a small net growth in the total number of teachers. However, rising pupil numbers, improving economic conditions, and shortages in certain subjects, mean that this situation will become increasingly difficult to sustain. The latest data highlights particular challenges with the demand for, and the recruitment and retention of, secondary school teachers.

In seeking an appropriate response, research that focuses on teachers' actions rather than their stated intentions is valuable for understanding what policy might be able to achieve. Our LFS analysis has shown that teachers that leave do not appear to be leaving for higher paid jobs, at least in the short term, and many out of service teachers with recent experience and a potential willingness to return to teaching are still working in the wider education sector. Encouraging those qualified teachers that are out of service back into the classroom will be increasingly important at a time when the number of entrants to teacher training is low.

Statistics describing the teacher labour market tend to focus mostly on the quantity of teachers in schools and this may give a rosier picture of the situation than is being experienced by practitioners. A more detailed picture of the teacher labour market needs a wider range of measures to add to our depth of understanding. For example, schools report the number of vacancies in their school in November each year through the School Workforce Census.

But how many vacancies have school leaders had to fill throughout the year? How satisfied were they with the number and quality of applicants?

There is a danger also that the way in which some of the relevant statistics or survey findings are reported presents a *worse* situation than the reality. Statistics about the teaching workforce need to be reported responsibly to avoid exaggerating or misrepresenting the nature of the challenges. There is a danger otherwise that they exacerbate the problem by putting off potential new entrants and distract from finding sensible solutions.

How recruitment and retention affects the *quality* of the teacher supply is a little researched question. In the United States research has found that teachers that enter the profession during recessions are more effective (as measured by pupil test scores), because "higher-skilled individuals choose teaching over other professions during recessions because of lower (expected) earnings in those alternative occupations"[18]. If the same is true in England, this suggests that as long as employment prospects remain buoyant in the wider economy, school leaders will find it harder to hire the quality, as well as the quantity, of teachers they most want.

So what are the possible solutions? The remainder of this chapter explores some of these. In the case of all the examples given, it would be important of course that any changes are introduced carefully, and their impact evaluated, to avoid unintended consequences and unnecessary disruption – thus undermining efforts to recruit and retain teachers.

Supply side measures

The evidence suggests that the current teaching workforce is not motivated only by pay, and teachers are not leaving teaching for higher paid jobs. This implies that limited resources targeted at retaining existing teachers should include **measures to tackle wider working conditions and to improve the status of the profession**. Reviewing salary structures and starting rates of pay may also help with recruitment, but this analysis has not considered the incentives for those who considered and dismissed a career in teaching.

Further investigation should be made of how these incentives vary by region. House prices, the cost of living and the level of graduate pay outside of teaching may be creating recruitment challenges for schools in certain areas, affecting both new recruits and experienced teachers who may otherwise join the school from other parts of the country. In this case, there may be an argument for **greater regional pay variation**. In more deprived areas the challenges may be more about the attractiveness of the location or the school, rather than the job itself.

The apparent 'revolving door' between people teaching in the state sector and undertaking other jobs in the education sector suggests some possible solutions. Measures should be taken for **keeping track of former teachers**, especially those still working in schools, in order to target opportunities to return to teaching (such as those currently being piloted by the National College for Teaching and Leadership (NCTL)).

Where this is not already happening, schools could also explore ways of making **greater use of non-teaching staff with a teaching background**, for example by deploying such individuals flexibly in providing preparation, planning and assessment, or supply cover. These approaches are most relevant where the turnover is greater, for example in secondary schools, and for part-time staff.

If the current situation continues whereby primary teacher trainees exceed TSM targets with shortfalls at secondary level, then measures could be explored for encouraging **greater flexibility between phases**. This could have the added benefit that teachers themselves making a transition between primary and secondary schools would be well-placed to support pupils making the same difficult transition. Policy should focus especially on primary trainees and experienced primary teachers with subject expertise in shortage subjects.

Another approach that could be explored is promoting **alternative career pathways** that keep good teachers teaching, rather than taking up management positions on reduced timetables. This would need to be reflected through pay scales and professional development opportunities. However, it would also mean 'backfilling' a greater degree of management responsibility to non-teaching professionals.

Demand side measures

An alternative solution to increasing the number of high quality serving teachers would be to decrease the numbers required. Although none of our suggested measures are quick or straightforward to implement, it is important to consider longer term solutions in addition to measures with more immediate impact.

One way to reduce the need for more teachers would be to **allow class sizes to rise**. Research suggests there is a weak relationship between class size and attainment, at least for small changes in class size. Slightly larger class sizes may not be detrimental for pupils and would almost certainly be cost effective[19]. Such a move would be politically difficult, but not impossible if the public understanding of the issue was raised. There would be practical challenges given classroom size constraints, but as new classrooms are having to be built to meet rising pupil numbers, some schools could begin to make this shift. This approach would need to be accompanied by careful monitoring of the impact on teachers.

