



Department
for Education

Analysis of teacher supply, retention and mobility

February 2018

Executive summary

A school's ability to achieve a supply of teachers is linked to a large range of factors, varying from national-level issues to teacher-level characteristics. To support this, the Department for Education (DfE) has moved towards more local analysis of the teacher workforce. This compendium of teacher supply analysis follows on from three previous publications: the local analysis of the teaching workforce¹, which looked at regional trends in certain teacher supply measures, and the first two compendia of teacher supply analysis^{2,3}, which looked at entrants to the teaching profession, teacher retention, and teacher mobility between jobs.

Given that detailed underlying data have already been published alongside each School Workforce Census publication⁴, this report does not seek to provide an exhaustive or comprehensive set of fine-grained data. Instead, it aims to generate new insights, be an accessible resource to stimulate debate, improve the public understanding of our data, and generate ideas for further research, rather than to provide authoritative answers to research questions.

Section 1 presents analysis of post-initial teacher training (ITT) employment rates. This exploits new linked data to look at the employment characteristics of trainees in the first few years after obtaining qualified teacher status (QTS)

The first section is new analysis of data linked between the ITT Performance Profiles and School Workforce Census datasets, which has enabled us to track individual trainees gaining QTS into the school workforce. As a result, we now have a new resource with which to estimate and analyse post-ITT employment rates. Rates have been rising steadily over the six years we report on (up to those achieving QTS in 2014/15 cohort) and 85% of both undergraduate and postgraduates achieving QTS now secure a teaching role within a state-funded school. These employment rates are lower than the rates derived from the DLHE survey, as published in the ITT Performance Profiles, but that is because they are, as we discuss, fundamentally different measures. The rising trend in employment rates can be seen in both measures.

Employment rates amongst graduates of school-led training routes (including School Direct) are typically 5 percentage points higher than those from HEI-based routes. There are also significant variations by secondary subject where rates for such as English, History and Geography approach 90%, but with Physics and Modern Foreign Languages

¹ <https://www.gov.uk/government/statistics/local-analysis-of-teacher-workforce-2010-to-2015>

² <https://www.gov.uk/government/statistics/teachers-analysis-compendium-2017>

³ <https://www.gov.uk/government/statistics/teachers-analysis-compendium-2>

⁴ <https://www.gov.uk/government/statistics/school-workforce-in-england-november-2016>

nearer to 75%. We also publish some provider-level employment rates and regional breakdowns.

Section 2 explores the mobility of newly qualified teachers (NQTs) moving into their first teaching post. The analysis looks at how far they travel to the first school where they take up employment

The second section uses our linked data resource to look at geographic patterns of NQTs securing their first teaching post. Based on six cohorts of NQTs gaining QTS from 2010 to 2015 – a total of more than 130,000 individual teachers – we have been able to produce robust patterns of NQT mobility. As with teacher mobility, new trainees do not move far to take up their first post with around half of NQTs taking up their first teaching role in a school within 25km of their ITT provider. The section explores how mobility varies with phase, subject, age, region and other characteristics. In order to support the ITT sector and provide information to prospective applicants, we have also supplied provider-level information on the destinations of NQTs. This includes interactive maps of the areas where NQTs are likely to find their first teaching post and lists of the five most popular local authorities amongst NQTs from each provider.

Section 3 provides updated analysis of teacher mobility

This section provides an update to work previously published in the first compendium in May 2017. The analysis here includes new data from the School Workforce Census (up to 2016) providing a baseline of six years' of teacher movements between state-funded schools. The headline findings remain the same, namely that 70% of teachers changing jobs move to schools 20km or less away (i.e. within commuting distance). Male, secondary, full-time teachers are likely to move furthest, and younger teachers move further than older ones. There is little movement between regions.

Section 4 explores how ITT provision relates to regional teacher supply by looking at a range of metrics around the demand for teachers

This section provides experimental analysis on regional measures of teacher supply in relation to the extent of regional initial teacher training provision. This analysis explores a series of alternative approaches to find potential regional weightings, based on combinations of possible measures of demand such as current pupil and teacher numbers, school age population, teacher wastage, and pupil growth. We have compared the possible derived regional teacher trainee need with actual trainee numbers recruited for 2017/18, and there are indications of some regions where the scale of ITT provision seems lower than demand and, conversely, where demand appears to be higher than required to meet local needs.

Section 5 provides analysis around the composition of pay rises amongst continuing teachers

This paper follows on from earlier analysis published in the second compendium (September 2017) which quantified the overall change in teacher pay as a combination of school-level workforce changes and pay progression amongst continuing teachers. The analysis presented here looks in detail at pay progression and compares pay changes due to progression within grade with those due to promotion into upper or leadership pay ranges. The overall cost of pay progression for 2016 was £551m (within a total pay bill of approximately £23bn) of which three-quarters was generated by within-grade progression.

The final section, Section 6, provides further information on engagement with schools as part of our work to verify the Supply Index published in the last compendium

This section builds on earlier work outlining the definition of a Supply Index, designed to quantify, at school level, gaps in teacher supply. To verify that the Supply Index reflected accurately schools' experiences of recruitment and retention, we commissioned independent qualitative research. The headline findings of this research were summarised briefly in our original article, and we include here the complete research report. The full report can be found in Annex A3.

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Introduction

This is the third in the series of compendia presenting analyses on teacher supply, retention, and mobility. These analyses are designed to complement the publication of annual statistics such as the School Workforce Census with in-depth, data-driven explorations of the factors which shape the school workforce.

We build in this publication on some of the areas covered in our previous compendia by expanding earlier work on teacher mobility, looking in more depth at changes in teacher pay, and with the inclusion of independent research to verify the Supply Index as a measure of sub-national teacher supply needs.

We also include new analyses which capture the contribution of newly-qualified teachers to teacher supply. By linking the School Workforce Census to the Performance Profiles dataset (which details the cohorts of QTS awardees successfully completing initial teacher training each year) we are now able to track individuals from their training through to their first teaching post and subsequent teaching career.

We would welcome feedback on the methods used and insights generated in this report, to inform future research and development of further publications. Please send your views to: TeachersAnalysisUnit.MAILBOX@education.gov.uk

Background

School Workforce Census

The annual School Workforce Census was introduced in November 2010, replacing a number of different workforce data collections. It collects information on school staff from all state-funded schools in England, including local-authority-maintained (LA-maintained) schools, academy schools (including free schools, studio schools and university technology colleges) and city technology colleges, special schools and pupil referral units (PRU).

The statistical first release (SFR) “School Workforce in England” provides the main annual dissemination of statistics based on the data collected, as well as details of the underlying methodology for those and the collection itself. The latest publication was released in July 2017, with results from the November 2016 census⁵. Alongside the SFRs, an underlying dataset is released, giving some of the workforce statistics at school level alongside details of regions, local authorities, wards and parliamentary

⁵ ‘School workforce in England: November 2016’ is available at <https://www.gov.uk/government/collections/statistics-school-workforce>

constituencies. The information is used by the Department for Education for analysis and modelling, including the Teacher Supply Model⁶, as well as research purposes.

We are developing innovative options to make complex datasets such as the School Workforce Census more easily accessible. In conjunction with Microsoft, the Department has recently developed an interactive dashboard that allows users to visualise national, regional, and LA level data from the School Workforce Census in an informative way. This allows users to interpret the published data in a visual, interactive manner at the click of a button; for example, users can easily examine how the headcount of teachers within the schools of York has varied over time. The dashboard has been created using [Power BI](#), is based entirely on previously published data⁷, and can be found at [School Workforce Census dashboard](#). Measures from the published data are broken down within the tool into teacher numbers, characteristics, and absence and vacancies.

Note that neither this report nor the dashboard replaces the SFR as the authoritative source of the latest school workforce statistics.

Performance Profiles

The Performance Profiles are an annual data collection to gather statistical information at the end of each academic year on initial teacher training (ITT) provider performance⁸. The Department uses this resource to analyse many aspects of ITT including the contribution of ITT to teacher supply within England, and the performance of different ITT providers, routes and subjects.

Characteristics of individual trainees (including age, gender, disability and ethnicity), are collected alongside details of their pre-ITT qualifications, and their ITT course information (subject, route, provider, level and mode of study). In addition, we also collect trainee status information for those completing their course - and whether they have been successful in achieving qualified teacher status (QTS) - and for those who will continue to train in the following academic year (for example, undergraduates on multi-year courses).

The Department publishes the Statistical First Release “Initial teacher training performance profiles” annually in July summarising national and provider-level outcomes for the previous academic year.

⁶ More information on the Teacher Supply Model can be found at: [Teacher Supply Model 2017 to 2018](#)

⁷ The [School Workforce Census Statistical First Releases](#) are published annually based on data collected from schools each November

⁸ ‘Initial teacher training performance profiles: 2015 to 2016’ is available at: <https://www.gov.uk/government/statistics/initial-teacher-training-performance-profiles-2015-to-2016>

Organisation of the report

This report contains six sections as follows:

[Section 1](#) presents information on the levels of employment, in state-funded schools in England, of teacher trainees who have successfully completed their initial teacher training and achieved qualified teacher status.

[Section 2](#) explores the mobility of these newly-qualified teachers in terms of the distance they move from their ITT provider to their first teaching post.

[Section 3](#) updates earlier findings published in our first compendium⁹ on the mobility of continuing teachers and introduces new information on the role that school Ofsted ratings play in the choices teachers make.

[Section 4](#) offers an experimental analysis of regional measures of teacher supply in comparison to existing patterns of ITT provision.

[Section 5](#) follows on from earlier analysis of teacher pay and examines components of pay progression amongst teachers continuing in post between 2015 and 2016.

[Section 6](#) contains a brief summary of qualitative research to verify with schools the Supply Index published in the second compendium¹⁰. This work was carried out by DHE Solutions Ltd under commission to the Department for Education, and their full report is contained in Annex A3.

The analysis described in Sections 1 and 2 draws on data created by the linking School Workforce Census and ITT Performance Profiles datasets. Annex A1 outlines the methodology used to create the link between these two datasets. We do not explicitly create a “linked dataset” but instead form a “linking mechanism” which captures the matched record identifiers in each of the contributing datasets.

Supporting data in Excel format accompanies sections 1 to 4, and is published alongside this document.

We have also published a series of interactive maps alongside this report that complement the national picture of mobility amongst newly-qualified teachers presented

⁹ [Teachers Analysis Compendium \(May 2017\)](#)

¹⁰ [Teachers Analysis Compendium \(September 2017\)](#)

in Section 2. These maps offer a provider-level view of mobility – region by region – for more than 130 individual ITT providers^{11,12}.

We have made full use of newly available information technology in producing these interactive maps and in the preparation of other aspects of this publication. Three of the sections above (2, 3 and 4) have been developed, written, and compiled automatically using code written in R Markdown. Once a template is set up, raw data can be turned into a report in a matter of minutes, as opposed to days or weeks using traditional techniques. This technique thus increases the speed which analysis can be produced and published, and reduces the potential for analytical errors. We are looking to expand this approach to more publications across the Department.

¹¹ On opening the accompanying HTML files you may experience some loss of the interactivity due to rendering issues with certain browsers, notably Internet Explorer. For example, instead of an array of “tabs” with which to select a provider, you may simply see the maps and charts for all providers displayed. If this occurs we recommend closing the HTML file and reopening it or opening the file in a different internet browser, preferably Google Chrome, Mozilla Firefox, or Microsoft Edge

¹² Only those providers who appear in the 2017/18 Trainee Number Census, and who have produced more than 50 QTS awardees within the six-year timeframe considered, are represented.

1. Post-ITT employment rates

This section provides the employment rates of trainees who gained Qualified Teacher Status (QTS) through completing Initial Teacher Training (ITT) in England. It is important for the Department to know the levels of employment post-ITT, in order to monitor the supply of new teachers and inform workforce planning, and to have evidence that trainees do enter the teaching workforce as we anticipate they will in the [Teacher Supply Model](#).

We have estimated employment rates by linking together two key datasets – the [ITT Performance Profiles](#) (ITTPP) and the [School Workforce Census](#) (SWC). The ITTPP data identifies all trainees on ITT courses in England and contains information about their course. The SWC is taken annually in November and identifies all teachers working in state-funded schools in England. By matching individuals across these two datasets, we can determine the proportion of trainees that have gained QTS¹³ that go on to enter the state-funded school workforce.

We can look at different subsets of trainees based on their ITT information and we can also look at the nature of their employment using the SWC – to see not only whether they are employed but where, and in what role. We have matched individuals primarily using Teacher Reference Number (TRN), a unique identifier used throughout a teacher's career. TRN is a well-populated and reliable field in both datasets, and of the trainees included in this analysis, we matched approximately 86% to the SWC. More detail on the linking of these datasets is given in Annex A1.

The Department currently derives post-ITT employment rates using the Destinations of Leavers of Higher Education (DLHE) survey, and these figures are published in the ITT Performance Profiles. For several reasons, we are exploring the feasibility of an alternative source of trainee employment rates:

- The DLHE is a survey and as such, there is a degree of non-response. We cannot infer anything about the teaching status of non-responders, and they are excluded from DLHE employment rate calculations
- The DLHE survey responses can include employment outside of England, in the independent sector, and in Further/Higher Education institutes, though the Department primarily wants to understand employment levels within the state-funded school sector in England

¹³ It is possible for a trainee to enter the state-funded school workforce as an unqualified teacher, but we have not looked at unqualified trainees in this analysis. We have only calculated employment rates for trainees that have been awarded QTS.

- The DLHE survey is being replaced by Graduate Outcomes¹⁴, which will survey graduates 15 months after graduation rather than the current 6 months' timeframe and therefore changes what information is available at the time of publishing the ITTPP

The majority of trainees that show up as entering the school workforce do so by November of the year after gaining QTS

Approximately 10% of trainees that gain employment do not appear in the School Workforce Census in the year they completed their ITT, but do appear in the following year. Naturally, the more years after successful completion of ITT that are considered, the higher the overall employment rate. However, the rates level out rapidly over later years, whereas the increase between the year of completing ITT and the following year is relatively steep (Figure 1.1).

For various reasons the increase in employment rates between the year of completing ITT and the year following will be a real effect. For example, some trainees may choose to take a gap year before starting work. However, to some extent it may also be due to a school's delay in entering new staff on their reporting system before the SWC is taken in November. Given this, we have chosen to look for evidence of teaching employment in the year after gaining QTS as well as the year of QTS, to give a more complete indication of post-ITT employment.

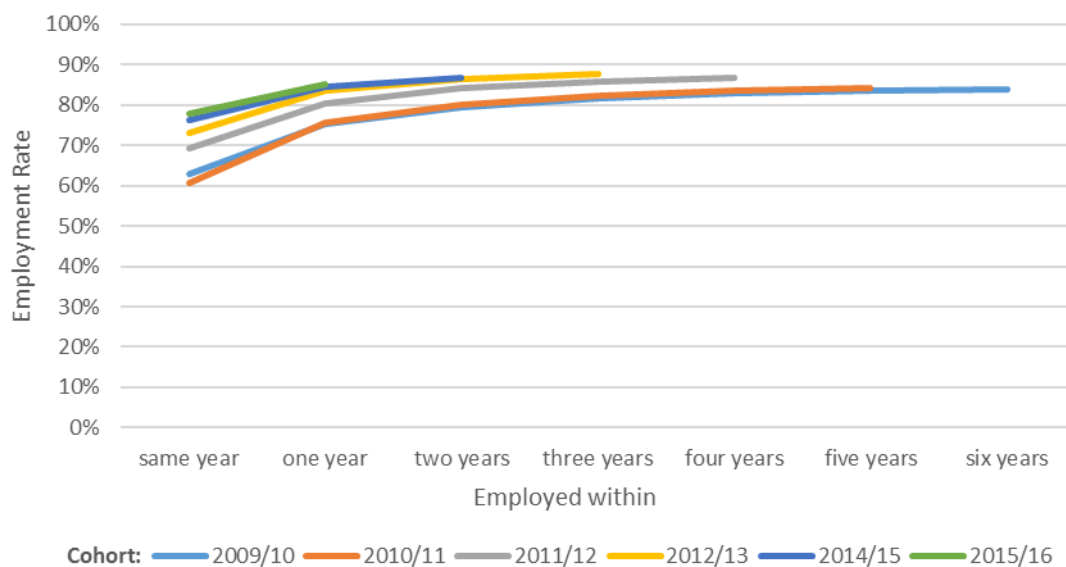


Figure 1.1: Employment rates in the years following gaining QTS, by trainee cohort

¹⁴ Information is available on HESA website <https://www.hesa.ac.uk/innovation/outcomes>

Given this two-census timeframe for employment that we have used, the cohorts of trainees that we can report on are between:

- The earliest cohort, 2009/10. These are trainees that gained QTS in the 2009/10 academic year, and the first year they can appear in the SWC as a newly qualified teacher (NQT) is 2010. We look for these trainees being employed in the 2010 or 2011 SWC. Since the first SWC was in 2010 this is the earliest cohort for which we have data
- The latest cohort, 2014/15. These are trainees gaining QTS in the 2014/15 academic year, and the first year they can appear in the SWC as an NQT is 2015. We look for these trainees being employed in the 2015 or 2016 SWC. The 2016 SWC is the latest available one, therefore this is the latest cohort for which we have two years of SWC data

In the latest cohort, 85% of trainees found employment as a teacher in a state-funded school

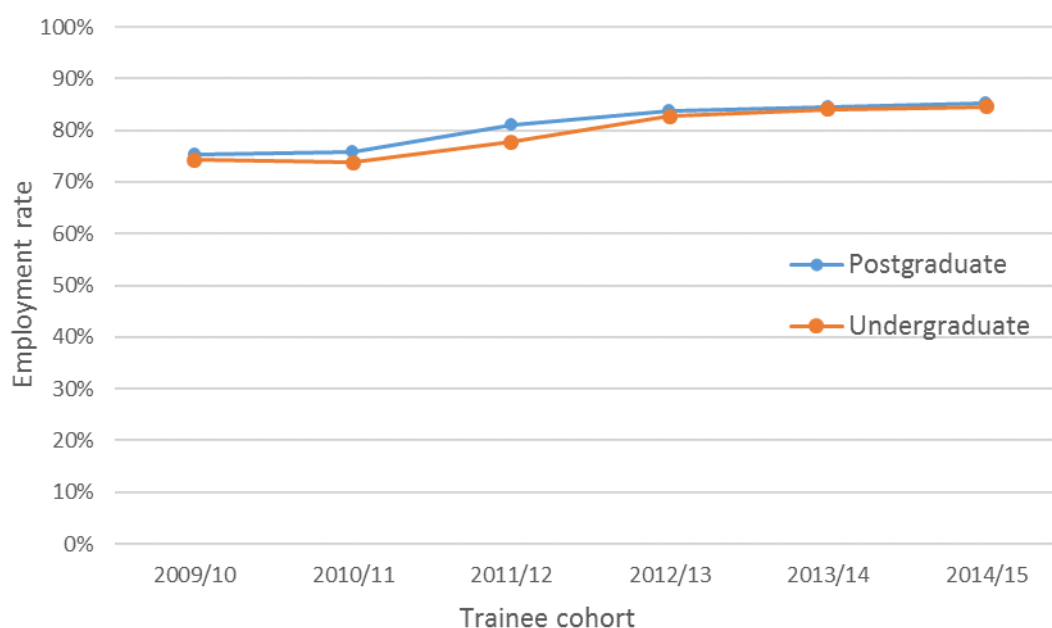


Figure 1.2: Percentage of trainees employed in a state-funded school within two years of gaining QTS

We have calculated a post-ITT employment rate of 85% for the latest cohort of qualified trainees, rising from approximately 75% over the six cohorts looked at (see Figure 1.2). We do not anticipate employment rates approaching 100% since the School Workforce Census covers only state-funded sector schools in England and it is expected some qualified trainees from each cohort will go on to work in other sectors or elsewhere in the UK.

Employment rates are slightly higher for postgraduates than for undergraduates, though the difference is negligible in the latest three years at less than one percentage point

difference. The analysis in later parts of this section will focus on employment rates of postgraduates only.

These employment rates are lower than the rates derived from the DLHE survey, as published in the ITT Performance Profiles, because they are fundamentally different measures:

- The DLHE figure includes every trainee that responded to the survey as 'in a teaching post'. This includes state-funded, independent and unknown teaching sectors. The teaching post could also be in a Further or Higher Education institute, and does not have to be in England. As such there are trainees included the DLHE figure that we would not expect to find in the SWC
- The figures presented in this report only refer to employment in the state-funded sector, in schools in England. Therefore, it will naturally be lower than the published DLHE figure

The published ITTPP DLHE survey rates and these new linked data rates are shown in Figure 1.3 below. Despite the difference in measures, the overall rising trend is consistent in both derivations of employment rate.

