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TeachFirst

# The careers of Teach First Ambassadors who remain in teaching: *job choices, promotion and school quality*

***Report to Teach First by Education Datalab***
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## Executive summary

In this report we explore the careers of individuals who began the two-year Teach First Leadership Development Programme between 2008 and 2012. Specifically, our research focuses on those who completed the programme – a group sometimes referred to in this report as 'ambassadors' – and chose to remain teaching in state-funded schools.

We compare the career profiles of these Teach First teachers to a matched group of teachers who embarked on a PGCE route into the profession at the same entry years as the Teach First group. The two groups share key characteristics including gender, ethnicity, age and QTS subject, we have not been able to match on degree class.

We found that, while there are variations between the retention profiles of these two groups in state-maintained schools in England, there are also marked differences between the speeds of progression into leadership roles within schools, and – crucially – between those achieving QTS who even go on to pursue teaching at all.

Indeed, whilst similar proportions of each group of teachers achieve QTS at the end of their first years, a larger proportion of PGCE trainees never go on to actually teach. Consequently, a higher proportion of Teach First teachers than PGCE teachers remain the classroom in year 2.

By year 3, however, the picture does begin to alter, with a higher proportion of PGCE teachers choosing to remain in the classroom, although this does balance out again after year 4.

Our research also reveals that Teach First teachers are over seven times more likely to progress to senior leadership positions in schools early in their career compared to teachers trained through HEI routes. In November 2014 there were 75 Teach First teachers in senior leadership roles compared to ten in the matched sample of PGCE teachers.

Salary data also suggests that Teach First teachers are taking on more middle leadership positions than non-Teach First teachers, earning £3k and £6k more than their counterparts by years 3 and 5 respectively.

Across both groups, those who qualified as teachers more recently are less likely to remain in teaching for a third year.

All Teach First teachers are placed in schools in low income communities and they are also much more likely to be placed in schools in challenging circumstances; schools that are Ofsted Requires Improvement. After three years in teaching Teach First teachers are twice as likely to teach in schools serving low income communities compared to teachers from other training routes.

A lower Ofsted rating is associated with higher wages by year 3. Selection is important here: these are just the wages of those who choose to remain in teaching and not those who left. It is possible that having an initial placement in a school judged unsatisfactory is challenging, such that succeeding in the placement and choosing to remain in teaching reflect a particular talent for the job.

In addition, teachers initially placed in regions outside of London are generally less likely to remain in teaching for a third year, although those who do continue teaching are most likely to stay in the region in which they trained.

# Introduction

Teach First has been placing graduates into schools in challenging circumstances since 2003. These schools have traditionally struggled to recruit high quality teachers and maintain low teacher turnover.[1] The Teach First participants commit to teach up to 80% of a standard teaching load for two years following six weeks of intensive basic training and are able to achieve fully qualified teacher status (QTS) by the end of the programme, with in-school and partner university support throughout. Over the past decade the scheme has grown from 186 graduates in 2003/4 to almost 1700 graduates in 2015/16, it has extended its reach from London into all the regions of England and Wales, has expanded its recruitment to include later career participants and since 2008 has placed participants in primary schools. Earlier research evaluated whether the placement of Teach First participants altered the educational outcomes of pupils at the age of 16, finding gains of over 5% of a subject grade from the placement of a Teach First participant in a departmental teaching team of six teachers.[2]

After two years, many choose to remain in teaching as Teach First Ambassadors, with the rest pursuing careers in other education and non-education-related fields. This report provides a high-level secondary data analysis of the careers of former Teach First participants who choose to remain in state-funded schools as Ambassadors. Data is drawn from Teach First's own records, the Initial Teacher Training Performance Profiles (ITTPP), five years of the School Workforce Census from November 2010 to 2014 and the National Pupil Database.

The research addresses five research questions:

1. How do **overall retention rates** of Teach First participants compare to a similar group of teachers who began their PGCE training at the same time?
2. What are the individual and school placement characteristics of those Teach First participants who choose to remain in teaching in **year 3 onwards**, compared to those who don't?
3. **Where are** Teach First Ambassadors teaching in years 3 and 5 of their career? How do these schools compare to schools chosen by similar PGCE-route teachers and how do they compare to their initial placement school?
4. What types of Teach First Ambassadors achieve rapid **promotion** and what types of school/job movements do they use to make this possible? Do Teach First Ambassadors achieve faster rates of promotion compared to similar PGCE teachers?

[1] For estimates of teacher turnover see Allen, R., Burgess, S. and Mayo, J. (2012) *The teacher labour market, teacher turnover and disadvantaged schools: new evidence for England*, CMPO working paper No. 12/294 and DoQSS working paper No. 12/09.

[2] Allen, R. and Allnutt, J. (2013) *Matched panel data estimates of the impact of Teach First on school and departmental performance*, DoQSS working paper No. 13/11.