Related to this point, as new physical capacity is built in schools, this could be built in ways that allows **more flexible deployment of staff** allowing more of a 'mixed economy' of larger lecture-style lessons combined with more traditional classroom teaching and targeted intervention. This approach would be particularly suited to secondary schools, and could help prepare students for further and higher education. Similarly, greater use of new approaches to using technology (such as flipped learning) could help relieve the pressure on teacher numbers.

7 Methodology

Data

The Labour Force Survey (LFS) is a survey of the employment circumstances of the UK population, which is conducted by the Office for National Statistics. It is the largest household survey in the UK and provides the official measures of employment and unemployment. The sample consists of around 41,000 responding households in Great Britain every quarter. The LFS uses a rotational sampling design, whereby a household, once initially selected for interview, is retained in the sample for a total of five consecutive quarters. The interviews are scheduled to take place exactly 13 weeks apart, so that the fifth interview takes place one year on from the first.

Our analysis used longitudinal LFS datasets, which contain individuals who responded in five consecutive quarters. The datasets are weighted to allow inference to the eligible population totals. A known issue with longitudinal data analysis is that it can be biased by differential attrition – some groups of people are more likely to drop out of the survey between quarters than others. The LFS longitudinal weighting is designed to help guard against this kind of bias. Our analysis used 51 longitudinal datasets, from the households first interviewed in July-September 2001 to the households first interviewed in January-March 2014.

Definitions

Our analysis sample included individuals whose main job was teaching in the English state school sector in their first or their last interview (or both). Our definition of a teacher was according to each individual's industry (where they work) and occupation (what they do at work), as well as their country of work and whether they worked in the public or private sector. We defined teachers as those with:

- Industry = "Primary education" OR "General secondary education"; AND
- Occupation = "Primary and nursery education teaching" OR "Secondary education teaching profession" OR "Special needs education teaching professional" OR "Senior professionals of educational establishments" OR "Teaching and other educational professionals".

There were 6,869 individuals who were teachers in the English state school sector at their first and/or last interviews, of whom:

- 5,186 were teaching in the English state sector at both interviews
- 936 were teaching in the English state sector at the first interview, but not at the last interview
- 774 were teaching in the English state sector at the last interview, but not at the first interview.

Other variables we analysed were: sex, age (five-year bands), region of work, usual weekly hours worked in main job, managerial responsibility and economic activity. We also analysed gross

weekly pay in their main job, adjusted to 2015 prices using the Consumer Prices Index. Real gross hourly wage was calculated by dividing gross pay by usual weekly hours. We also analysed whether a respondent was looking for a different, or additional, job. All analysis was weighted using the LFS longitudinal weight.

Analysis

Analysis of the destinations of leavers and origins of joiners: We analysed the frequencies of destinations of leavers and origins of joiners to teaching in the state-school sector in England and cross-tabulations with key moderating variables, such as phase of education and managerial responsibility. We conducted logistic regression analysis of both individuals' likelihood of leaving teaching, and likelihood of joining teaching. We analysed the association between leaving/joining and a set of covariates: individual's wages at first interview (i.e. 12 months before, in the first quarter), usual weekly working hours, school phase, region of work, sex, managerial responsibilities (manager, supervisor, not a manager), age (5-year bands) and the UK unemployment rate.

Analysis of pay of leavers [joiners] vs. stayers: We conducted linear regression analysis of wages at last interview (i.e. in the fifth quarter) with a leaver [joiner] indicator as the main explanatory variable of interest. Other covariates were: individual's wages at first interview, school phase, region of work, sex, managerial responsibilities, age and the UK unemployment rate. Additional analysis explored the interaction between destination [origin] and wages, by replacing the leaver [joiner] indicator with a set of destination [origin] indicators. We also analysed the distribution of differences between leaver [joiner] vs. stayer wages, using quantile regression.

Limitations

By focusing on actual job moves rather than stated intentions, our analysis is able to draw out some of the push and pull factors that might be influencing teachers' actual decisions to change job. However, there are notable limitations with analysis based on this source of data:

- The LFS is a longitudinal household survey, so does not track individuals when they move house. Therefore, the analysis may be disproportionately missing important sub-groups of job movers. The most significant of these is students entering teaching: DfE data shows students make up around half of entrants to teaching, yet only 15 per cent of entrants in the LFS were students. Also, for example, the analysis can say little about teachers moving to teach abroad, which recent analysis by Schools Week has highlighted as a potentially significant alternative[20].
- The LFS is a specialised employment survey, so does not include the detailed school-related factors that are available in educational datasets: for example, school types and contexts or subject specialisms. This data has a limited scope for informing the particular challenges that some subjects and geographical areas face.