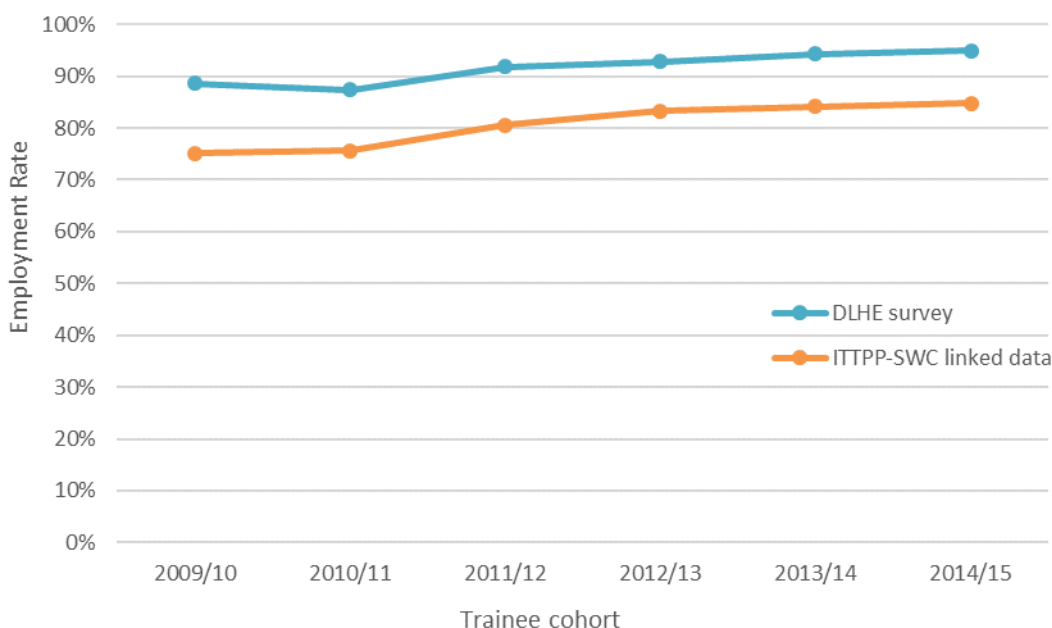


Figure 1.3: Comparison between DLHE and ITTPP-SWC linked data employment rates

School-led ITT routes have higher employment rates than the HEI-led route

Figure 1.4 shows how employment rates vary slightly between different ITT routes. Note that this part of the analysis includes postgraduate trainees only. As undergraduates take

HEI-led ITT courses, we have only included postgraduate trainees in order to compare accurately the different routes.

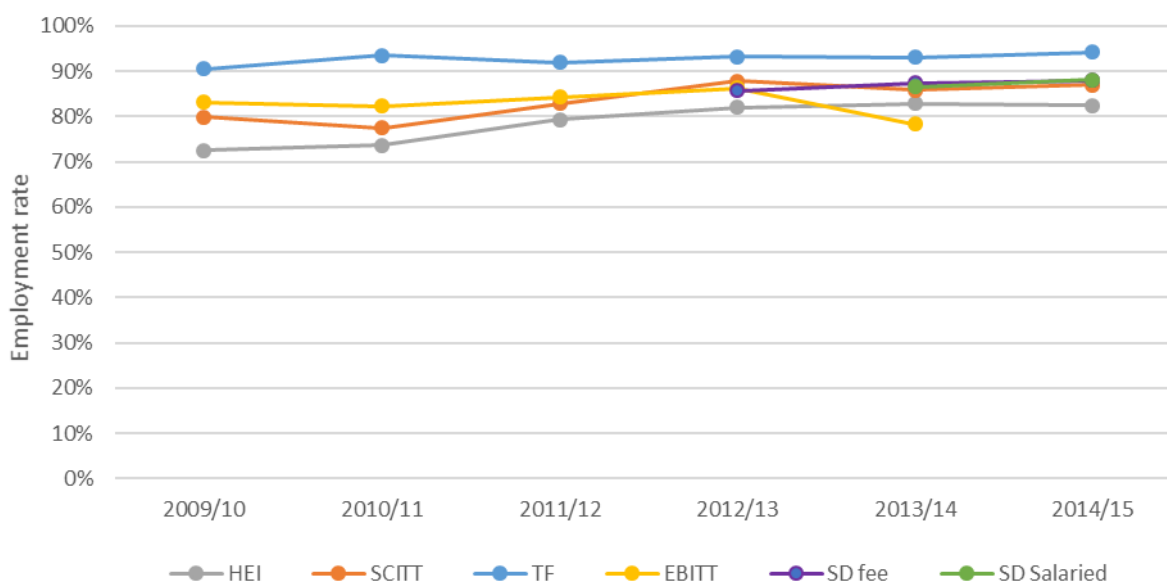


Figure 1.4: Percentage of postgraduate trainees employed in a state-funded school within two years of gaining QTS, by ITT route

Employment rates of trainees from the school-centred ITT (SCITT) route have consistently been approximately five percentage points higher than those from a HEI-led route.

The SD fee-paying route opened to entrants in 2012/13, with the salaried option starting a year later in 2013/14. For the few years that these routes have been open, the employment rates of trainees coming from SD have been consistent with the rates of trainees on the SCITT route, and there appears to be little difference between the salaried or fee-paying SD options.

The nature of Teach First (TF) is different to other routes, which explains the high employment rate seen for this route. Teach First is a two-year programme where the trainee is expected to complete their NQT year as part of the programme. Therefore, we would expect to find that Teach First trainees are employed in the first year after gaining QTS, as this would be the second year of their TF programme. However, despite that, the employment rate for TF is at an average of 93% over the six cohorts. This reflects that some Teach First trainees do leave the programme after the first year¹⁵.

¹⁵ Teach First maintains its own internal records, which also show that there is some drop-out after the first year, though their year two retention estimate is a little higher than 93%. The slight difference here could be

The Employment-Based ITT (EBITT) route closed to new entrants in 2012/13. In the years that the EBITT route was open, the employment rates are broadly consistent with the other school-based routes. The employment rate for the 2013/14 cohort of EBITT trainees is not directly comparable to the previous year's - as the route was closed to new entrants, this year's rate is based on a just small number of deferred trainees (who by definition of being deferred may have different characteristics to the whole EBITT population) - but is included for completeness.

School-centred ITT provision has higher employment than HEI-led provision, but there is more variation amongst SCITT providers

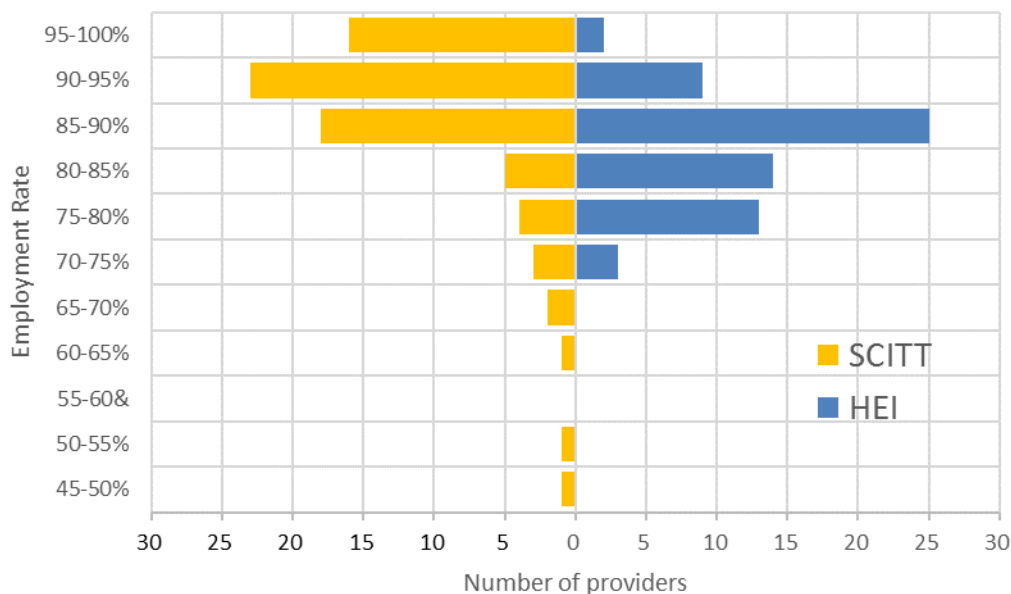


Figure 1.5: Distribution of employment rates for SCITT and HEI providers

For the latest cohort of trainees (the 2014/15 cohort), school-centred ITT providers¹⁶ (SCITTs) had an average employment rate of 88% and HEI providers had a rate of 85%. However, employment rates varied more between SCITT providers than HEI (see Figure 1.5). There were five SCITTs with rates lower than 70%, yet there were also five SCITTs with rates of 100% - where every NQT at that SCITT found employment in the state-funded sector by the year following QTS award.

indicating that some schools mistakenly do not enter TF trainees in the SWC whilst they consider that trainee to be still 'on programme'.

¹⁶ In this section, only ITT providers that are still active – i.e. have trainees in the 2017/18 academic year - and had more than 25 trainees in 2014/15 are included in the analysis. This section excludes Teach First, as geographic information for TF routes is not readily available.

Figure 1.6 below shows the providers with the highest and lowest employment rates. The SCITT with the lowest employment rate (at 48%) is Cumbria Primary Teacher Training, where the low rate could be explained by the rural location of that provider. The majority of the HEI providers with the highest employment rates have a higher proportion of primary trainees than HEIs with the lowest rates. Those providers' overall high employment rates may be being driven by their primary trainees, who tend to have higher employment than secondary school trainees (see Figure 1.9 in 'Subject' section below).

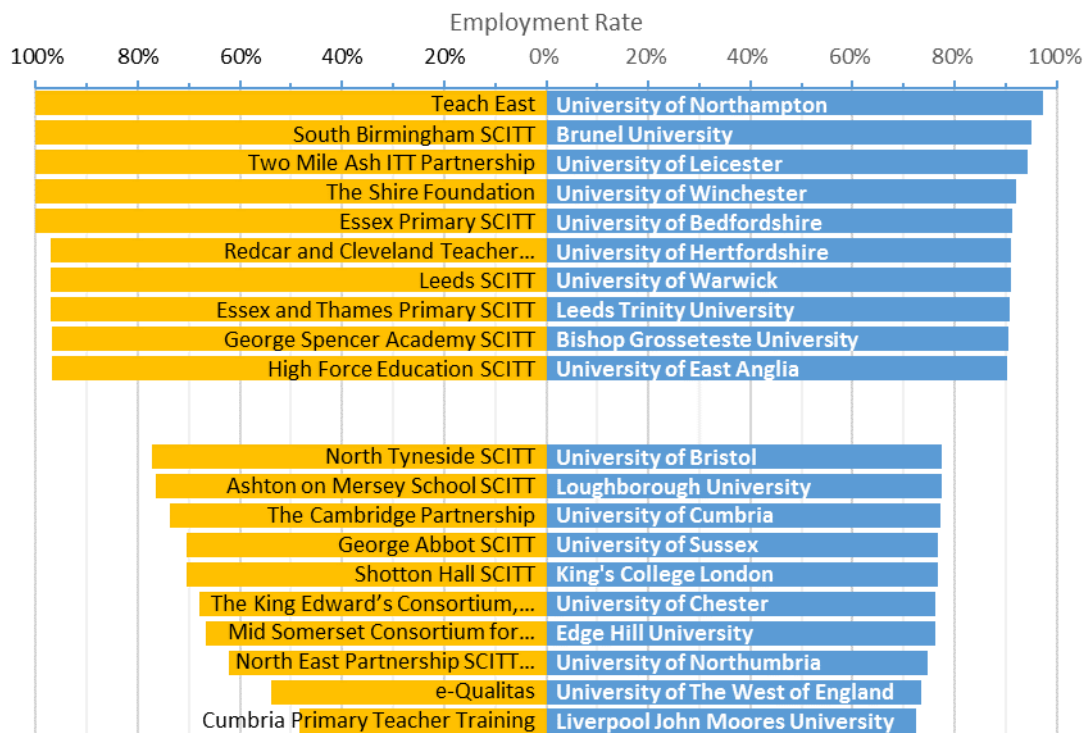


Figure 1.6: Providers with the highest and lowest employment rates

Employment rates for all six cohorts for all active ITT providers are available in the accompanying tables to this report. Provider-level employment rates have been published previously by the Department as part of the [Multiple-Year Allocations](#) publication. There may be small differences in certain provider's rates, as this analysis includes a slightly different subset of trainees and we have also refined our data-linking methodology. However, no differences in employment rates are significant enough to change the outcome of the multiple-year allocations.

Regional differences in employment rates are in line with regional NQT supply

This section looks at employment rates of trainees by region, where regional information is attributed to a trainee based on the location of their ITT provider¹⁷. Of course, a trainee may well gain employment in a different region to where they studied. The mobility of NQTs – the distance they move between their ITT provider and their first teaching post - is addressed in Section 2 of this report.



Figure 1.7: Percentage of postgraduate trainees employed in a state-funded school within two years of gaining QTS, by regional location of ITT provider

Employment rates in all regions (Figure 1.7) have risen over the timeframe analysed, so all regions are broadly in line with the overall rising trend. Providers located in the East Midlands and East of England have consistently seen the highest employment rates for their trainees, with West Midlands rising to a similar level in the latest year of data.

Trainees from providers in the North West have consistently had the lowest employment rates. These regional trends are roughly in line with what we might expect given the number of trainees being produced in a region. Regions with more newly qualified trainees as a proportion of all teachers have lower employment rates, perhaps indicating

¹⁷ Since region is determined by the location of the provider, it may not necessarily represent where the trainee is located.

that NQT supply is outweighing demand in some areas. See section 4 of this report for more details.

Figure 1.8 shows the regional-level employment rates and the location and employment rate of individual ITT providers for the latest cohort of ITT graduates. Providers have been placed in one of three employment rate bands based on the tertiles¹⁸ of the employment rate distribution.

The map shows some interesting variation between providers within a region. Almost all providers in the East of England are in the top employment rate band; the two exceptions are the University of Cambridge and The Cambridge Partnership SCITT, which are both in the bottom band. The DLHE survey shows a higher level of employment for these providers, so this could suggest the Cambridge trainees are finding employment as a teacher outside the state-funded sector.

¹⁸ The lower, middle and upper tertiles each contain a third of the provider population ordered by employment rate.

NQT Employment Rates of ITT Providers

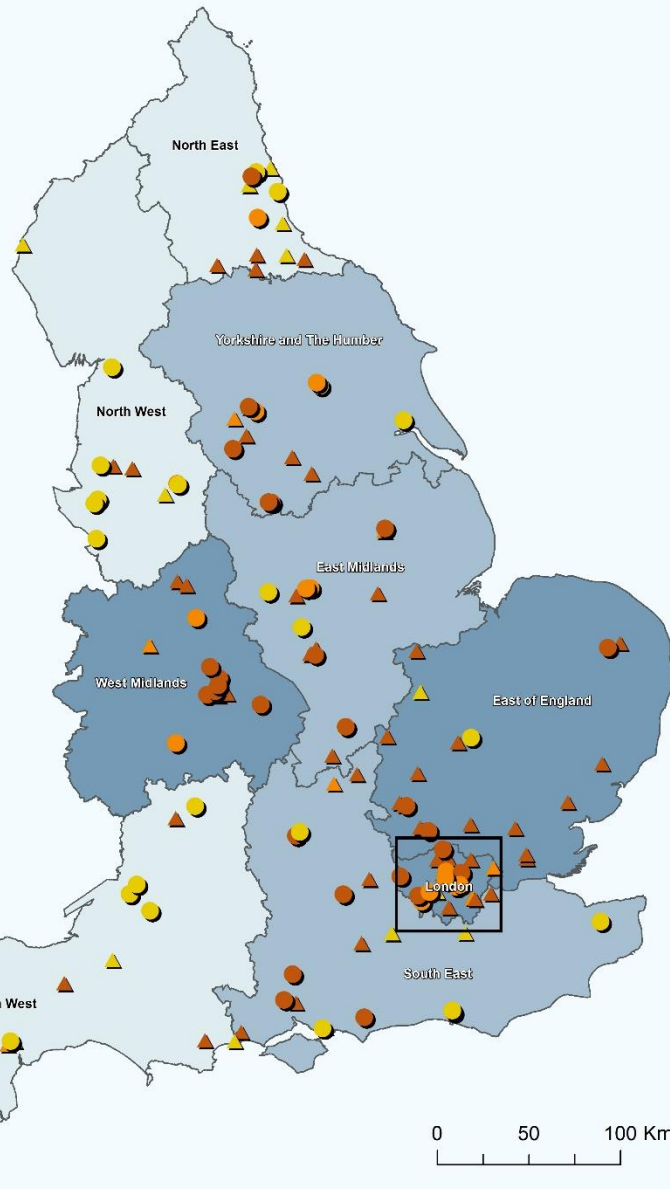
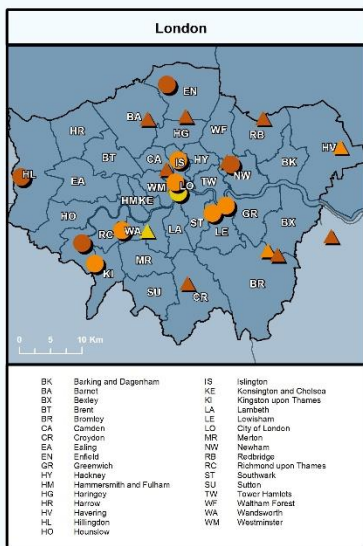
LEGEND

Provider NQT Employment Rate

SCITT	HEI
▲ ≤82.6%	● ≤82.6%
▲ 82.61 - 87.2%	● 82.61 - 87.2%
▲ ≥87.2%	● ≥87.2%

Regional NQT Employment Rate

□ ≤82.6%
□ 82.61 - 87.2%
□ ≥87.21%



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 Ordnance Survey Licence Number 100038433.
 Map produced by Data Insights Team, Workforce Analysis Unit, DfE
 February 2018

Figure 1.8: Employment rates of ITT providers and regions

Employment rates differ slightly between subjects

This section looks at employment rates of postgraduate trainees by the subject in which they specialised in their ITT year¹⁹.

Employment rates amongst primary trainees have been consistently above those for secondary trainees by approximately four percentage points (Figure 1.9).

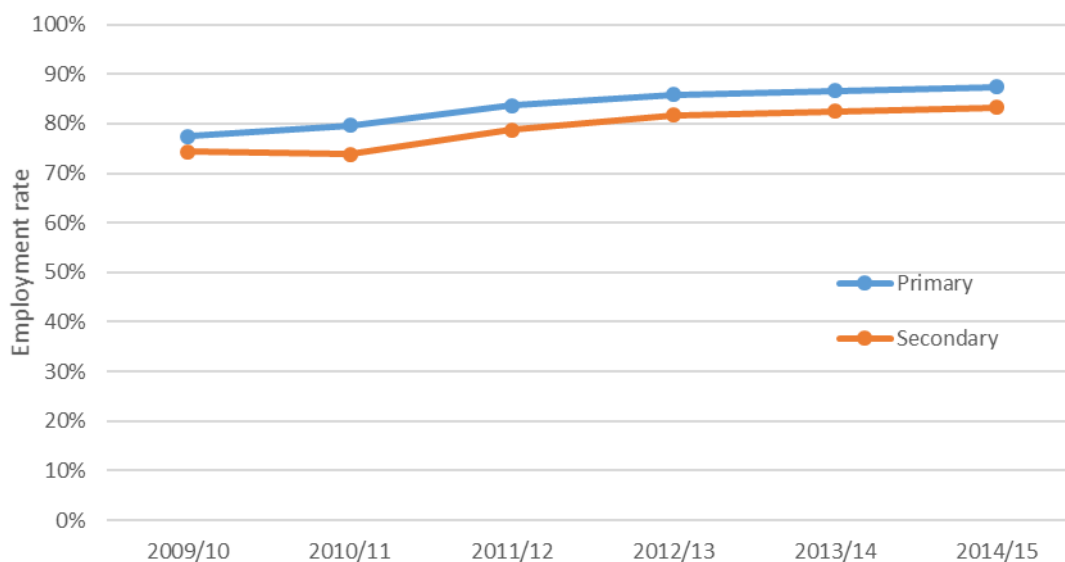


Figure 1.9: Percentage of postgraduate trainees employed in a state-funded school within two years of gaining QTS, by primary or secondary school specialism

For postgraduates training to teach secondary school subjects, Figure 1.10 shows the overall employment rates for EBacc²⁰ and non-EBacc subjects. Employment rates for EBacc subjects are higher than non-EBacc subjects across the whole timeframe.

¹⁹ Note that this analysis does not look at whether an NQT actually teaches their chosen ITT subject.

²⁰ The English Baccalaureate (EBacc) was introduced in 2010 and defined an academic core including GCSE-level examinations in English, Mathematics, Science, Humanities and languages. To enter the EBacc, pupils are required to take GCSE-level examinations in English Language and English Literature, Mathematics, two or three science subjects, History or Geography, and an ancient or a modern language.