## The matched PGCE sample

The Teach First participants that we study in cohorts beginning summer 2008 to summer 2012 are very different in their characteristics to teachers who train across other routes. So, throughout this report we compare their teaching careers to a group of similar individuals who began a full-time PGCE at a Higher Education Institution (HEI) at the same time.[3] Note that the comparison means that, whilst Teach First participants are in school from September in year 1, the matched PGCE students are on HEI-based courses that involve a series of school placements. We cannot identify where these placements are. Both the Teach First and PGCE participants should achieve QTS at the same time.

Our Teach First participants are matched on a small set of background characteristics available to us for the PGCE students (see method at end of the report for further details on procedure). These are: gender, ethnicity, age, QTS subject and cohort year. Table 1 shows the differences in the characteristics between the total sample of PGCE students and the matched PGCE students that we use for analysis in most of this report. We choose not to match on other characteristics available to us for a number of reasons. We decided that region of training and placement is not a fixed characteristic of the individual, especially in the case of Teach First where participants are often placed in an area where they have no previous attachment. The undergraduate degree class is missing for many PGCE students and is not particularly useful because there is no split between the 2:1 and 2:2 degree class.

[3] A PGCE – Post Graduate Certificate in Education – can be awarded via many training routes. We use it here to mean studying for a PGCE at an HEI, which remains by far the most common training route.

Table 1: Characteristics of the matched and unmatched PGCE cohorts

| | Unmatched PGCE cohort | Matched PGCE cohort | Teach First cohort |
|---|---|---|---|
| N | 102,438 | 3,203 | 3,203 |
| % female | 69% | 63% | 63% |
| % BME | 14% | 15% | 15% |
| **Cohort year:** | | | |
| 2008 | 20% | 12% | 12% |
| 2009 | 21% | 16% | 16% |
| 2010 | 21% | 18% | 18% |
| 2011 | 19% | 24% | 24% |
| 2012 | 19% | 31% | 31% |
| **Age at QTS:** | | | |
| 20-22 | 29% | 8% | 8% |
| 23-24 | 34% | 51% | 51% |
| 25-29 | 10% | 37% | 37% |
| 30-34 | 4% | 3% | 3% |
| 35-39 | 9% | 1% | 1% |
| 40-65 | 8% | 0% | 0% |
| **PGCE subject:** | | | |
| Other secondary | 29% | 27% | 27% |
| English | 7% | 26% | 26% |
| Mathematics | 9% | 20% | 20% |
| Science | 16% | 18% | 18% |
| Primary | 40% | 10% | 10% |

## I – Overall retention rates at Teach First

In this section we explore retention rates by training route. It is important to note that retention here is defined as continuing to teach in a state-funded school in England. Many teachers may continue to teach in the independent sector, in Wales, Scotland or overseas, or in further education. None of these will be identified in the School Workforce Census.

Teachers are tracked through our datasets using fuzzy matching techniques via their Teacher Reference Number (TRN), their names, date of birth, gender and ethnicity. The School Workforce Census allows us to estimate a lower bound on retention rates by route. The actual retention rate will be higher, for two reasons. First, where TRNs are missing or incorrect and names are inaccurate, there is a chance our matching fails to correctly track the individual. Second, there are clearly many missing records in School Workforce Census where a school has failed to submit a complete return on their teachers. This problem appears to be particularly acute for teachers employed whilst working towards QTS, perhaps because they have only just joined payroll and the school is not storing their details correctly in the November after they join or perhaps because the school does not understand that they must be included in the return (see the Data section for more details).

We can use the data Teach First holds on their own participants to illustrate the extent of the missing records problem in School Workforce Census. The bars in Figure 1 shows the inflows and outflows of teachers participating in Teach First, according to the School Workforce Census. In the November of year 1 of their placement, we know that 96% of starting participants are still teaching but only 90% are found in the census (a difference of 6 percentage points). In the November of year 2 of their placement there is a 4 percentage point difference between the number of teachers found in the census (83%) and those we know are still teaching (87%). There are even a few occasions where the School Workforce Census records a teacher present who has left according to Teach First records. Moreover, we have a small inflow of teachers in year 2 that were supposedly not teaching in year 1, which cannot be correct. After year 2 we do not have accurate records of how many former Teach First participants have remained in teaching, but it is reasonable to assume that the census is understating the figure by, at most, 6 percentage points. It is likely that the understatement of retention falls as careers progress since more mature teachers are more likely to remain in the same school and thus be accurately recorded in the census.