8 Other data sources

Department for Education - School Workforce in England

https://www.gov.uk/government/collections/statistics-school-workforce

Statistics on the size and characteristics of the schools workforce in state-funded schools. Includes statistics on the number of teachers and other school staff, average salaries, teacher qualifications and the number of vacancies, as well as a detailed breakdown of the number that have left and joined teaching and the number of qualified teachers who are not teaching.

Department for Education - National pupil projections: trends in pupil numbers

https://www.gov.uk/government/collections/statistics-pupil-projections

National projections for the number of pupils in schools by type of school and age group over the next ten years.

Department for Education & National College for Teaching and Leadership - Initial teacher training: trainee number census

https://www.gov.uk/government/collections/statistics-teacher-training#census-data

Provisional recruitment to initial teacher training programmes in England in the academic year 2015 to 2016, including breakdowns by training route, phase of education and subject specialism.

Department for Education – Teacher Supply Model

https://www.gov.uk/government/publications/teacher-supply-model

The Teacher Supply Model is a statistical model that seeks to predict the future national need for teachers. It is used to inform Government decisions about the allocation of funding and places for Initial Teacher Training at a national level.

NFER – Teacher Voice Omnibus Survey June 2015

http://www.nfer.ac.uk/teacher-voice-omnibus-survey/

Questions submitted to the Teacher Voice Omnibus Survey in June 2015. In total, 1,430 teachers and senior leaders from primary and secondary schools responded to the survey. The Teacher Voice survey is representative of schools in England by factors including geographical region, school type and eligibility for free school meals. Sample weighting is also applied if necessary to ensure that the schools represented by our respondents are statistically representative of these school factors nationally. Full details of these findings will be reported in a separate, forthcoming, publication.

9 End notes

[1] School Workforce in England 2014. Table C1a https://www.gov.uk/government/statistics/school-workforce-in-england-november-2014

[2] School Workforce in England 2014. Table 14. Vacancies consist of all full-time posts being advertised and those being filled (advertised or not) on contracts lasting less than a year https://www.gov.uk/government/statistics/school-workforce-in-england-november-2014

[3] National pupil projections: trends in pupil numbers - July 2015. Table 1. https://www.gov.uk/government/statistics/national-pupil-projections-trends-in-pupil-numbers-july-2015

[4] Initial teacher training: trainee number census - 2014 to 2015. Table 1a https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2014-to-2015

[5] Initial teacher training: trainee number census - 2015 to 2016. Tables 1a. https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2015-to-2016

[6] Teacher Supply Model. https://www.gov.uk/government/publications/teacher-supply-model

[7] School Workforce in England 2014. Table 2 https://www.gov.uk/government/statistics/school-workforce-in-england-november-2014

[8] Initial teacher training: trainee number census - 2015 to 2016. Table 1. https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2015-to-2016

[9] School Workforce in England 2014. Table 12. https://www.gov.uk/government/statistics/school-workforce-in-england-november-2014

[10] What makes great teaching? http://www.suttontrust.com/wp-content/uploads/2014/10/What-Makes-Great-Teaching-REPORT.pdf

[11] Allen, Burgess and Mayo (2012) The teacher labour market, teacher turnover and disadvantaged schools: new evidence for England http://www.bristol.ac.uk/media-library/sites/cmpo/migrated/documents/wp294.pdf

[12] Questions submitted to the Teacher Voice Omnibus Survey in June 2015. In total, 1,430 teachers and senior leaders from primary and secondary schools responded to the survey. The Teacher Voice survey is representative of schools in England by factors including geographical region, school type and eligibility for free school meals. Sample weighting is also applied if necessary to ensure that the schools represented by our respondents are statistically representative of these school factors nationally. Full details of these findings will be reported in a separate, forthcoming, publication.

[13] NFER: https://www.nfer.ac.uk/publications/LGK01/LGK01.pdf

CEER: http://dera.ioe.ac.uk/5625/1/RR640.pdf

[14] Average wage difference estimated from a linear regression, controlling for other personal characteristics including initial wage. The distribution is estimated using a quantile regressions at the 10th to 90th percentiles.

[15] A profile of teachers in England from the 2010 School Workforce Census https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/182407/DFE-RR151.pdf

[16] Hutchings. M (2011) What impact does the wider economic situation have on teachers' career decisions? A literature review https://www.gov.uk/government/publications/what-impact-does-the-wider-economic-situation-have-on-teachers-career-decisions-a-literature-review

[17] Labour Force Survey: User Guide. Volume 3 – Details of LFS Variables 2015 http://www.ons.gov.uk/ons/guide-method/method-quality/specific/labour-market/labour-market-statistics/volume-3-2015.pdf

[18] Weak Markets, Strong Teachers: Recession at Career Start and Teacher Effectiveness http://www.nber.org/papers/w21393

[19] Reducing class size https://educationendowmentfoundation.org.uk/toolkit/toolkit-a-z/reducing-class-size/

[20] http://schoolsweek.co.uk/exclusive-more-teachers-left-to-go-abroad-than-did-a-university-pgce/

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