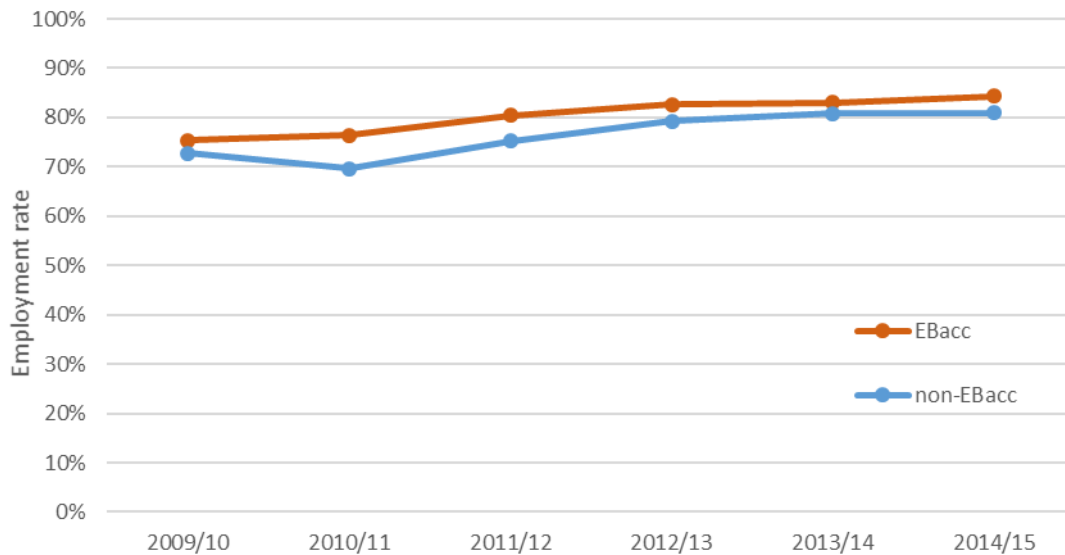


Figure 1.10: Percentage of secondary postgraduate trainees employed in a state-funded school within two years of gaining QTS, by specialism in an EBacc or non-EBacc subject

Figure 1.11 shows the employment rates of trainees for each individual EBacc subject.

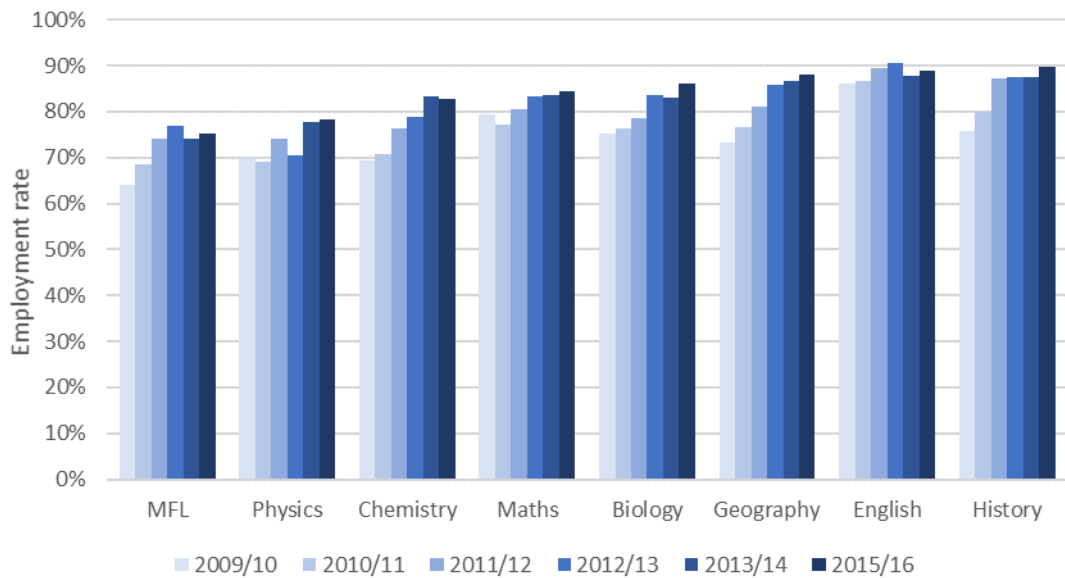


Figure 1.11: Percentage of postgraduate trainees employed in a state-funded school within two years of gaining QTS, by ITT subject for EBacc subjects only

Trainees that have trained to teach English have consistently had high employment rates at approximately 88%, and have had the steadiest level of employment across all the cohorts looked at. History and Geography trainees have had steadily rising employment rates, reaching similar levels to English in more recent years. This is perhaps reflecting a growing need for teachers in this subject in line with increasing EBacc take-up.

Employment rates for trainees of Chemistry, Biology and Mathematics have all risen between the earliest and last cohorts in this analysis, with rates of between 83% (for Chemistry) and 86% (Mathematics) in the latest year of data. Of these three subjects, Mathematics has had the least variation in rates between cohorts.

Trainees of Physics and Modern Foreign Languages have consistently had the lowest levels of employment out of all the EBacc subjects, despite there being a demand for both Physics and Languages teachers. The DLHE survey also shows Modern Foreign Languages trainees as having the lowest level of employment out of all the EBacc subjects, so this could suggest that Languages trainees are less likely than others to go into teaching. For Physics trainees, the DLHE survey does not show such a difference in employment rates against other subject trainees as there is here. This could indicate that Physics trainees are more likely to teach outside the state-funded sector.

2. NQT destinations from ITT providers in England

This section details where trainees, who graduated between 2010 and 2015 from different Initial Teacher Training (ITT) providers, started their first role as Newly Qualified Teachers (NQTs). It explores a range of NQT and ITT provider characteristics, and shows how the distance between ITT provider and NQTs' first schools differs as these characteristics change.

Analysing the destination of NQTs from different ITT providers may help monitor the supply of new teachers into certain areas and inform workforce planning. The analysis shows there are distinct differences between the distances ITT graduates are travelling to start their first post as NQT, particularly between graduates in different areas of the country and who have trained to teach different subjects.

This analysis uses a dataset created by linking data from the ITT Performance Profiles data to the School Workforce Census (SWC). Details of this methodology can be found in Annex A1. ITT providers must still be active, as defined by the 2017/18 ITT Census, for ITT graduates to be included in this analysis. Also, only ITT graduates taking a job in the state funded sector in England can be identified in the SWC and consequently be included in this analysis.

All distances are as the crow flies in kilometres (km). Distances are in kilometres as the coordinates of schools and providers (Easting and Northing) use the metric system. The ITT Census for 2017/18²¹ has been used to collect information on the location of each ITT provider and Get Information About Schools²² has been used to ascertain the location of each school. Due to the structure of some training courses, for example School Direct, the ITT provider may not be the main location of its trainees.

Cumulative density curves are used to display the distances travelled from ITT provider to first job as an NQT for the different characteristics of NQTs and providers. These show the percentage of trainees that travel a certain distance or less between ITT and their NQT role.

The supporting materials published alongside this report contain maps of how far graduates moved to start their first role as an NQT from each individual provider, separated into regions and a breakdown of the five most popular Local Authority Districts (LADs) for graduates from each ITT provider.

²¹ <https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2017-to-2018>

²² <https://get-information-schools.service.gov.uk/>

Half of ITT graduates stayed within 25 kilometres of their ITT provider when starting their first job as an NQT

50.1% of ITT graduates travelled 25 kilometres or less from their ITT provider to their first job as NQT and 76.6% travelled less than 60 kilometres (Figure 2.1). At the upper end, 13.8% of graduates travelled more than 100 kilometres and only 5.7% moved more than 200 kilometres to their first job from ITT provider. This relates closely to analysis in Section 3 on how far teachers move between roles once they have started teaching. ITT graduates travelled only slightly further between provider and their first NQT post than teachers travelled between schools once they have started teaching²³. The maximum distance travelled is about 600 kilometres; however, to be concise the graphs below will only show movement up to 400 kilometres, given that only a small percentage moved further.

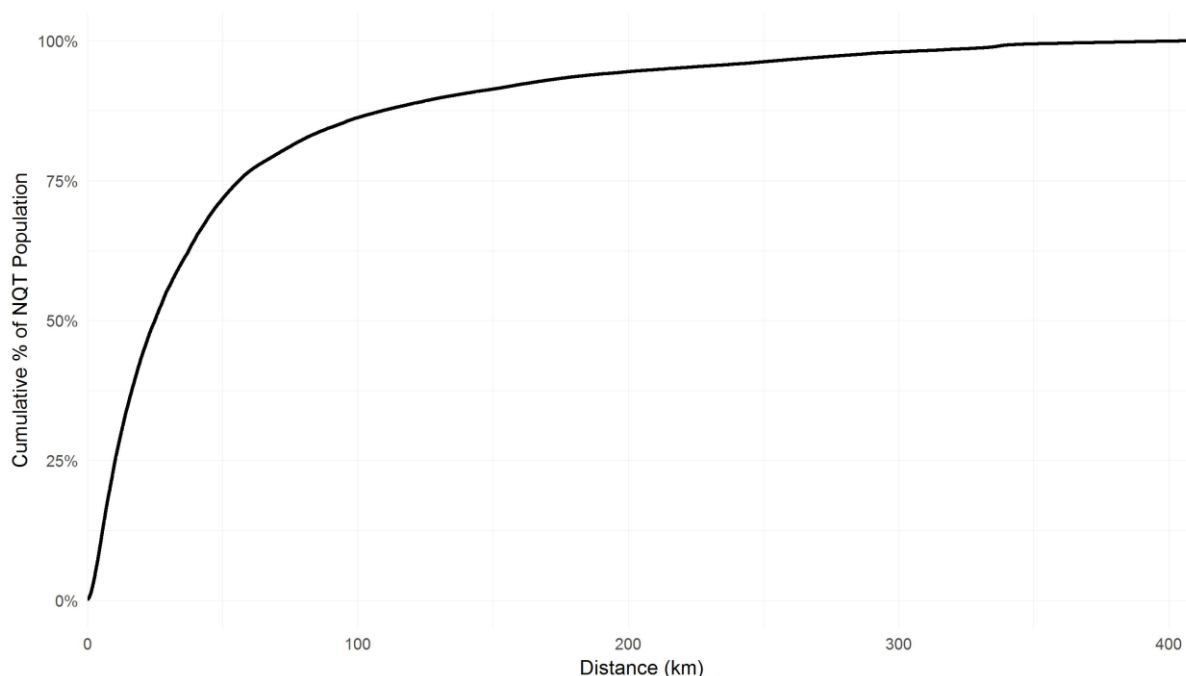


Figure 2.1: Cumulative distribution of distance from ITT provider to first teaching post

Distances moved from ITT provider to first job varied across the country

Figures 2.2 and 2.3 show how the distance travelled from ITT provider to first teaching role varies between regions.

²³ Section 3 of the current report “Teacher mobility across England”

Figure 2.2 shows ITT providers in London and the East of England did not typically have their graduates travel far to their first posts as NQTs with 96.6% and 90.3% of ITT graduates staying within 100 kilometres respectively. However, Figure 2.3 shows on average schools in these regions recruited graduates who had travelled a long way: only 82.8% and 77.9% of NQTs stayed within 100 kilometres of their ITT providers. This may be due to the low ratio of trainees to pupils in these areas meaning trainees in these areas can find NQT roles fairly easily but other trainees need to come to the area post ITT to meet demand in schools for NQTs. In the East of England, the low trainee to pupil ratio can be seen by considering the region's pupil numbers²⁴ and trainee numbers²⁵. In London, the trainee to pupil ratio is not very low; however, the region has a higher teacher to trainee ratio than other regions²⁶. This means a higher trainee to pupil ratio may be needed to fill the higher demand for teachers. Consequently, the trainee to pupil ratio in London could be considered low. London also has a higher population density, which may mean people don't have to travel as far for a teaching post.

In the North West and the North East the opposite phenomenon occurs. Providers in these regions had their graduates travel some of the furthest distances to start as NQTs with 81.1% and 82.3% of ITT graduates staying within 100 kilometres respectively. However, schools in these regions often recruited local graduates; in fact 94.7% and 88.6% of NQTs in schools in the area stayed within 100 kilometres of their ITT provider. This part of the country (covering both regions) has a high ratio of trainees to pupils, which can be seen from the pupil numbers²⁷ and trainee numbers²⁸ of the two regions. This means schools in these regions can recruit trainees from providers in the area but not all ITT graduates from the regions will be able to find a post in schools close to their provider.

Providers in the South West had their graduates travel the furthest to their first NQT post with only 68.5% staying within 100km. Schools in this region often recruited NQTs who had trained at providers quite a large distance away with only 81.6% coming from providers within 100km of their first school compared to an average of 86.2% for all regions. The South West has a fairly sparse population density²⁹ so trainees may have to travel a long way between provider and NQT post even within the region.

²⁴ <https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2017>

²⁵ <https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2017-to-2018>

²⁶ <https://www.gov.uk/government/statistics/school-workforce-in-england-november-2016>

²⁷ <https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2017>

²⁸ <https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2017-to-2018>

²⁹

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationdensitytables>

It is likely the fact that people travelled a long way from providers in the North West, North East and South West is reinforced by ITT graduates travelling from these areas to teach in London.

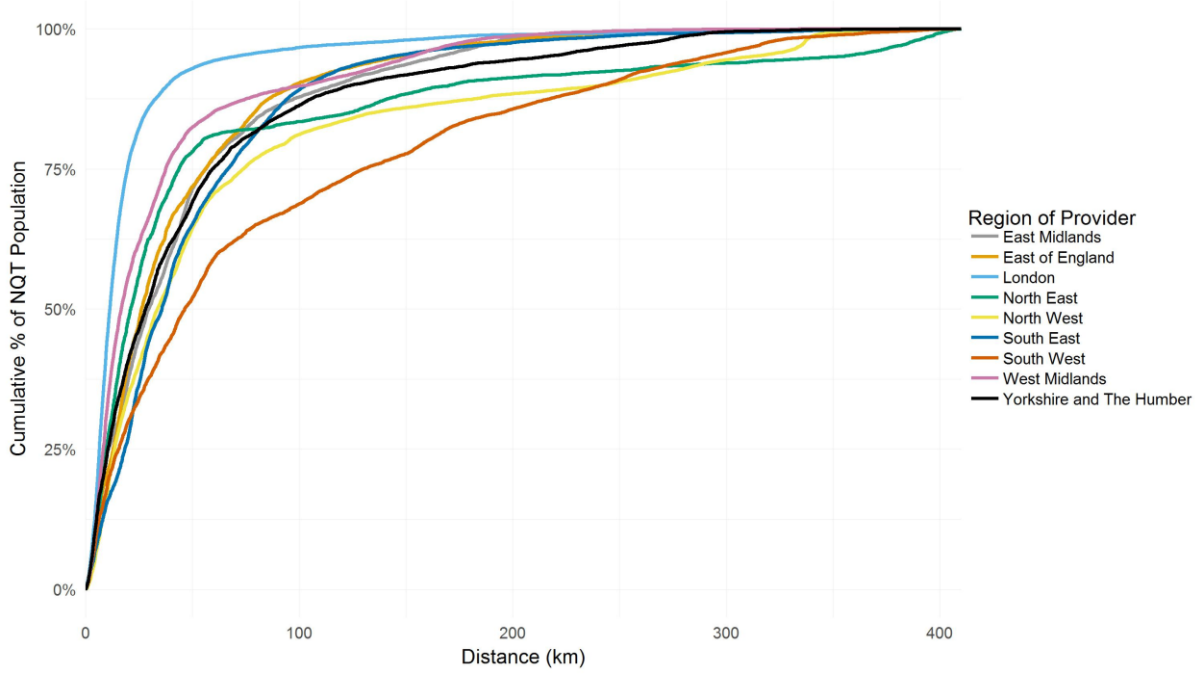


Figure 2.2: Cumulative distribution of distance from ITT provider to first teaching post by region of ITT provider

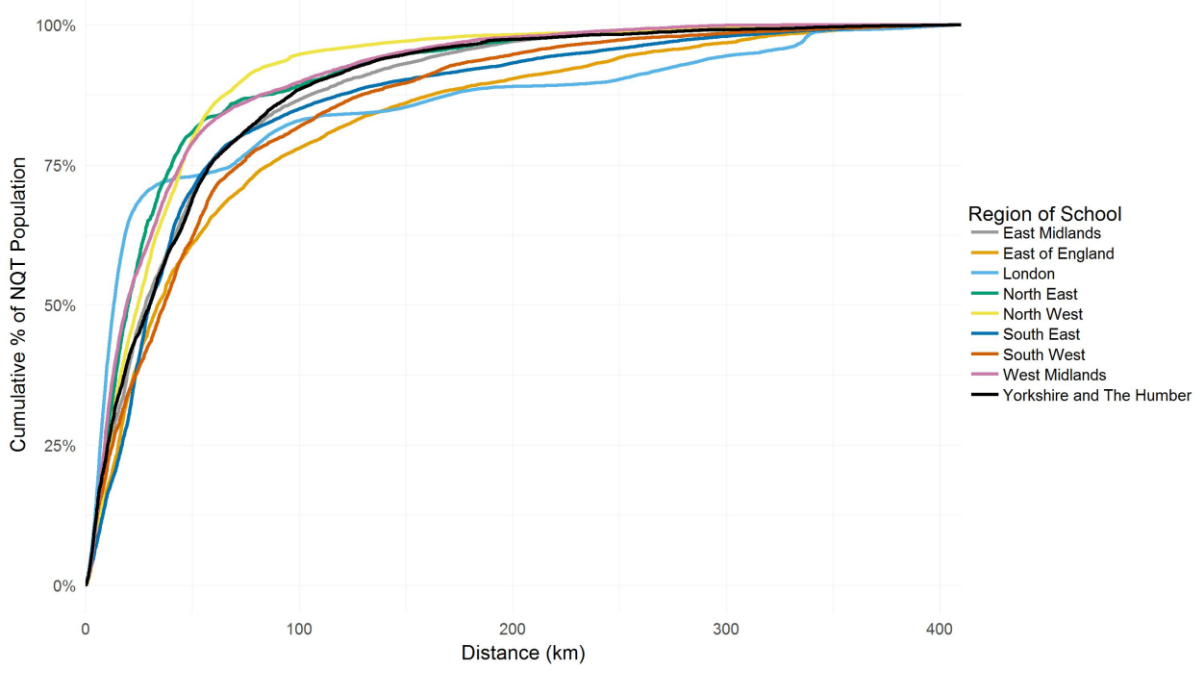


Figure 2.3: Cumulative distribution of distance from ITT provider to first teaching post by region of school

Younger ITT graduates were more likely to move a greater distance between ITT provider and their first role

On average, younger ITT graduates travelled further to their first job than older ITT graduates (see Figure 2.4). This mirrors the findings of analysis on mobility of teachers between jobs that younger teachers are more likely to travel greater distances (see Section 3). When comparing the percentage of ITT graduates staying within 50 kilometres of their provider, of those under 25, 68.2% stayed within 50 kilometres of their ITT Provider whereas for those over 35 this percentage rises to 81.9%.

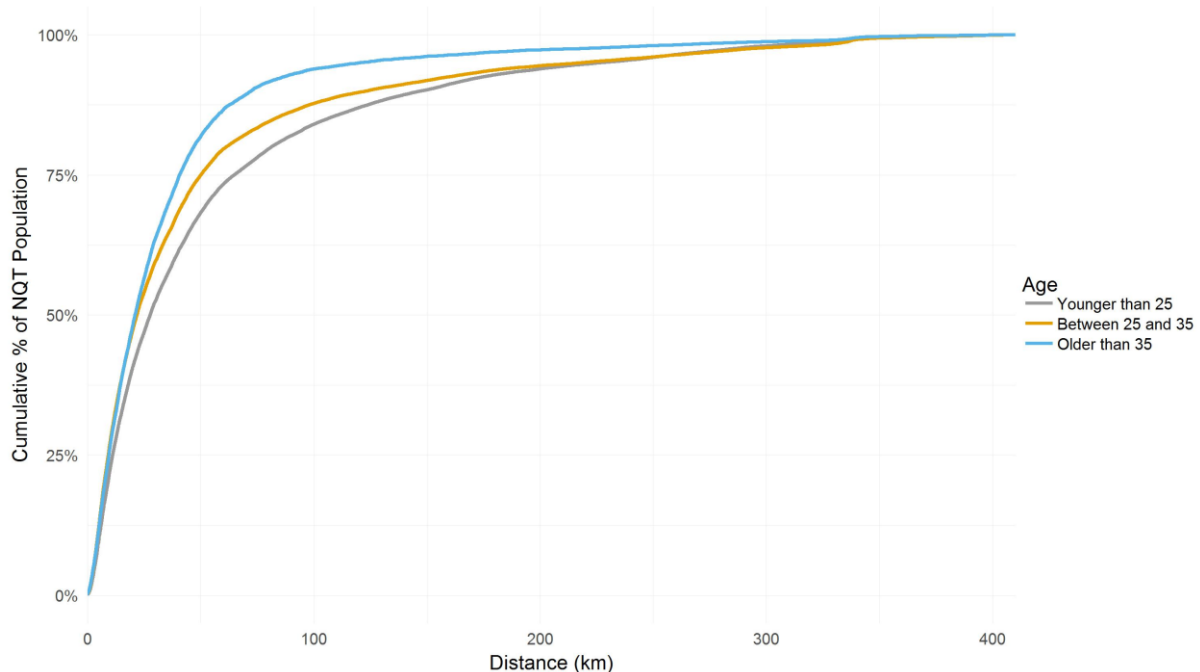


Figure 2.4: Cumulative distribution of distance from ITT provider to first teaching post by age of NQT

Secondary school teachers, specifically EBacc language teachers, travelled the furthest between ITT provider and their first role

From Figure 2.5 it can be seen those graduates who started as an NQT teaching in secondary schools had to travel further from their ITT provider than those who went on to teach in primary schools. For those teaching in secondary schools 84.4% stayed within 100 kilometres whereas for those teaching in primary schools this percentage rises to

87.4%. This may be due to the lower number of secondary schools nationally³⁰ and therefore the likelihood they are more sparsely distributed around the country.

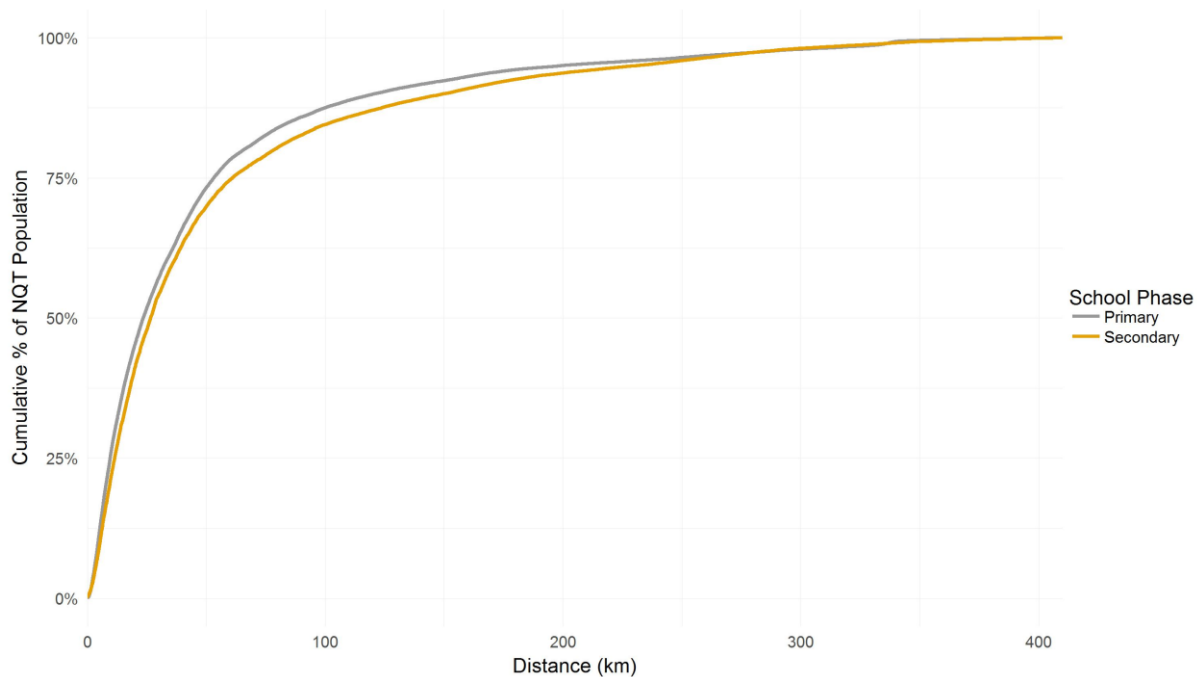


Figure 2.5: Cumulative distribution of distance from ITT provider to first teaching post by phase of school

With regards to those starting NQT posts in secondary schools, Figure 2.6 shows that those trained to teach EBacc languages³¹ and non-EBacc subjects in their first post as an NQT travelled the furthest between their ITT provider and their first job with 68.1% and 62.1% staying within 50 kilometres respectively. Those trained to teach non-EBacc subjects may have to travel a long way given lower demand for these subjects, meaning they may need to travel to find a school where there is a vacancy. Those trained to teach EBacc languages may need to travel further as there are fewer providers offering training in teaching languages so they may need to travel some distance from these providers to a school where there is demand. There are 157 ITT providers with EBacc language trainees as opposed to 191 ITT providers with EBacc STEM according to the 2017/18 ITT Census.³²

Graduates trained to teach STEM had to travel the smallest distance. This may be because demand for STEM teachers is high universally, meaning they do not need to

³⁰ <https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2017>

³¹ EBacc Languages are considered to be any Modern Language or Classics. EBacc Humanities are History or Geography. EBacc STEM subjects are Biology, Chemistry, Mathematics, Physics or Computing. Non-EBacc subjects are any other secondary school subject (not including English).

³² <https://www.gov.uk/government/statistics/initial-teacher-training-trainee-number-census-2017-to-2018>

travel as far to find a vacancy. For those trained to teach STEM, 76.3% of ITT graduates stayed within 50 kilometres of ITT provider when moving to their first NQT post.

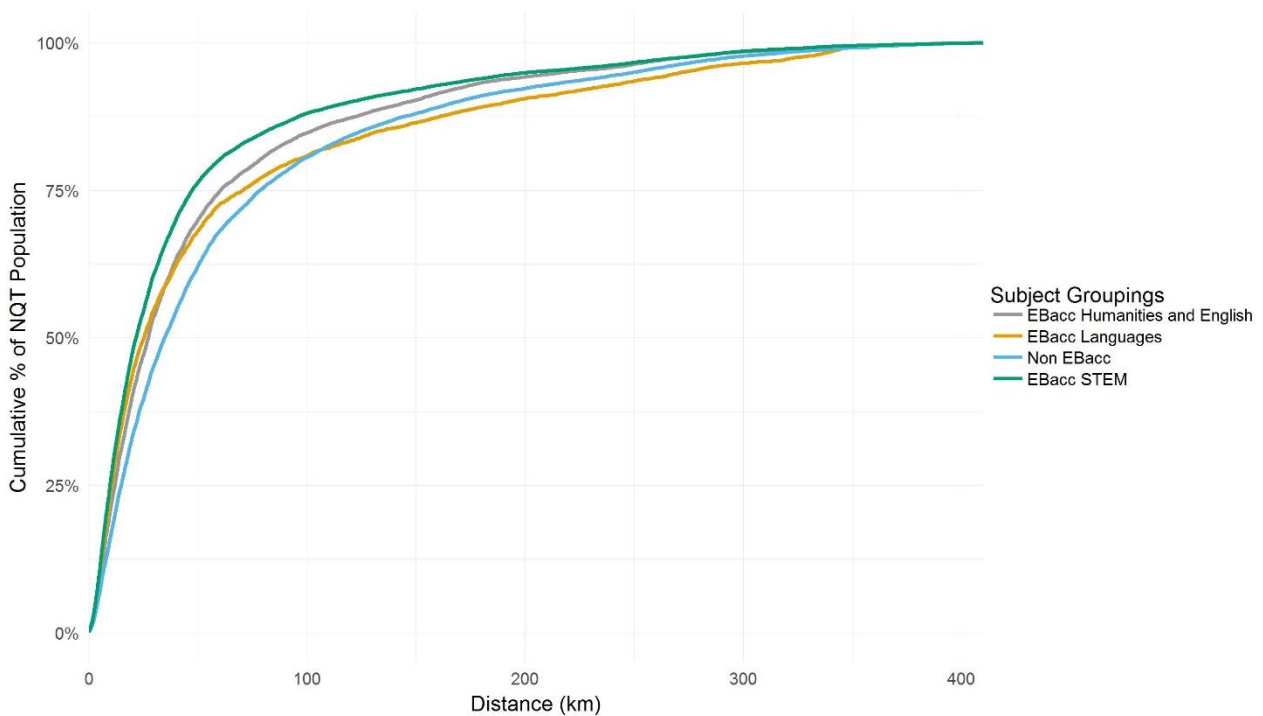


Figure 2.6: Cumulative distribution of distance from ITT provider to first teaching post by subject specialism

Graduates from HEIs travelled a larger distance to their first jobs than those from SCITTs

Figure 2.7 shows ITT graduates from an HEI travelled further to their first job than ITT graduates from a SCITT; from HEIs 70.6% stayed within 50 kilometres of their provider whereas for SCITTs this percentage is 82.9%. This may be because there are fewer HEIs and consequently they are more spread out.

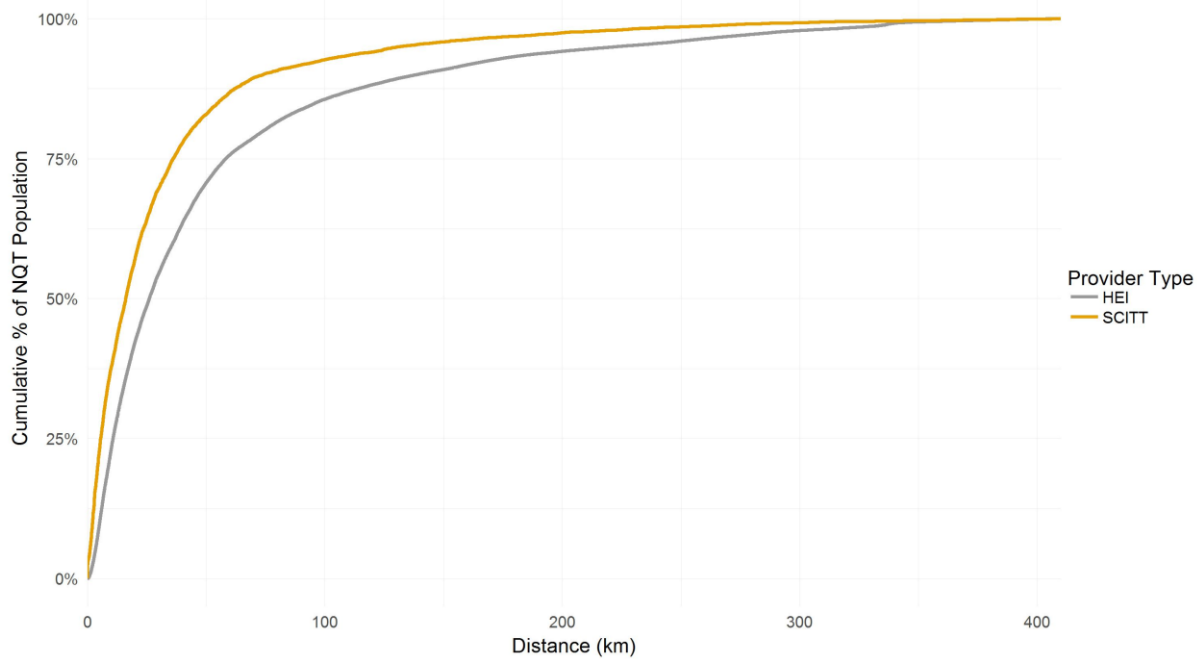


Figure 2.7: Cumulative distribution of distance from ITT provider to first teaching post by type of provider

ITT graduates on average travelled less distance between leaving their ITT provider and starting as an NQT in 2015 than they did in 2010

Figure 2.8 shows that ITT graduates who graduated in 2015 travelled the least distance between leaving ITT and starting as NQT. Of those that graduated from ITT in 2015, 88.7% stayed within 100 kilometres when starting as an NQT whereas for those that graduated in 2010 this figure dropped to 84.9%

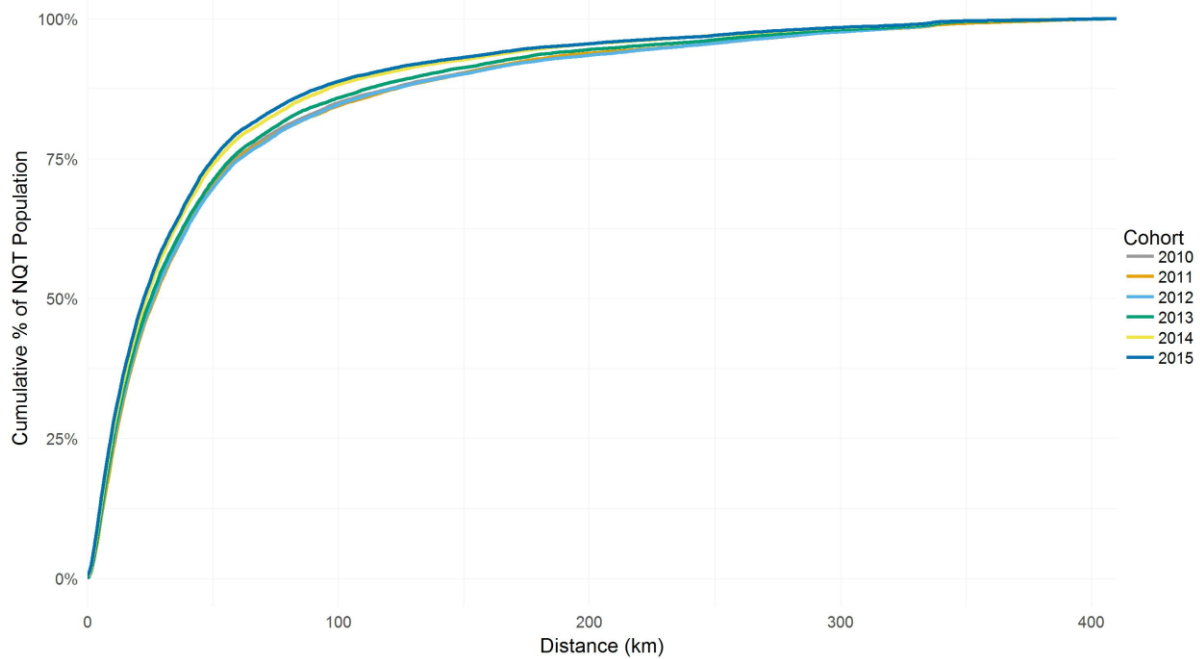


Figure 2.8: Cumulative distribution of distance from ITT provider to first teaching post by year of graduation

There are large differences between the distances travelled from different ITT providers to their trainees’ first jobs as NQTs, even between providers with similar characteristics

In the accompanying provider level analysis it can be seen how far trainees travelled from each individual provider and to where. This analysis has only been carried out for providers producing more than 50 NQTs in the state sector in England between 2010 and 2015 to increase the reliability of the analysis. From the maps of how far graduates travelled from each provider and the spreadsheet of their destinations it can be seen how much variation there is in the distances travelled from each provider.

3. Teacher mobility across England

This section provides analysis of teacher's mobility between schools between 2010 and 2015. Where a move occurred between 2015 and 2016 this is referred to as a move in 2015, as the move originated in this year. It follows on from analysis of teacher's mobility between 2010 and 2014 produced in May 2017³³, providing an update to the data to include the most recent year as well as providing new analysis looking at movements between schools depending on Ofsted grades.

Analysis of the linked School Workforce Census (SWC) allows us to see how far teachers moved when they stayed within the state-funded system in England. We are unable to see if a teacher had moved to a post outside of this system.

School-to-school mobility is now the biggest source of new entrants to schools, accounting for 40.6% of all entrants to primary schools and 44.3% for secondary schools in 2015³⁴.

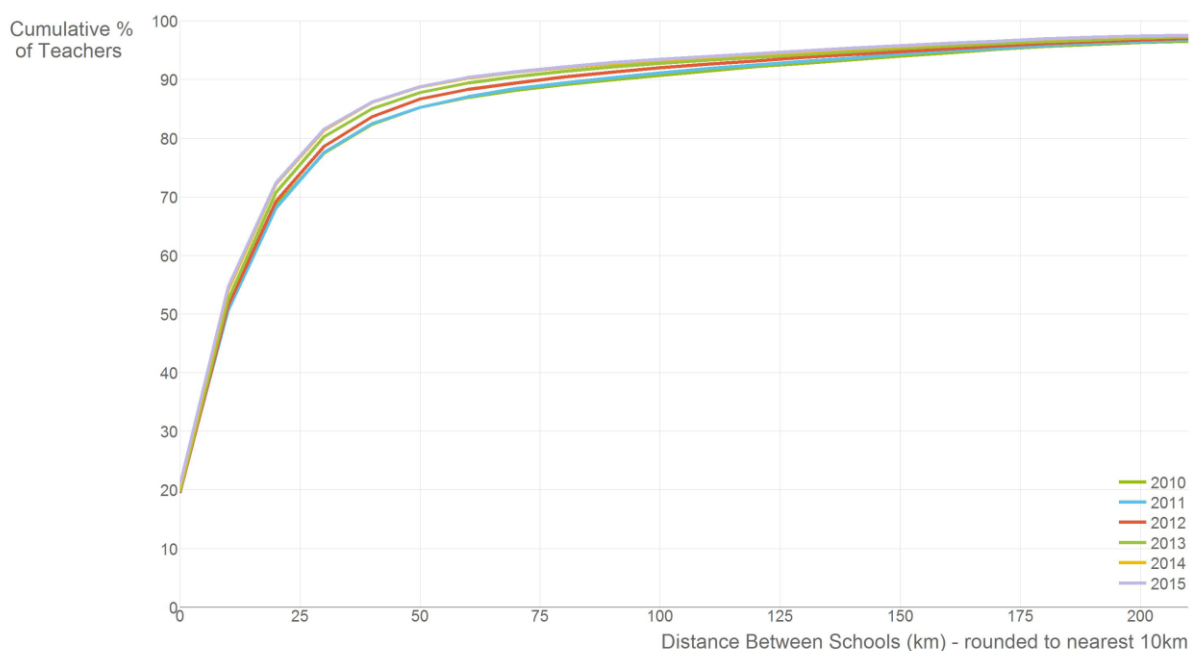
Alongside this report, we have also published two maps for each Local Authority District (LAD). One shows the LAD as the origin of teachers' movements when moving between jobs and one showing the LAD as the destination of teachers' movements when moving between jobs. There will also be two tables for each LAD showing the top 10 most popular origins and destinations when moving from and to that LAD respectively and two Sankey diagrams displaying the same information. More detail can be found in the accompanying HTML files.

Most teachers stay within commuting distance when moving schools

70.5% of all teachers who moved between 2010 and 2015 moved 20 kilometres or less. In contrast, just over 3.0% of teachers who moved schools moved more than 200 kilometres. The maximum distance moved in the period was approximately 600 kilometres, however for presentation purposes the graphs below will only show movement up to 200 kilometres, given that only a small percentage moved further. This pattern holds across all of the years in the analysis, as shown in Figure 3.1.

³³ <https://www.gov.uk/government/statistics/teachers-analysis-compendium-2017>

³⁴ <https://www.gov.uk/government/statistics/local-analysis-of-teacher-workforce-2010-to-2015>



Source: School Workforce Census

Figure 3.1: Cumulative distribution of distance between schools by year

Male teachers, teachers working full-time, and secondary school teachers were more likely to move a greater distance

As can be seen from the table below (Table 3.1), teachers were more likely to move further if they were male, working full-time, or if they taught in a secondary school. Teachers were more likely to move if they taught in a secondary school, reflecting that these are more spread out across the country as there are fewer of them. Variation in movement according to gender is linked to this. In November 2016, 86.1% of qualified primary school teachers were female - this is similar to figures in previous years. Female teachers on average move shorter distances than male teachers: 87.9% of female teachers who moved between 2010 and 2015 moved 50 kilometres or less, compared to 86.0% of male teachers.

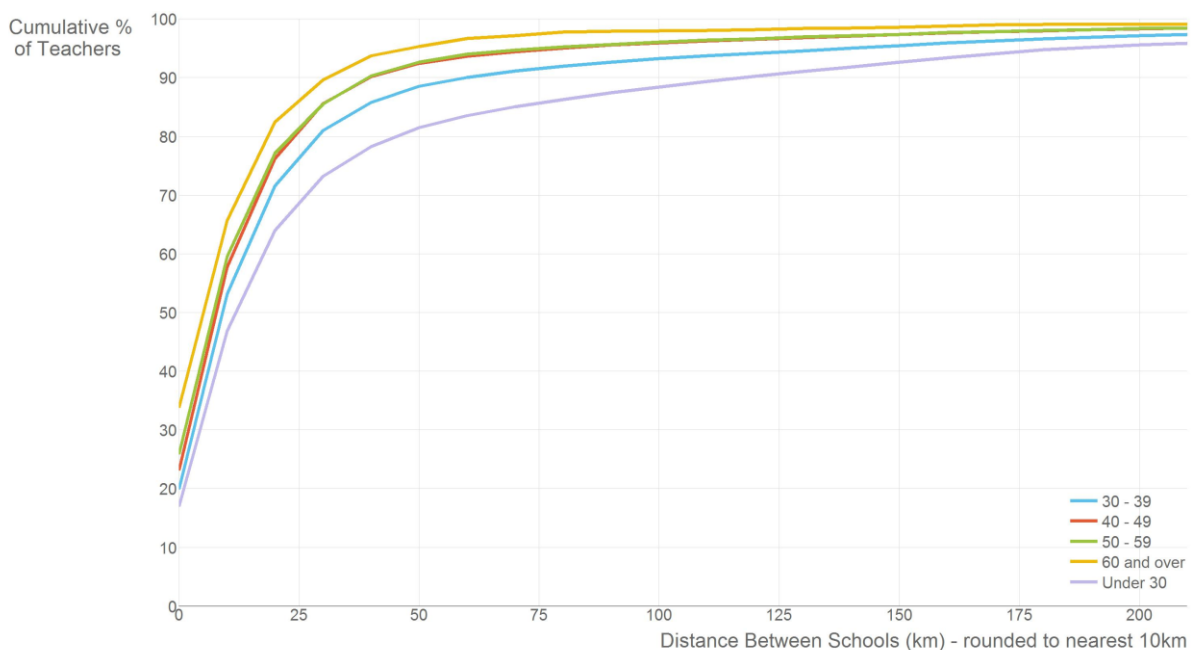
Working patterns are also linked to gender and phase taught. On average, part-time teachers moved shorter distances than full-time teachers. 93.5% of part-time teachers who moved did so to a school 50 kilometres or less away. This is 7.3 percentage points higher than the figure for full-time teachers (86.2%). In 2016 female teachers were more than 3 times more likely than male teachers to be a part-time teacher (27.8% of female teachers versus 7.8% of male teachers), and primary school teachers were more likely to work part-time than secondary school teachers (26.5% and 18.3% respectively). The table below reinforces these clear links, further information can be found in Annex A2 and the accompanying tables.

Characteristic	% moving 50km or less
Primary, Female, Part-time	94.7
Primary, Female, Full-time	88.2
Primary, Male, Part-time	91.8
Primary, Male, Full-time	88.9
Secondary, Female, Part-time	89.2
Secondary, Female, Full-time	81.2
Secondary, Male, Part-time	84.5
Secondary, Male, Full-time	82.1

Table 3.1 Distance between schools by phase, gender and working status

Younger teachers were more likely to move a greater distance when they move schools

Figure 3.2 shows that just under 90% of those teachers under 30 years of age who moved between 2010 and 2015 moved 100 kilometres or less, compared to those aged 30-39 for whom approximately 90% moved 50 kilometres or less. The distance moved when moving schools generally decreases with age, indicating that there are factors associated with age which mean older teachers move longer distances less frequently than their younger colleagues do.



Source: School Workforce Census

Figure 3.2: Cumulative distribution of distance between schools by age

There is little movement between regions

Figure 3.3 illustrates the movement of qualified teachers between regions. The thickness of the lines shows the proportion of teachers who moved from their origin region (on the left) to their destination region (on the right). The values on the left hand side show the percentage of teachers who remained within that region when they moved. For example, of teachers in the East Midlands that who moved school between 2010 and 2015, 77.0% stayed in the East Midlands. The vast majority of teachers stayed within the same region when moving school, with relatively few moving to different regions, again demonstrating that teachers seldom move large distances. The only noticeable inter-region movements are between Inner and Outer London, and both London regions and the South East.

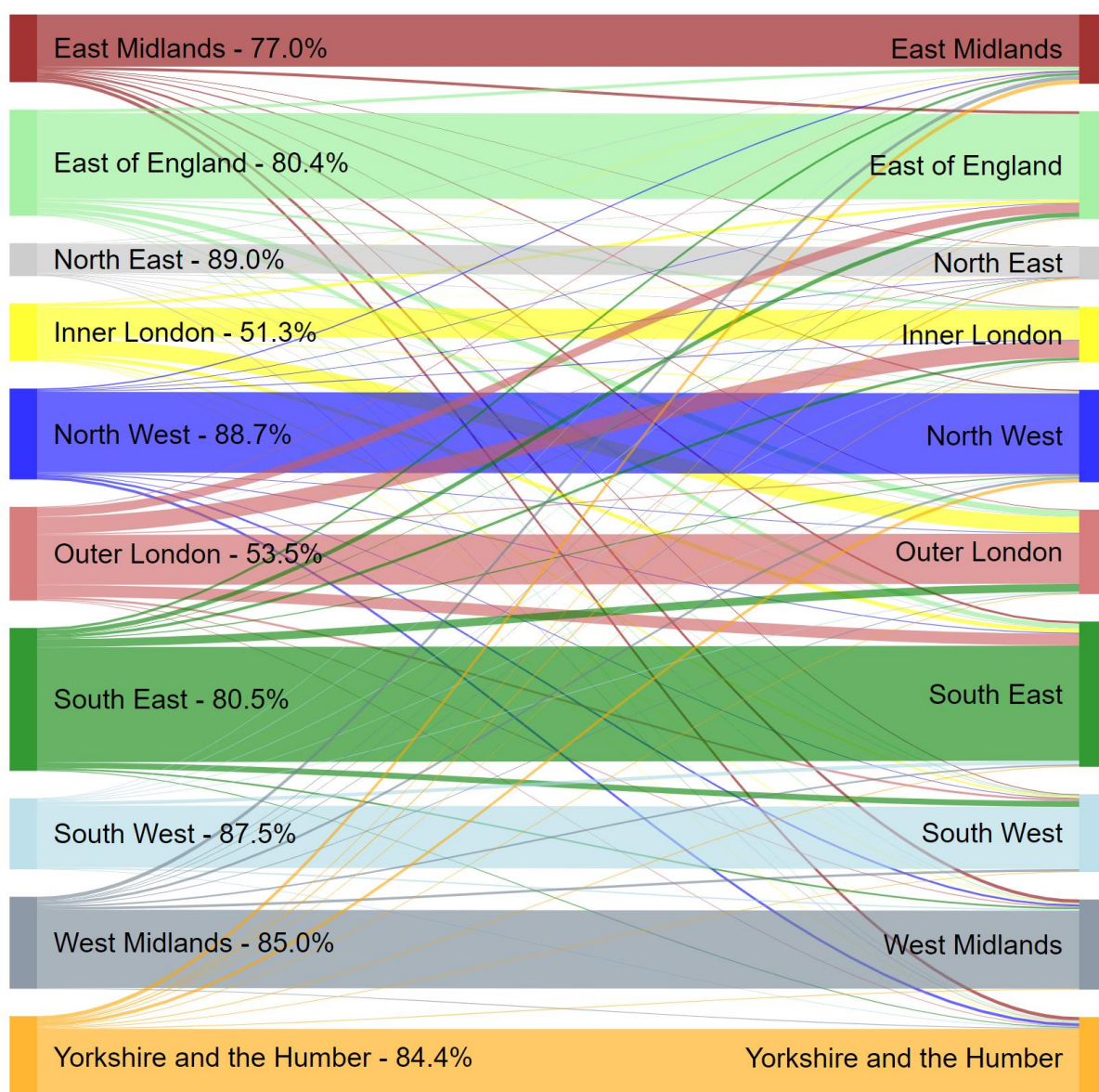


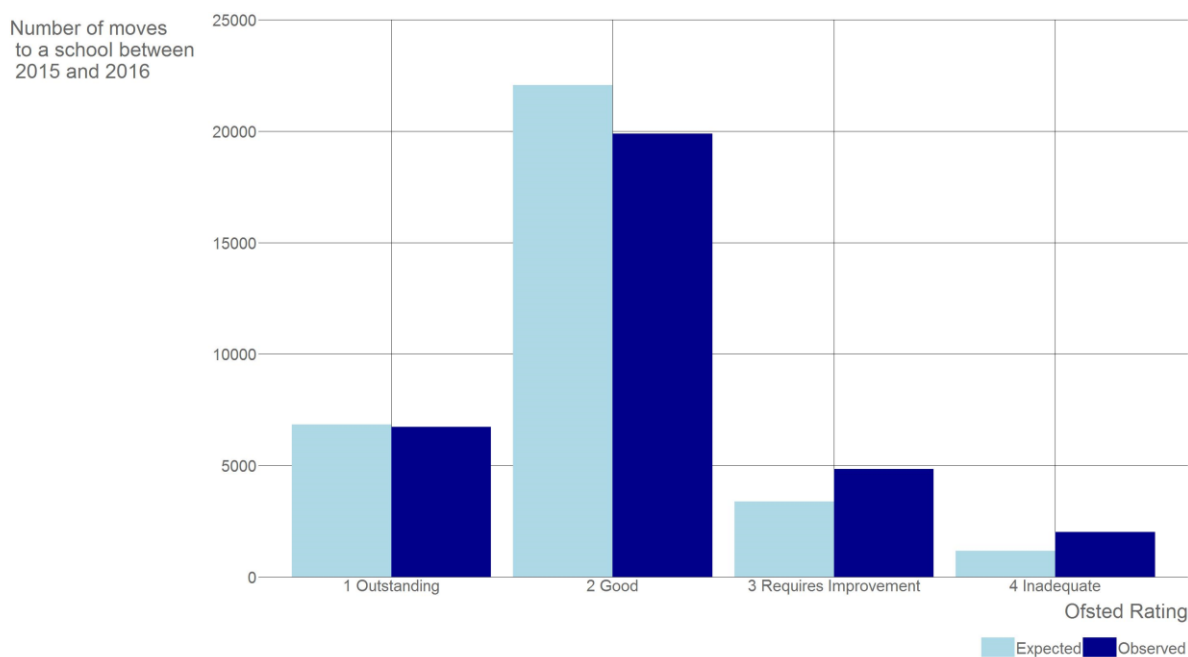
Figure 3.3: Percentage of moves between regions

Teachers are more likely to move to a school with an ‘inadequate’ or ‘requires improvement’ Ofsted grade

Figure 3.4 below shows that in 2015 the observed number of teachers moving to schools with an Inadequate or Requires Improvement Ofsted rating is higher than the number we might expect based on the distribution of the Ofsted ratings of schools. There are almost twice as many movements to schools rated as Inadequate at their last Ofsted inspection than we would expect based on the percentage of schools with an Inadequate rating. Given the distribution of schools and the number of teachers who moved, we would have expected 1,158 teachers to move to a school that was rated as Inadequate at their last Ofsted inspection, what we observed was that 2,007 teachers moved to these schools.

The number moving to Outstanding schools is approximately what we would expect (6,723 observed compared to an expected 6,844), it is the number moving to schools rated good that is lower than we would expect (19,892 observed compared to 22,070 expected). This pattern holds across all years from 2010 to 2015.

There are several potential reasons why this might be the case. There are more vacancies proportionally in schools rated Inadequate or Requires Improvement (we offer further analysis below), so there is likely to be more movement to those schools.



Source: School Workforce Census & Ofsted

Figure 3.4: The observed and expected number of moves between schools based on Ofsted grade (2015 to 2016)

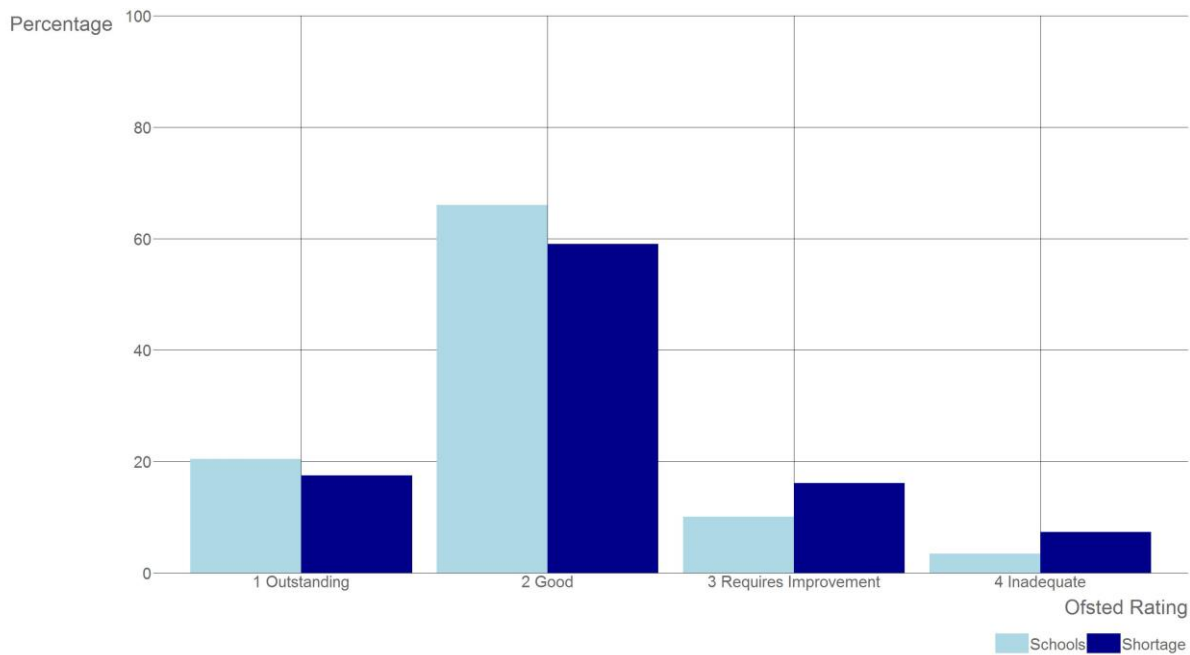
A chi squared goodness of fit test was carried out on the data for each year; the results are shown in Table 3.2 below. These tests were carried out separately for London and the rest of England and for both together. The tests were carried out separately to understand whether the national trend holds across the country and since movements into and out of London see different trends to the rest of the country. The tests show that the results are statistically significant for each year at the 0.1% significance level. This suggests that there is evidence that teachers are more likely to move to schools that are rated as Inadequate or Requires Improvement by Ofsted than we would expect based **only** on the percentage of schools that are in these categories. There is, however, currently no evidence to suggest there is a *causal* link.

Year	National Test Statistic	National p value	London Test Statistic	London p value	Rest of England Test Statistic	Rest of England p value
2010	500.9	<0.001	23.1	<0.001	532.6	<0.001
2011	940.1	<0.001	41.6	<0.001	1017.9	<0.001
2012	1491.0	<0.001	91.9	<0.001	1573.6	<0.001
2013	1678.2	<0.001	70.8	<0.001	1782.7	<0.001
2014	1829.1	<0.001	103.6	<0.001	1917.4	<0.001
2015	1461.6	<0.001	120.7	<0.001	1483.0	<0.001

Table 3.2 Results of a chi-squared test to determine whether the effect of Ofsted grade on the decision of a teacher to move to a school is statistically significant

One possible reason why this trend is seen is that there are more vacancies and temporarily filled posts on average per school in those rated either Inadequate or Requires Improvement compared to those rated Good or Outstanding. In November 2016, the percentage of all vacancies and temporarily filled posts which were reported in schools rated as Inadequate was 7.3%, the percentage of schools rated as Inadequate at this time was 3.4%. Conversely 17.5% of all vacancies and temporarily filled posts were reported in schools rated as Outstanding and there were 20.4% of schools with this rating.

This trend is similar for all years from 2011 to 2016. The figures for 2016 can be seen in Figure 3.5 below.



Source: School Workforce Census & Ofsted

Figure 3.5: The percentage of schools and percentage of vacancies and temporarily filled posts in November 2016 by Ofsted grade

In this chart the total number of vacancies and temporarily filled posts, as reported by a school in the School Workforce Census, has been compared to the Ofsted grade of the school at the time the Census was collected; however, it is possible vacancies have been influenced by an earlier grade. Then the total number of vacancies and temporarily filled posts in schools at each Ofsted grade has been divided by the total number of schools at each Ofsted grade to calculate the average shortage in a school for each Ofsted grade.

An alternative reason why the number of moves to schools rated Inadequate or Requires Improvement is higher than we would expect may be because teachers have an aspiration to help raise the standards in schools currently rated poorly by Ofsted.

4. Analysis of regional initial teacher training place weightings

The 2018/19 Teacher Supply Model ([TSM](#)) estimates the number of postgraduate Initial Teacher Trainees (ITT) that are required to start training courses in the 2018/19 academic year to enter the teaching workforce in 2019/20 onwards as Newly Qualified Teachers (NQTs). The model operates at a national level (for England only) and estimates ITT place requirements for the primary phase and a selection of secondary subjects. The 2018/19 TSM was published on October 26th 2017 alongside the 2018/19 allocations and multiple year allocations.

This analysis follows up on previous National Audit Office (NAO)/ Public Accounts Committee (PAC) comments on sub-national evidence for teacher demand^{35,36}.

This analysis looks at a range of factors that could help to explore how we might better understand demand for teachers and within that, ITT places, at a sub-national level. All figures are calculated at a regional level for the purposes of this exploratory analysis.

The national teacher supply model

There are a number of reasons why the Department models teacher supply and future ITT place requirements at a national level only within the TSM. These include, and are not limited to:

- At a sub-national level there is a lack of data, information, and evidence relating to the development of modelling assumptions, e.g. future sub-national Pupil:Teacher Ratios (PTRs). Similarly there is a lack of modelling input data (e.g. robust economic projections)
- A sub-national model would be more vulnerable to issues around the quality of the data due to smaller sample sizes. For example, teacher wastage rates for each age group and gender would be estimated using data relating to a considerably smaller number of teachers
- The size and scale of the model would be much greater - rendering it both increasingly difficult for users to engage with and requiring whole new input data sets such as inter region flows as well as the current entrant and wastage data
- The way teacher training places are allocated is not based on precise geographic breakdowns, as different providers have different levels of geographic coverage

³⁵ <https://www.nao.org.uk/report/training-new-teachers/>

³⁶ <http://www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/inquiries/parliament-2015/training-new-teachers-15-16/>

(see Section 2 of this report) and more recently, with a large number of subjects having unrestricted recruitment, there would be no direct use of sub national outputs of the TSM

Regional weightings analysis

To address the need for more localised understanding of teacher supply, this analysis takes a different approach to ever more increasing complexity in teacher supply modelling.

For this exploratory analysis, we have looked at a [regional](#) level of geography as defined by the Office for National Statistics (ONS) to test the concept of weighting the national outputs.

We take as given the totals produced by the TSM as national control totals. Then we look at the proportion of ITT trainees (by primary and secondary phase) in each region against this to give us starting region weights to compare to other approaches.

What can the weightings be used for?

These statistics are an experimental first attempt at utilising accessible data to approximate teacher demand by region. They should be interpreted in this light rather than as a direct account of teacher demand by region.

Each individual measure is used in this analysis as a comparison to latest number of ITT places filled as a way of illustrating the differences.

What data are used in this analysis?

The data sources used in this analysis are as follows:

1. [School Workforce Census \(SWC\)](#)
2. [School Census](#)
3. Local Authority Pupil Projections - [published data](#)
4. 2014 ONS Population Projections by age - [published data](#)
5. 2017/18 ITT places filled³⁷

³⁷ [Initial teacher training: trainee number census - 2017 to 2018](#): Provisional recruitment to initial teacher training programmes in England in the academic year 2017 to 2018

All data sources are used to calculate regional aggregates.

Summary of methods

Weightings are defined as:

$$\textit{Weighting} = \frac{\textit{Regional Figure}}{\textit{National Figure}}$$

There are two different approaches explored in this analysis: those based on some form of regional population data and those based on simple causal models.

Regional populations

Weightings based on these approaches assume that the future need for teachers is proportional to the size of the population (pupils/teachers respectively). The advantage of these approaches is that they are transparent and easy to interpret.

The weightings in this category are equal to the proportion of the relevant population within each region. For example, in methodology 1.a, the North West has 14% of the primary-aged pupil population so has a weighting of 14% for primary.

The **key disadvantage of these approaches** is that they do not make use of the teacher behaviour data that the Department holds on key **teacher supply factors such as the number of teachers leaving the profession in each region**, where there are clear differences between different parts of the country.

The methodologies in this category are as follows:

1.a **Current Pupil Numbers** - the number of pupils on roll as of the 2016/17 School Census. We use this approach to account for the number of pupils in each region as a proxy for teacher demand

1.b **ONS Population Projections** - ONS age group population projections for 2020 broken down into primary school and secondary school age groups. This approach attempts to take into account future projected growth in regions by looking at the expected size of the school age population published by ONS

1.c **LA Pupil Projections** - 2019/20 Academic Year Pupil projections provided to the Department by Local Authorities (separate to ONS). This again tries to take into account future demand but instead uses data collected by the Department for capital funding

1.d **Current Teacher Numbers** - headcount of teacher stock as of 2016 SWC. This approach tries to account for differences in staff deployment in different regions by focussing on current teacher numbers rather than pupil numbers

Simple causal models

Weightings in this category focus on known drivers of teacher demand and create estimates using these.

These **approaches offer the benefit of utilising teacher behaviour data** that can be combined with external forecasts.

Again, the weightings in this category are based on the relative weightings of the value shown. For example, in methodology 2.a, 12% of qualified primary teachers leaving the profession were based in the North West, and so the North West has a weighting of 12% for primary.

Methods 2.c and 2.d also account for estimated pupil growth which is likely to be a key driver of future teacher requirements at a sub-national level. The methods utilise pupil growth data via PTR (pupil:teacher ratio) growth assumptions as pupil and teacher numbers do not historically increase/fall in a 1-to-1 relationship. For example, historically as pupil numbers have increased, pupil teacher ratios (PTRs) and class sizes have also increased, so teacher numbers have not grown as fast as pupil numbers.

The methodologies are as follows:

2.a Qualified Leavers (most recent year) - the number of teachers with qualified teacher status that left schools between the 2015 and 2016 SWC. This measure aims to account for replenishment needed in the current teacher stock to match current supply

2.b Qualified Leavers (weighted average four years³⁸) - weighted average of the number of qualified teachers that have left schools over the last four years of SWC data. This measure again looks at replenishment but utilises a weighted average to take account for short-term growth

2.c Qualified Leavers (weighted average) + Pupil Growth (based on region's PTR)
This is based on the number of qualified teachers that left schools plus a simple estimation of the number of extra teachers needed to account for pupil growth; where this simple estimation is based on the ratio of pupils to teachers within this region. This aims to combine two of the main causes of teacher demand; teachers leaving and increased pupil demand

2.d Qualified Leavers (weighted average) + Pupil Growth (based on average PTR)
This is based on the number of qualified teachers that left schools plus a simple estimation of the number of extra teachers needed to account for pupil growth; where this

³⁸ Weighted average from year 1 (most recent year) to year 4 (farthest year) as follows: 40%, 30%, 20% then 10%.

simple estimation is based on the ratio of pupils to teachers nationally. This again combines two of the main causes but looks to add the need for new teachers due to pupil growth on an even basis rather than based on existing differences in pupil:teacher ratios

Findings

Summary of weighting factors

Figure 4.1 shows the outputs for all of the regional weighting factors alongside the actual number of first year trainees on postgraduate ITT courses in England in 2017/18 (see accompanying Excel tables for values for each region). The coloured bars reflect the outputs under the different weightings described above and the black bars are the ITT places allocated in 2017/18.

This chart shows little variation in the outputs of the different measures besides the spike in London demand when taking into account the number of teachers leaving the profession and pupil growth (2.c and 2.d). By comparing to measure 2.b which these build on we can infer that this is down to high pupil growth.

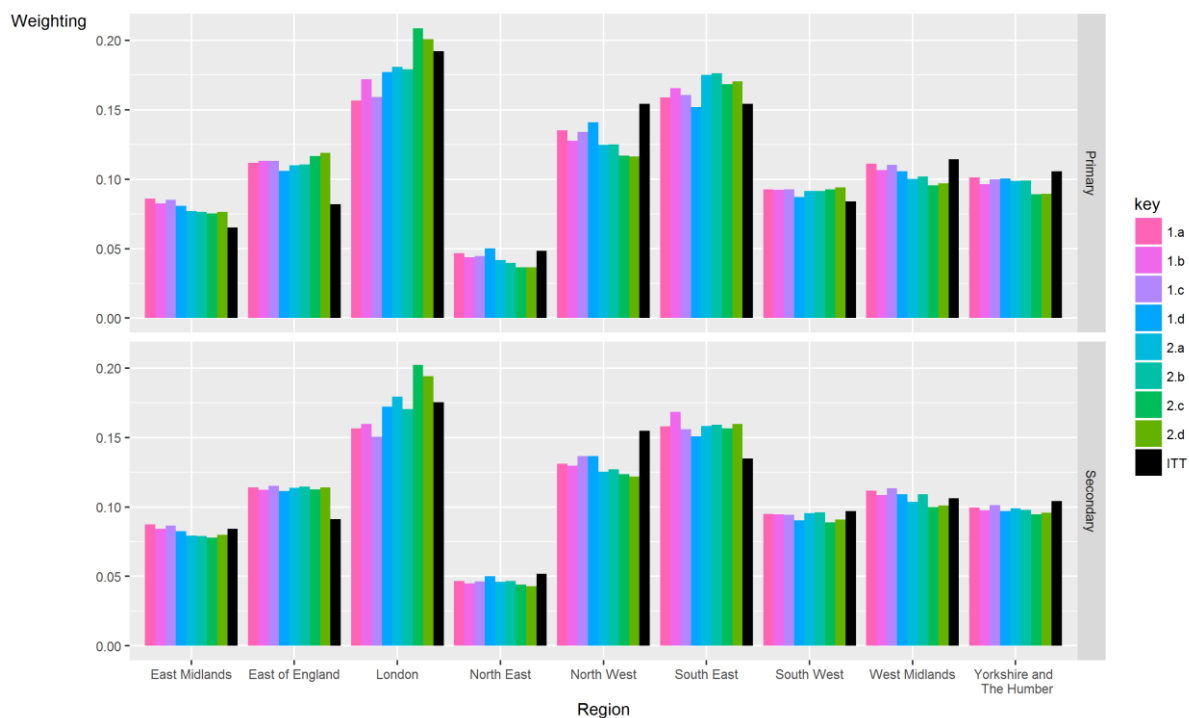


Figure 4.1: Primary (top) & secondary (bottom) weightings for teacher supply

Weightings vs ITT regional

Figure 4.2 compares the ITT weighting measures from the different methodologies compared to the actual distribution of trainees starting ITT within each specific region in

2017/18 for the primary and secondary phases respectively by subtracting one from the other. Again, see accompanying Excel tables for values for each region.

The individual weighting measures for each region (1a, 1b, 1c etc as illustrated within Figure 4.2) have been subtracted from the proportion of trainees that started ITT in 2017/18 in that specific region.

A positive value indicates that the proportion of trainees that started ITT within that region was higher than the estimated weighting measure suggested was needed. For negative values, the opposite applies.

The chart shows that, for primary, the East Midlands, East of England, and South East received a smaller proportion of ITT trainees than any of their measures suggest that they should. Conversely, the North West, West Midlands, and Yorkshire and The Humber had a higher proportion of ITT trainees than their measures suggest.

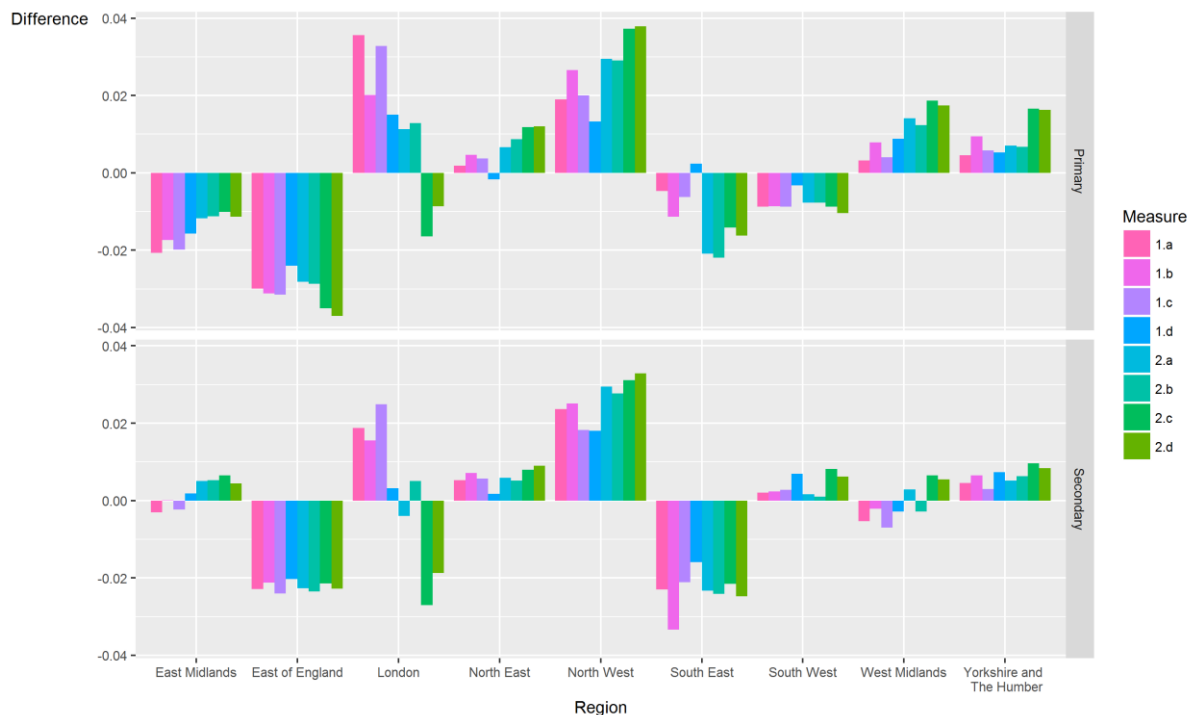


Figure 4.2: Primary (top) & secondary (bottom) weightings differences for 17/18 ITT

5. Decomposing teacher pay progression into within-grade progression and promotions

Our earlier paper in the second Teachers Analysis Compendium³⁹ decomposed pay change across the teaching profession into two dynamics: composition and progression. Composition refers to teachers leaving and joining the state-funded sector and thus looks at changes in the make-up of the workforce. Progression refers to the change in pay for teachers working in the state-funded sector in consecutive years. Both affect average pay in teaching, with progression having a positive effect and composition having a negative effect. In 2015 and 2016, the progression pay rise for teachers who were employed in consecutive years was 3.9% and 4.6% respectively, with an average rise of £1,500 in the first year considered and £1,800 in the second.

This paper extends the analysis carried out in the previous compendium in order to better understand the dynamics of the teacher pay system. Progression within grade is qualitatively different from promotion to a higher grade, the latter of which changes the role and responsibilities of a teacher. In this analysis, the progression pay rise is itself decomposed into those two distinct types.

Summary of key findings

This analysis finds that most teacher pay rises (for those on the main or upper pay range) in 2015 and 2016 – around three-quarters by overall value in 2016 – are linked to within-grade progression, rather than promotion out of grade.

Classroom teachers are paid on either the main pay range (MPR) or the upper pay range (UPR)⁴⁰, and schools can choose at which point within the relevant range a teacher is paid (see Table 5.1). MPR teachers can apply for promotion across the threshold to the UPR, if they demonstrate high competence and substantial and sustained contribution.⁴¹ There are three main leadership posts above these in the leadership pay scale: assistant head, deputy head and head. The analysis presented here looks only at classroom teachers. Leadership posts have not been considered, as the progression and promotion arrangements are very different. The size of a school, the pupil-teacher ratio and the number of pupils with special needs all influence the pay of headteachers. These may

³⁹ Department for Education, [Teachers Analysis Compendium 2](#)

⁴⁰ A small proportion of teachers sit on the unqualified teachers' range, below the MPR. A smaller proportion are designated "leading practitioners" and largely carry out classroom teaching but receive higher salaries. We do not analyse these groups in this paper.

⁴¹ School Teachers' Pay and Conditions 2017 <https://www.gov.uk/government/publications/school-teachers-pay-and-conditions>

change between years, making it challenging to distinguish performance-linked pay rises from increases due to these other factors changing.

Pay range		Rest of England	Inner London	Outer London	London Fringe
Main pay range	Minima	£22,467	£28,098	£26,139	£23,547
	Maxima	£33,160	£38,241	£36,906	£34,249
Upper pay range	Minima	£35,571	£43,184	£39,127	£36,650
	Maxima	£38,250	£46,829	£42,077	£39,331

Source: School Teachers Pay and Conditions Document 2016

Table 5.1: Minima and maxima by pay range, 2016/17

Figure 5.1. illustrates the total pay rise for all MPR teachers in consecutive service between 2015 to 2016. This is to establish the relative size of the two effects (within-grade progression and promotion). This shows that there has been a growth in the within grade progression for those on the MPR between 2015 and 2016, from £226m to £261m (see table 5.2).

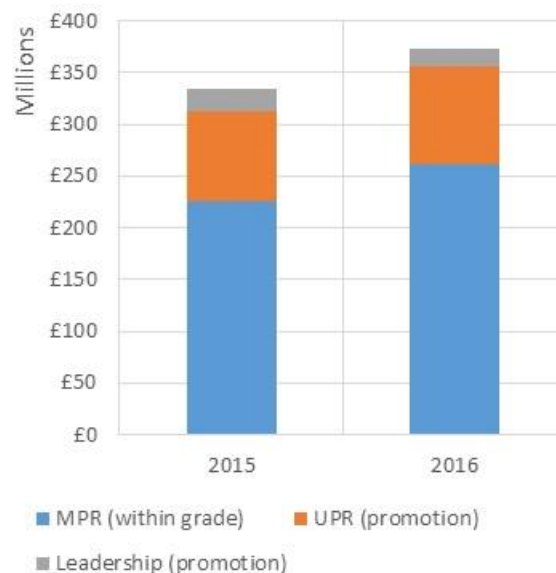


Figure 5.1: Total pay rise for MPR teachers, split by within-grade progression and promotion

MPR	Progression / promotion pay rise, £m (% of total)				
	Teachers moving on to... →	MPR (within grade)	UPR (promotion)	Leadership (promotion)	Total
2015		£226m (68%)	£87m (26%)	£22m (6%)	£335m (100%)
2016		£261m (70%)	£95m (25%)	£17m (4%)	£373m (100%)

Table 5.2: Total pay rise for MPR teachers, split by within-grade progression and promotion: value

MPR	Progression / promotion pay rise, numbers receiving ⁴²				
	Teachers moving on to... →	MPR (within grade)	UPR (promotion)	Leadership (promotion)	Total
2015		124,300	18,500	2,000	144,800
2016		129,000	16,100	1,600	146,700

Source: Schools Workforce Censuses 2015 and 2016

Table 5.3: Total pay rise for MPR teachers, split by within-grade progression and promotion: number of teachers in each group

Most pay progression for teachers on the MPR is in the form of within-grade progression (Tables 5.2 and 5.3). This accounts for over two-thirds of the total pay rise in a year. In 2016, promotion to higher grades made up 25% and 4% for promotion to the UPR and leadership grades respectively. These proportions only vary slightly between 2015 and 2016.

Figure 5.2 considers teachers on the UPR. On the UPR, the overall picture is more skewed towards progression within grade and away from promotion (Tables 5.4 and 5.5). More than three-quarters of the aggregate progression pay rise is linked to within-grade progression, with the proportion rising from 75% to 82% between 2015 and 2016. The remainder goes to teachers receiving promotion to leadership grades.

⁴² Figures refer to numbers of full-time equivalent teachers in each group.

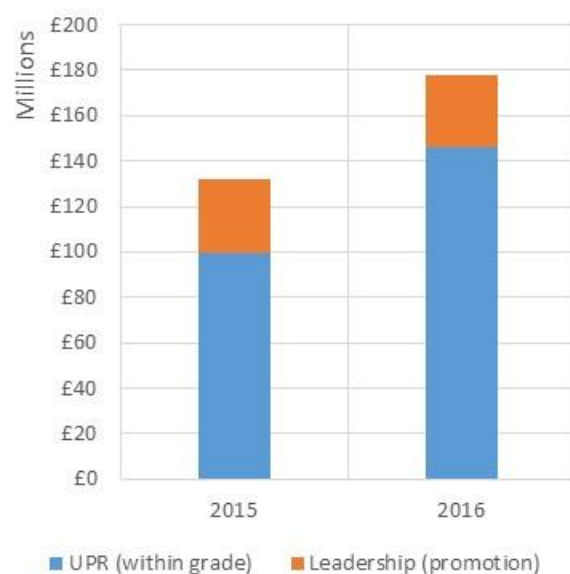


Figure 5.2: Total pay rise for UPR teachers, split by within-grade progression and promotion

UPR	Progression / promotion pay rise, £m (% of total)		
	UPR (within grade)	Leadership (promotion)	Total
Teachers moving on to...→			
2015	£99m (75%)	£33m (25%)	£132m (100%)
2016	£146m (82%)	£32m (18%)	£178m (100%)

Table 5.4: Total pay rise for UPR teachers, split by within-grade progression and promotion: value

UPR	Progression / promotion pay rise, numbers receiving		
	UPR (within grade)	Leadership (promotion)	Total
Teachers moving on to...→			
2015	154,100	5,700	159,800
2016	154,800	5,300	160,100

Source: Schools Workforce Censuses 2015 and 2016

Table 5.5: Total pay rise for UPR teachers, split by within-grade progression and promotion: number of teachers in each group

6. School Leaders' Perspectives on Local Teacher Supply

Introduction and Aims

The Department for Education (DfE) has developed a measure of teacher supply for schools, called the Supply Index (SI)⁴³, which relates to the recruitment and retention of teachers and headteachers. The DfE commissioned the research reported here to assess the accuracy of the SI, in addition to exploring wider perspectives of schools on their teacher supply situation. The full report can be found in Annex A3.

Methodology

A total of 152 interviews were carried out with headteachers (and other senior staff) in schools purposely selected with either a high SI rating (likely to have supply problems) or low SI rating (likely *not* to have supply problems). Interviews were carried out by telephone in November 2016 (high SI) and March 2017 (low SI). It should be noted that responses were not representative of all schools.

Key Findings

Overall issues with teacher supply

- 76% of high SI respondents reported that they had significant difficulties with teacher supply. A smaller proportion (37%) of low SI respondents also reported significant supply issues. Many respondents felt there was a serious shortage of teachers.
- Schools were more likely to report significant difficulties with recruitment of teachers than retention (particularly among low SI schools).
- A majority of respondents from both high and low SI schools felt the recruitment of teachers was getting worse over time.
- Secondary schools were *more* likely to report significant issues with teacher supply. Schools in the “Northern Powerhouse” and maintained schools were both *less* likely to report significant issues with teacher supply.

⁴³ See here for more information on the Supply Index:

<https://www.gov.uk/government/statistics/teachers-analysis-compendium-2>

Specific issues relating to teacher supply

- Respondents cited a number of specific issues relating to teacher supply, including difficulties recruiting for specific subjects, roles and phases; low response rates to recruitment efforts; and the use of temporary agency and supply staff.
- Issues relating to location were cited by a number of respondents. Specific issues related to the accessibility of the school; the quality of staff available in less urban locations; and inequalities between county and London boundaries.
- A majority (79%) of respondents who reported teacher significant supply issues had experienced issues for more than two years and a fifth of high SI schools said they had at least one teacher vacancy at the time of the interview.

Reasons for teacher supply issues

- Low SI schools reported that they fared better than other schools for reasons including the location of the school, low turnover rates in the school, the good reputation of the school, and the school's selective or specialist nature.
- The main perceived impacts of significant teacher supply issues within the school were felt to be the negative effects on continuity or standards of teaching; increased use of agency/temporary staff; and financial effects on the school. This was often felt to be an issue specifically linked to temporary and/or agency staff, who were perceived to be of a lower quality, and in some cases resulted in the standards of teaching dropping.
- The main perceived reasons for significant teacher supply issues (in both high and low SI schools) included the location of the school, and the quality or quantity of newly qualified teachers (NQTs) and new staff.
- When asked what could prompt teachers to leave their schools, respondents cited factors including workload and work-life balance; structural or status changes to the school; school leadership; and personal factors such as a change in circumstances.

Strategies for dealing with teacher supply issues

- Schools described a range of strategies they had used to deal with their supply issues, and some schools reported having to be increasingly creative in the way they recruited teachers. Reported strategies included: taking advantage of academy status and the associated infrastructure and staffing benefits; strategies relating to marketing and advertising; and allowing staff greater flexibility or training opportunities. Strategies relating to policy and management included: discussions on workload with staff; increased planning time; and establishing workload challenge groups.
- Low SI schools were also asked about what strategies they used, and these were most often related to good management and governance; headteachers stated that developing and adhering to policies and procedures put them in a good position strategically. Other strategies reported by this group included proactive

involvement from governors, and processes relating to recruitment such as developing an alumni database from which to recruit staff.

- When asked to consider what else could be done to help the school resolve or minimise the supply issues identified, many suggestions reflected strategies which had already been adopted by respondents. These included: smarter marketing and financial incentives for hard to recruit teachers; building an alumni database from which to recruit; and participating in Initial Teacher Training programmes (which a majority of respondents reported that their schools were involved with).

Annex A1: Methodology for linking initial teacher training records with the School Workforce Census

This annex describes the process taken to link two of the Department's key administrative data resources, namely the [ITT Performance Profiles](#) (ITTPP) and the [School Workforce Census](#) (SWC). The ITTPP dataset records the outcomes of all trainees on ITT courses and the SWC is the Department's main source of data on staff working in state-funded schools in England.

The ITTPP-SWC linked data resource is the first output in a series of work that we are doing to link together a number of various datasets relating to teacher trainees and the teacher workforce. Linking individuals between the ITTPP and SWC datasets enables us to estimate post-ITT employment rates and look at the nature of post-ITT employment. Both Sections 1 and 2 of this report used the ITTPP-SWC linked data resource in their analysis.

The main steps involved in linking the two datasets are as follows:

Preparing the data:

- Identify trainees that have successfully completed their ITT course and been awarded qualified teacher status (QTS) from the ITTPP dataset
- Identify individual teachers across the six SWC censuses

Linking the data:

- Match trainees to the SWC using the Teacher Reference Number (TRN). The TRN is a unique reference used throughout a teacher's career
- Supplement with additional matches based on 'cleansed' surname, maiden name, first name and date of birth information

Preparing the trainee and teacher 'cohorts' for linking

Both datasets in their raw form contain multiple records per individual. Prior to linking, the data is prepared in order to carry forward a unique record per individual.

For the SWC data, each annual census is matched to the previous censuses to produce a longitudinal teacher dataset. Teacher flow data (entrants, leavers and retention) as published in the SWC statistical releases are derived from this longitudinal dataset. Every teacher is uniquely identified in the dataset by a 'Staff Matching Reference' (SMR) and has only one record per year. We use this 'link-ready' longitudinal teacher dataset without further preparation.

A subset of the ITTPP data is prepared specifically for linking. A trainee can appear in the ITTPP data more than once. For example, a part-time or undergraduate trainee will have

a record for each year they are on course. Therefore, the first step is to filter the data to extract only final year trainees. We then filter to look only at trainees that have achieved QTS, as per the focus of the analysis in this paper. Trainees that are still on course, or have withdrawn, left or failed their course are not taken forward for linking.

After filtering, a very small number (<0.5% of all trainees) of trainees in the ITTPP data still have more than one record. This happens for two reasons:

- A school-based ITT trainee is entered by both the school and the HEI partner provider in error. Most of the duplicate records arise for this reason. We select the school record entry as the correct one to keep
- In a very small number of cases, a trainee looks to have completed two ITT courses – e.g. an undergraduate course training to teach Primary, and then later a postgraduate training to teach Secondary. For these cases we have kept just the later record

After filtering and de-duplicating the ITTPP data, we have a dataset of unique trainees to take forward for linking to the SWC's longitudinal teacher dataset.

Matching using Teacher Reference Number

The first stage of linking utilises an individual's Teacher Reference Number (TRN). A TRN is a unique identifier allocated by the Department to trainees as they commence their ITT courses, and remains with them throughout their teaching career. The TRN is present in both datasets, and is considered a high quality data field. We rely on providers to record their trainees TRN accurately, though we have checked the validity of the field and used the Departments 'Database of Qualified Teachers' (DQT) to compare records. We have attempted to complete missing TRNs in the ITTPP data using the DQT.

The TRN is a well-populated, high-quality identifying field present in both datasets and is used to link the vast majority of trainees to the SWC. Of all the matched individuals, approximately 98% are matched using TRN alone.

However, as expected in a large administrative data, there remain a small number of erroneous or missing TRNs that cannot be resolved by the DQT. In the ITTPP data, TRNs are missing for approximately 0.5% of all the ITT trainees included in this analysis. In the SWC data, TRNs are missing for approximately 1% of all records.

Additional matches using personal information

To account for the small number of records in either dataset that do not have a TRN and to reduce any bias this may create, the second stage of linking looks at an individual's names and date of birth (DoB).

Names and DoB information is available in both datasets but we have observed that the quality varies much more than TRN and there is a tendency for differences between datasets. Therefore, our first step is to ‘cleansed’ the data fields containing name information. Aligning both datasets by cleansing the name fields in the same way greatly increases the number of additional matches achieved in this stage.

The cleansing involves:

- Removing anything in brackets – this tends to be nicknames or previous surnames
- Separating out any middle name(s)
- Stripping out all punctuation and whitespace

As well as looking for exact matches on name and DoB, we also use an inexact or “fuzzy” matching technique. This allows us to match an individual despite small differences between the two datasets that may remain even after cleansing. For example, a person may have their name recorded as ‘Elisabeth’ in one dataset but ‘Elizabeth’ in the other. With a series of matching criteria looking at first name, surname and DoB, the fuzzy matching method achieves a link despite the slight difference in first name. As well as accounting for slight differences in name, we also allow for a one-character inconsistency (i.e. a typographical error) in DoB, but only if the name data matches exactly.

Fuzzy matching on name and DOB matches gives approximately 5,000 additional linked trainees. Table A1.1 gives the full breakdown.

	ITTPP (2009/10 – 2014/15)	% matched to SWC
Number of records	346,042	
Number of individuals completing ITT with QTS	196,857	
Number matched on TRN	166,413	97.9%
Number matched exactly on name and DoB	3,387	2.0%
Number matched inexactly on name and DoB information	228	0.1%
Total number matched	170,028	86%
Number not found in SWC	26,829	14%

Table A1.1: Record count summarising ITTPP data preparation and linking

Evaluation of match quality

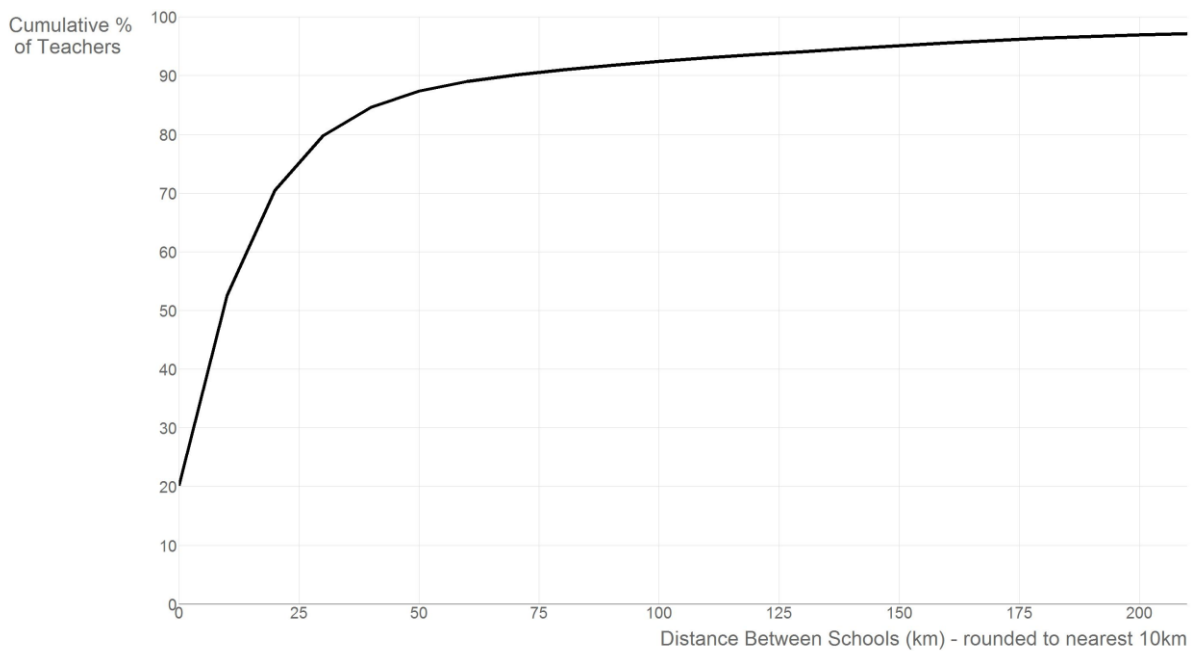
We have done some work to check the accuracy of the matches established. The Levenshtein distance algorithm is a well-established method of measuring the difference between two strings, by counting the number of insertions, deletions and substitutions required to change one string into another. We have used the Levenshtein distance to measure the difference between the name and DoB information in each dataset and derive an overall percentage match-quality score for each matched individual.

The vast majority of individuals have been matched using TRNs. Almost all of these matches (95%) had a perfect match-quality score – i.e. name and DoB matched exactly between the two datasets. Of the remaining 5%, the majority of matches were found to be good quality matches with an acceptable level of difference in name or DoB. For the individuals matched using name and DoB, either exactly or fuzzy-matched, our evaluation of the match quality confirmed they were reliable matches.

In addition to our own quality checks, the Department has previously commissioned work from Dr Rebecca Allen of Education Datalab to develop a linking methodology between the ITTPP and SWC⁴⁴. The Datalab linking methodology in this report is entirely independent of our own and inherently more comprehensive than the one we have used here. However, we have compared the links generated in each case and confirmed that both methods produce highly consistent linked data.

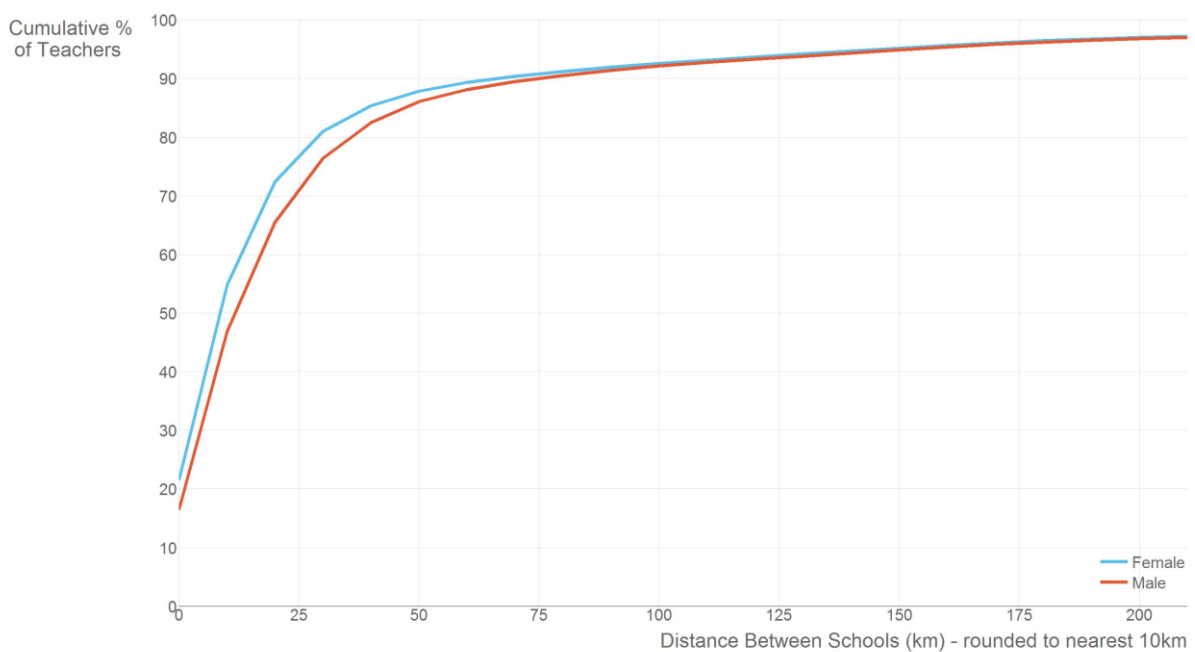
⁴⁴ Education Datalab report: [Linking ITT and workforce data: \(Initial Teacher Training Performance Profiles and School Workforce Census\)](#)

Annex A2: Teacher movement between schools (supplementary charts)



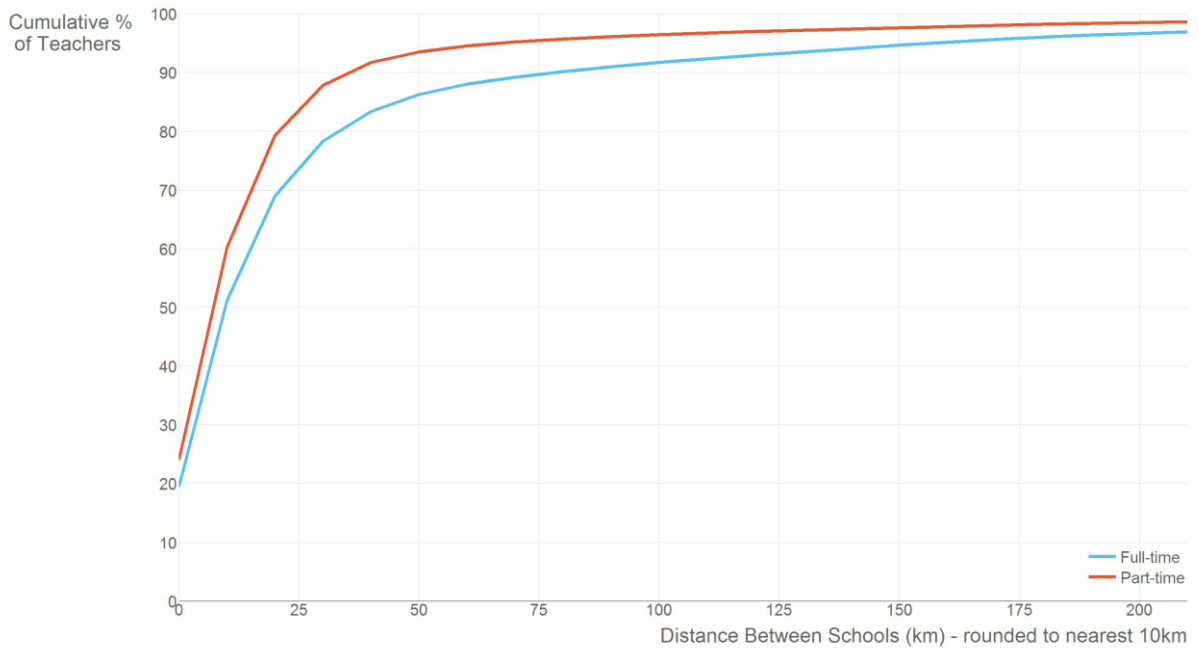
Source: School Workforce Census

Figure A2.1: Cumulative distribution of distance between schools



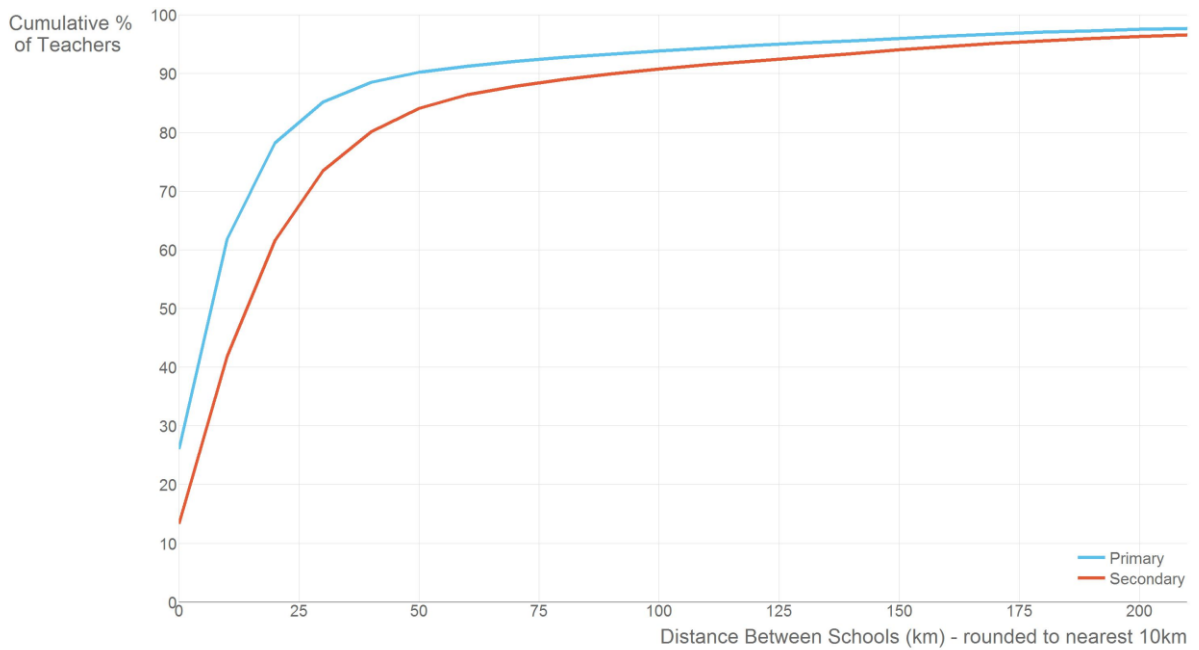
Source: School Workforce Census

Figure A2.2: Cumulative distribution of distance between schools by gender



Source: School Workforce Census

Figure A2.3: Cumulative distribution of distance between schools by working status



Source: School Workforce Census

Figure A2.4: Cumulative distribution of distance between schools by phase

Annex A3: School Leaders' Perspectives on Local Teacher Supply (full report)

Introduction and background

The Department for Education (DfE) has developed a measure of teacher supply for schools, called the Supply Index (SI). This is a composite measure⁴⁵ which is intended to indicate a given school's supply situation. The data for the SI comes from the School Workforce Census (SWC)⁴⁶, for which data is collected in November of a given year and published the following June. It is important to understand how accurate the SI is at predicting a school's supply situation, particularly given this time lag.

The methodology behind the construction of the SI, was published in September 2017⁴⁷. When schools' SI scores are plotted on a map, no large scale geographical trends in SI scores appear. Instead, teacher supply issues appear to vary at a school level.

The DfE commissioned DHE Solutions Ltd to carry out research to assess this through interviews with school leaders.

The key aims and objectives of the research were to explore:

- The accuracy of the SI in predicting a school's teacher supply situation.
- Wider perspectives of school leaders on teacher supply, including any specific issues faced by the schools.

Methodology

The research involved 152 interviews with the individual in each school who was responsible for teacher recruitment; often this was the head teacher, but other senior leaders, business managers and HR managers were also interviewed. Interviewers used short questionnaires⁴⁸, which primarily included open questions about teacher supply within their schools. Interviews were conducted in November 2016 (for high SI schools) and March 2017 (for low SI schools).

Schools were identified through the SWC and were purposely sampled from two groups: those in the "high end" of the SI (predicted as likely to have issues with teacher supply)

⁴⁵ Made up of seven measures for primary schools and eight measures for secondary schools

⁴⁶ <https://www.gov.uk/government/collections/statistics-school-workforce>

⁴⁷ <https://www.gov.uk/government/statistics/teachers-analysis-compendium-2>

⁴⁸ A different questionnaire was used for low SI and high SI schools

and those in the “low end” of the SI (predicted as likely *not* to have issues with teacher supply). In total, 51% of schools had a high SI and 49% had a low SI.

It is important to note that, while the sample was intended to have similar geographic, rural/urban, and Ofsted rating distributions to the population of schools, the primary aim of the research was to provide an indication of the teacher supply situation facing a small group of purposely selected school leaders. The findings are therefore not representative of all schools.

More information on the methodology can be found in A3.1. A copy of the questionnaires used are included in A3.2 and A3.3. Key results tables are included in A3.4.

Schools facing recruitment and/or retention issues

Overall, **76% of high SI respondents stated they had significant difficulties with recruitment and/or retention**, while a smaller proportion (37%) of low SI respondents stated they had significant difficulties. As can be seen from table 1, low SI respondents nearly all reported an issue only with recruitment.

Table 1: Responses to the question “are you having any significant difficulties either recruiting or retaining teachers?”

Indicator	High SI	Low SI
Significant issues with just recruitment	49%	35%
Significant issues with just retention	4%	0%
Significant issues with both	22%	2%
No significant issues	24%	63%

As can be seen from the table, respondents were more likely to report significant difficulties with recruitment than retention. One reason for this may be that recruitment could be perceived as more dependent on external factors (such as supply of qualified applicants in the area), whereas retention may be perceived to be influenced by internal factors (such as characteristics of the school).

Secondary schools were twice as likely to report significant difficulties with supply as primary schools: 68% of respondents who reported ‘no significant issues’ with recruitment or retention were from primary schools and 32% were from secondary schools.

Schools in the Northern Powerhouse were less likely to report significant difficulties with teacher supply: 56% identified significant issues with recruitment/retention compared to 86% for schools in the rest of England. Thirty six per

cent of Northern Powerhouse primary schools identified significant issues whilst 92% of the rest of England secondary schools identified significant issues.

In terms of institution type, **local authority (LA) maintained schools were less likely to report significant difficulties with recruitment and/or retention** (62%) than the average for all schools interviewed (76%). By contrast, *all* sponsored academies and converter academies within the sample reported issues.

Differences were also found by Ofsted ratings; **schools were more likely to report significant difficulties with recruitment and/or retention if they were rated either “requires improvement” or “inadequate”** for: overall effectiveness (87% reported issues), quality of teaching (87%) or leadership and management (90%).

It should be noted that some of these sub groups represent a small number of schools. However, these findings were also supported by wider contextual responses from the interviews.

Sub Level Supply Indexes

As well as an overall SI for each school, experimental ‘sub-indexes’ were created, by weighting different variables within the SI in an attempt to highlight certain types of teacher supply problems. The sub-indexes related to:

- Shortage
- Inflow
- Outflow
- Specialism (secondary schools only)

Responses to the question on whether the school was experiencing significant issues with recruitment and/or retention were analysed against these sub-indexes (and the school characteristics fields) to establish whether there were any significant relationships. **The experimental sub-indexes were not found to predict these types of issues within the school**, and so will not be used further.

Several respondents suggested reasons why indicators could be undermined, including: where the school is very small (so the movement of staff would be exaggerated); where the school is, or has been, restructured; or where the school has converted, or is currently converting, to an academy⁴⁹.

⁴⁹ Note that analysis of responses shows that four respondents who said ‘No’ to Q1 (on whether the school has significant recruitment and/or retention issues) *did* describe significant recruitment problems (in three

Significant recruitment/retention issues faced by schools

Of those who stated that they had significant recruitment and/or retention difficulties, participants were asked *what kind* of significant issues the school faced. Note that participants were able to cite multiple issues.

Among high SI schools:

- A third of all responses related to recruitment/retention difficulties for **specific subjects, key stages, or specific roles**; most commonly: English, STEM⁵⁰, headteacher, ICT⁵¹ and key stage 2.
- Twelve per cent cited the **response rate** to all recruitment efforts as being too low. They gave examples of strategies schools used to recruit teachers including sharing candidate information within a local headteacher forum and contacting ex-pupils and offering to internally train them.
- Ten per cent cited the need to use **temporary staff from agencies, or from overseas**. Many comments indicated that the quality of supply staff was low, and the cost of agencies could be prohibitive.
- **Location** was cited by 16 respondents and included issues relating to remote locations e.g. rural, or cost of living / affordability of housing; poor public transport; and county borders or London fringe areas having schools nearby which offered better pay.

Among low SI schools:

- Forty four per cent cited significant difficulties with **recruitment to particular subjects** with maths and science being cited most frequently, followed by English, geography, physics and modern foreign languages (MFL).
- 10 respondents felt dealing with a **poor response rate** to all recruitment efforts was a significant issue.
- Other issues mentioned by these schools included finding cover for maternity leave, poor quality newly qualified teachers (NQTs), and issues with Ofsted ratings.

cases) and retention problems (in one case). The sub-indexes were run again against Q1, with these records set to “yes”. However, there were no changes to the relationship of the indexes.

⁵⁰ Science, technology, engineering and mathematics

⁵¹ Information and communications technology

It is notable that among both sets of schools the most frequently cited issues were those relating to specific subjects/roles/phases in education, and those relating to low response rates to recruitment efforts.

When asked to select **the most severe supply problem the school faced**, respondents across both groups most commonly cited **low response rates to recruitment efforts**⁵². Despite what respondents perceived as increased efforts, schools received very low, or in some cases no, responses. This was qualified several times by comparing to higher response rates two or three years ago. Some stated that they worked in teaching schools yet could not attract new or young teachers.

Less significant issues relating to recruitment and/or retention

Respondents were asked whether their school experienced any other issues with recruiting and retaining teachers, i.e. distinct from the more “significant” issues previously discussed. Note that respondents could cite multiple issues.

Among high SI schools:

- Issues with retention related to **high turnover of staff**, with teachers moving “sooner and younger”; respondents felt that, having invested in their development, the teachers then moved on. One respondent commented that they felt “the tradition of staying is disappearing”.
- **Size and structure of the school** was occasionally an issue for respondents. For example, if the school was felt to be too small to retain teachers for a long time (and particularly for younger staff). Other related factors that influenced retention included uncertainty attached to transition to academy status; closure of the school; or uncertainty around the school’s status as a middle school and what this means for supply.
- Comments were made by participants relating to **Ofsted**, including the perception that the rating (high or low) put teachers off applying, or that NQTs could not be engaged whilst the school was in special measures. Ratings, including Outstanding and Special Measures, were reported to put teachers off for a variety of reasons, including high expectations or pressure to improve within a timeframe.

Less significant issues mentioned among low SI schools were broadly similar to those mentioned above. Two schools specifically reported issues around fewer teachers from the EU coming forwards; other schools talked about their expectations of this issue continuing going forwards, and the expected effects exiting the EU would have on recruitment.

⁵² This was cited by 15 schools

Location

Location was mentioned by over a third of respondents in one or more of their answers, and a number of supply difficulties relating to location and teacher supply were raised through the interviews:

- **Accessibility:** schools could be remote or hard to get to, i.e. not accessible by public transport⁵³.
- **Quality of staff:** In some cases, distance from the nearest city was felt to make it harder to recruit a “good calibre of staff”.
- **Inequalities of county or London boundaries:** a number of respondents stated that schools near a county or metropolitan fringe created problems when pay was inequitable on each side. County borders were also felt by some respondents to draw applicants towards particular schools (and counties) with more positive reputations.
- **Expenses and costs:** Respondents from both inner and outer London schools referred to affordability of housing, cost of living and expense of commuting. Some referred to losing out to overseas posts, particularly in the Middle East, while others stated that teachers were moving north for promotion and more affordable living costs.

The rurality⁵⁴ of the school was also analysed, given the number of responses relating to location. However, **the rurality of the school was not found to make it more likely that the school would have significant recruitment and/or retention issues.**

Vacancies and supply issues over time

Schools were asked how long they had experienced their significant difficulties with supply. **A majority (79%) of the respondents had experienced issues for two or more years**, and just over one quarter (27%) had experienced issues for five or more years. Only one school had experienced issues only in the last six months.

Low SI schools were asked about their supply situation over the past 3-5 years. **Most (72%) low SI schools believed their supply situation was getting worse**; over a quarter (28%) believed it had remained the same, and no respondents felt the situation was getting better. Most (63%) of the low SI schools felt the situation would get worse over the next three years, while 37% felt it would remain the same.

⁵³ Note that this issue was specifically mentioned by those in schools in East Cambridge, East Sussex and the Isle of Wight.

⁵⁴ Rurality was defined according to a DEFRA measure and included categories such as “largely rural”, “rural with city and town”, “urban with major conurbation”, etc.

Respondents were asked about teacher vacancies within their school. **A fifth of high SI schools reported that they currently had unfilled teacher post/s.** A majority of high SI schools reported either that current posts had been vacant for more than four weeks or that their previous vacancy had taken this long to fill, while around four in ten (43%) had had vacancies for a school term or longer. Nine schools had recruited via an agency for their previous teacher vacancy. Comments from these respondents indicated that the difficulty in recruiting was sometimes dependant on the time of year, and how much notice the leaving teacher had given. By contrast, low SI schools who had vacancies more often had either had the vacancies for fewer than eight weeks, or had taken less than eight weeks to fill their previous vacancy, irrespective of whether they identified significant issues or not.

Respondents were asked how many applications they had received for their last teacher vacancy. **Most of the high SI schools responding to this question had received fewer than five applications for their last teacher vacancy.** Low applicant numbers also affected the low SI schools with six of the 10 receiving five or fewer applications for their last teacher vacancy. Where schools had no significant problems, irrespective of whether they were from a high or low SI school, applicant numbers were higher. Respondents were also asked what they thought the reasons were for not being able to fill the posts. The main reasons cited were that the quality of applicants was perceived to be too low and that agency staff quality was low.

Comparisons with other schools

Low SI schools were asked how they felt they compared with other schools (both locally and nationally) in terms of recruitment and retention of teachers. Locally, a majority of low SI schools felt they fared better (31%) or the same (41%) as other schools, and a fifth said they didn't know. A minority thought they fared worse.

Reasons given by participants who felt they fared better than other local schools included:

- **Geography/location** of the school, i.e. if they were in “leafy suburbs” or if they were village schools, which respondents felt were attractive to teachers (including the associated cohorts of pupils in these areas).
- **Low turnover**, which respondents felt gave them an advantage over competitors.
- **Good reputation** (including of the MAT⁵⁵ they were part of, where relevant), e.g. of the management and general ethos of the school.

⁵⁵ Multi-Academy Trust

- **Selection / specialism** of the school, i.e. if the school was selective in nature, or had a specific specialisation, they did not see the same turnover as other schools.

When asked about how their school compared with other schools *nationally* in terms of teacher supply, the majority (77%) of SI schools did not know how they compared, though some schools felt they performed better and a smaller minority felt they fared the same. No one thought their school fared worse.

Impact of supply issues

Respondents were asked about any impacts of their teacher supply issues. Respondents were able to cite more than one impact, which is reflected in the findings below.

- A fifth (20%) of all responses related to the **continuity of teaching or standard of teaching for children**, i.e. they perceived supply issues to affect teaching in a negative way.
- Fifteen per cent of respondents stated that supply issues increased their **use of agency or temporary staff**. There was generally a reluctance to use these staff due to the associated costs and perceived quality of the staff, particularly if they were provided as short term supply.
- Eleven per cent of respondents cited **financial effects** of supply issues, including instances of the school running into financial deficit, having to adjust budgets, or having to offer higher salaries to attract teachers.
- Other perceived impacts included effects on staff morale, strategic management/planning, reduced quality of teaching, and staffing adjustments.

Reasons for supply issues

Respondents were asked about the reasons behind their supply issues. Nearly a third of comments related to location as a reason behind their supply issues (as discussed in more detail in section 4.4). Twelve per cent felt their supply issues were related to the fact that NQT / new staff were not as well trained or prepared as they had been previously, or that training course numbers have been cut. Further reasons included the school's Ofsted rating, the size/structure of the school, and the reputation of the school.

Respondents were also specifically asked about teacher supply issues which were outside of the school's control, and associated areas for improvement. Many of these comments related to DfE policy. These included a perception that changes in curriculum and assessments were too regular (which they felt resulted in staff leaving the sector). An issue was also raised around the government needing to publicly acknowledge the teacher supply problem, and improving marketing to more accurately portray

teachers/teaching. Suggestions were also raised around providing greater managerial support to headteachers and help with the cost of living for teachers.

Respondents were asked to give the main factors they felt might influence teachers' decisions to *leave* their school. Some of the reasons given could be classified as "positive", for example promotion or personal development for the teacher. The teacher's family moving away was also mentioned. However, many of the reasons given were more negative for the school, and related to stress, pressure and expectations. These included:

- **Workload** - including the perception that greater demands had been placed on them, e.g. from curriculum changes. Other workload reasons included high or increased workload, and workload created when there were too many roles to fulfil in a small school.
- **Change of school status** - including the idea that some teachers did not want to work for an academy.
- Where schools were currently **middle schools and the associated uncertainty** of what any changes to their structure would mean, and what their future in the school would be.
- **Where other schools were perceived as more appealing**, for example if they thought the role would involve higher salaries or less pressure for the teacher.
- **Work-life balance** - for example, where individuals are balancing personal commitments (such as family) with the long teaching year / week.
- **Disillusionment with the teaching sector** was also brought up as a potential reason, including disillusionment with the teaching system itself, and the desire to leave the sector and return to other professions. Issues were raised in relation to the administration required by teachers and that the "goal posts" change too often.
- **Economic reasons**, which were often related to the location of the school, i.e. the high cost of housing and travel time; and the need to move to a more convenient school.
- **Leadership reasons**, including a change of leadership and structure within the school; successful leadership leaving the school and other teachers following; and expectations from headteachers⁵⁶ causing teacher to leave.

⁵⁶ While many headteachers were interviewed, responses were also received from other senior staff.

- **Teachers moving overseas**, which was said to be appealing for tax reasons, to gain specific experience, or if teachers had to return to their country of origin following the expiry of a visa⁵⁷.

Strategies to address teacher supply challenges

Respondents (in both high and low SI schools) were asked what strategies their schools had put in place to address teacher supply challenges, including any temporary measures. Schools reported a range of approaches and strategies:

- Respondents from academies reported **taking advantage of the academy or MAT infrastructures and specialist positions** (e.g. recruitment or HR specialists) to help with teacher supply.
- Responses relating to **advertising / marketing** included taking advantage of the timing and positioning of adverts in papers; advertising on social media; advertising overseas; increasing the amount of advertising; and using LA or county marketing mechanisms.
- A number of respondents described strategies around **flexible working**, including subject specialists teaching other subjects; teachers acting up; senior management teaching lessons; unqualified teachers and teaching assistants teaching lessons; rotation of groups; and bringing teachers out of retirement and using them on an *ad hoc* basis. Respondents also reported allowing individuals flexibility around cheaper public transport or childcare needs.
- Respondents described strategies related to **training**, included regular continuous professional development (CPD) and leadership training. One respondent commented that once teachers were “through the door we invest heavily in CPD”.
- Strategies relating to **policy and management** included: discussions on workload with staff; increased planning time; establishing a workload challenge task group; proactive policies on grievance and behaviour management; and utilising the location of rooms (e.g. supply staff were placed next to experienced staff).

Low SI schools were also asked what strategies they adopted to ensure they maintained a good complement of teachers:

- The types of strategies most often cited by this group related to **good management and governance**; headteachers stated that developing and adhering to policies and procedures put them in a good position strategically. An

⁵⁷ Note this was mentioned by three participants.

example from one respondent was the use of a “strong behaviour policy” which they felt removed the hassle for teachers of dealing with low-level issues around pupil behaviour.

- Respondents also cited **pro-active involvement from governors**, particularly around recruitment and staff decision-making.
- A number of **processes relating to recruitment** were also described including; the use of “business style” questioning on candidates’ judgement, drive and influence; implementing a salaried route to improve recruitment competition; retaining maths teachers by paying more; and developing an alumni database from which to recruit staff.
- Respondents described **pro-active behaviour around recruitment** including: advertising early to get higher quality NQTs, as well as pre-empting teachers who are going to leave and taking the risk of being overstaffed.
- Other strategies (similar to those discussed above) included a strong ethos in the school of training; taking advantage of the schools’ structure, i.e. if they’re a MAT; and using advantages around a school’s location such as affordable property or the perceived stability of the area.

Respondents were also asked what else could be done to help the school resolve or minimise the supply issues they identified. Many of the suggestions reflect strategies which have already been adopted by respondents. Suggestions included smarter marketing and financial incentives for hard to recruit teachers e.g. science, maths and English; building an active alumni database from which to recruit, track and contact ex-students; and participating in initial teacher training (ITT) programmes (discussed below). Other issues and suggestions for improvement included improved regulation of commercial recruitment agencies, which were perceived to be “too expensive” and aggressive within the market. Some thought there was nothing more they could do.

A majority of respondents reported that their schools were involved with at least one ITT programme, while just over a third (35%) were not. The ITT programmes mentioned included national programmes, such as Teach First, as well as local school-centred ITTs (SCITTs). Some respondents were more vague about the ITT programmes their school was involved with and did not mention programmes by name. Most of those involved with an ITT scheme said that it had helped them with recruitment and many had recruited teachers directly through the schemes.

A3.1 Methodology

The project was conducted in two stages. Stage 1 focused on the high end of the SI, i.e. schools where the SI indicated that the supply or retention of teachers was likely to be problematic. Stage 2 focused on the low end of the index, i.e. schools where the SI indicated that problems with the supply or retention of teachers was likely to be low. The sample came from school records from the previous annual SWC (November 2015). In total, the research comprised 152 responses, 79 (52%) of which were with individuals in primary schools and 73 (48%) in secondary schools.

A1.1 Stage 1: High SI schools

At stage one, 330 school records were used which were expected to have high SI. Of 322 schools approached, 100 took part in the research. Ninety per cent of the schools had a high SI, whilst 10% had a low SI. The sample included both primary (40%) and secondary (60%) schools.

A1.2 Stage 2: Low SI schools

During stage two, 189 schools were contacted (from an original sample of 205 schools with low SI) and 52 agreed to take part in the research. The sample included primary (50%) and secondary (50%) schools.

A1.3 Sampling and fieldwork

In order to maximise response rates, schools were contacted up to four times and were also sent a follow up email by the DfE. Interviews were held by telephone with the person responsible for teacher recruitment and these included head teachers, deputy and assistant heads, business managers, HR managers, bursars or representatives of the MAT to which the school belonged.

A different questionnaire was used for each stage of the research, which can be found in appendices 2 and 3. Many of the respondents' answers did not fit neatly into the prepared lists, as contextual information so often determined the response. Two respondents offered information on a second school (where they had previously been a headteacher) which provided better examples than the school they currently worked in.

To quality assure the responses, transcripts of the interviews were returned to the respondent, resulting in some minor additions and alterations. Two respondents also changed their response about whether they were experiencing supply issues from 'No' to 'Yes' at this stage.

A1.4 Limitations

As with all qualitative interviews, the responses represent the perspectives of the participants. Given the respondent was a senior member of staff within each school, their responses may contain elements of speculation where views are given on, for example, why teachers leave or may not apply to their school. Head teachers also may be inclined

to play down areas of weakness where criticism may be levelled at them or their senior management team.

Due to the aims of the research, schools were purposely selected when they had a certain type of SI indicator, in order to provide detailed insight into their individual supply situations. The schools were therefore not sampled randomly and are not representative of all schools. While efforts were made to include a mixture of schools, any conclusions drawn from the findings can only be said, with confidence, to apply to those schools who took part in the study.

A3.2 Stage 1 Questionnaire

1. Are you having any significant difficulties either recruiting or retaining teachers? If yes, can you tell us about the kind of issues you're facing?
2. Are there other issues with recruiting and retaining teachers which your school experiences?
3. How long have you experienced each of these supply (recruitment or retention) issues? *Less than half a year, between half a year and a year, 1-2 years, over two years*
4. Which of these problems are the most severe and why? *Using prompt list*
5. Thinking about the issues we have raised, what do you think are the reasons behind them? *Using prompt list*
6. What do you feel has been the impact on the school of the above supply problems? *Using prompt list*
7. What strategies have you put in place to address the issues, even just temporarily?
8. If you are involved in ITT, has your involvement in ITT helped you to recruit? Have you subsequently taken on ITT participants who trained at your school?
9. What else do you think needs to be done to help you resolve or minimise the issues identified?
10. Are some of the issues outside of your control, if so which, and what would need to be done externally?
11. Do you have any unfilled posts currently? If yes, how long have the posts been vacant and how many times have you advertised it/them (list individually if more

- than 1)? How many applicants did you receive and assuming more than 0, why weren't they suitable?
12. What do you think the reasons are for not being able to fill the posts (if not already discussed in earlier questions)?
13. Thinking specifically about retention, what do you think are the factors which might influence teachers' decisions to leave your school? *Using prompt list*
14. How far are your teachers prepared to move or commute? (i.e. geographical reach)
15. What percentage of teachers has moved from outside the area to teach at your school?
16. The DfE is aiming to run pilots of support measures designed to help address teaching supply problems. Would you be interested in taking part in future pilots? The initial contact would be just a short telephone conversation. *Yes/No*

A3.3 Stage 2 Questionnaire

1. Are you having any **significant** difficulties either recruiting or retaining teachers?
 - a. If yes, which issues are you facing? (prompt from *Table 7*) *If No go to Q3*
 - b. Would your answer to this question vary depending on the time of year? And if yes, how?
2. How long have you experienced each of these supply (recruitment or retention) issues? (*Table 9*)
3. Are you having any **minor** difficulties either recruiting or retaining teachers?
 - a. If yes, which of the following issues are you facing? (*Table 7*)
4. How long have you experienced each of these supply (recruitment or retention) issues? (*Table 9*)
5. How has the situation changed in the last 3-5 years?
6. Thinking ahead to the next 3 years, do you think you will have greater problems recruiting or retaining teachers? Y/N
 - a. If yes, how will you deal with these challenges?

7. Thinking about your last substantive teacher vacancy, how long was it vacant and how many times did you advertise it?
8. What are the knock on effects of not being able to fill the vacancy (ies) as quickly as you would like? (table 11)
9. How do you think your school compares to schools near to you when thinking about teacher supply?
10. How do you think your school compares to schools nationally when thinking about teacher supply?
11. What strategies have you put in place to address the issues, either previous supply issues that have since disappeared, issues that would be affecting you currently or to ensure they don't appear as an issue in the future? (Table 13)
12. The DfE is aiming to run pilots of support measures designed to help address teaching supply problems. Would you be interested in taking part in future pilots? The initial contact would be just a short telephone conversation. *Yes/No*
13. Would you be happy to email your two most recent job adverts, so we can better understand how you fill your vacancies? Please could you detail whether these jobs were filled easily, you struggled to recruit, or you didn't.

A3.4 Key results tables

Table A3.1: High SI schools by phase and area

Area / level	Count	Significant issues	Recruitment	Retention	Both
Northern Powerhouse (primary)	14	36%	7%	14%	14%
Northern Powerhouse (secondary)	18	72%	39%	0	33%
Rest of England (primary)	33	82%	58%	3%	21%
Rest of England (secondary)	25	92%	68%	4%	20%

Table A3.2: Type of significant issue experienced

Category	Count (High)	Count (Low)
Specific subjects / key stages / specific roles	71	33
Response rate to recruitment efforts	26	10
Agency staff	20	4
Location of school	16	0
Size / structure of school	14	0
Retention issues	12	0
Changing situation of school	8	0
Headteacher-related	6	0
Quality of teaching	6	6
Working practice terms & conditions	5	0
Ofsted	0	4

Table A3.3: Most severe supply problem experienced

Category	Count
Low response rates to recruitment efforts	15
Quality of teachers / teaching	10
Location of school	9
Size/structure of school	8
Continuity for children	6
Supply agencies	6
Perceived quality of NQTs	6
Budget	7
Perception of teachers / negative press	6
Specific subjects	6
Retention issues	5
Count	84

Table A3.4: Impact on school

Category	Count
Continuity / standards for pupils	48
Increased use of agency / temporary staff	36
Financial implications	26
Staff morale	21
Strategic management / planning	19

Reduced quality of teaching	18
Staffing adjustments	17
Parental/carer concerns	15
School standards	10
Increased workload for some staff	6
Retention problems	4
Reputation	3
Reducing pupil roll	3
Head has to teach lessons	3
Pupil behaviour	3
Vacancies	2
Count	235

Table A3.5: Strategies to improve supply

Category	Count
Advertising / marketing	47
Flexible working	41
CPD / training	32
Policies / practices / management / governance	26
Staff team building / motivation	21
Agencies	20
In-house promotion / “grow your own”	20
Strategies relating to academy / MAT status	17
SCITT / university / teaching school	14
Financial / other incentives	8
Quality Assurance	7
Restructuring curriculum, classes	6
Local networking	5
LA support	4
Shared resources across schools	2
Collaborative working	2
Timing of recruitment	2
Count	274



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