Figure 1: Teach First inflows and outflows from School Workforce Census

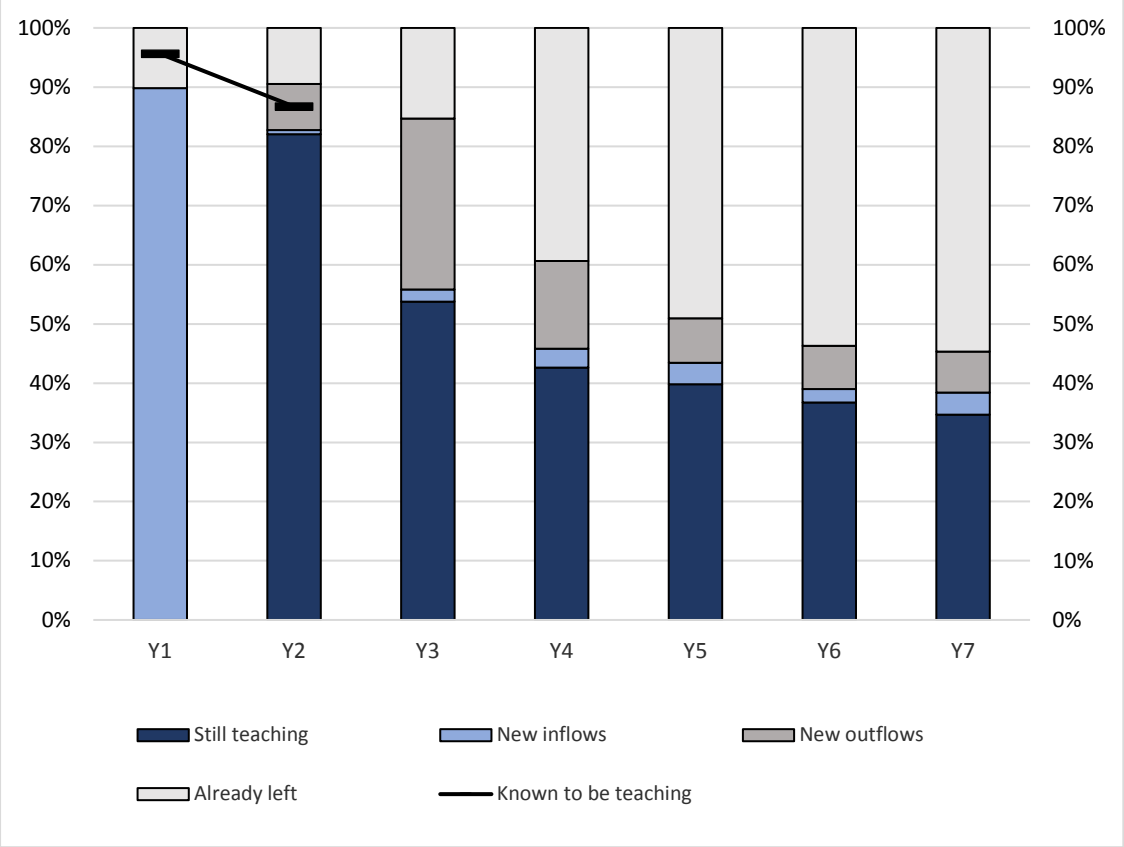



Figure 2 shows the presence of the Teach First participants in the census, alongside equivalent statistics for our matched group of PGCE students and for all PGCE students. Since we know that School Workforce Census understates retention, these should be interpreted as lower-bound estimates. The estimates are shown separately for the five cohorts starting between 2008 and 2012, inclusive.

Note that there is no data for PGCE students in year 1 because their training placements in schools are not recorded in the School Workforce Census. Similar numbers achieve Qualified Teacher Status (QTS) across the routes. In year 2, Teach First has very high retention because teachers are still on their initial placement; lower proportions of PGCE students have taken a job in a state maintained school following completion of their course. However, by year 3 this pattern reverses and retention on the PGCE is higher than for Teach First.

It is worth noting that retention on the PGCE course is higher for the students who are matched as similar to Teach First participants, than it is overall. This principally reflects higher retention rates across teaching for younger trainees.

After year 3, the retention profile of the PGCE route is relatively flat. There are large numbers of PGCE route trainees who decided not to teach in state maintained schools following the completion of their course, but retention is good for those who decide to pursue a teaching career. One quirk that has been noted in the past is that year 3 PGCE retention is better than retention immediately following QTS. There are several possible reasons for this: (1) we believe the census records for year 3 are likely to be better than for year 2 so it may be a fallacy of the data; (2) individuals may take a

'gap year' following completion of the course before they decide to take their first job; (3) individuals may not find a job immediately after training; or (4) they are actually taking longer than 1 year to achieve QTS. The fact that this pattern of data is more pronounced for the unmatched PGCE cohort that includes older trainees who are likely to have more complex home lives suggests that the final reason might be important for many.

In contrast to the PGCE route that has relatively high retention after a large drop-out at the end of the initial course, Teach First continues to have relatively significant drop-out each year.

We do not see hugely significant differences in retention between these cohorts. This, in itself, is interesting because they would be undergoing a teaching career against the back-drop of very different economic circumstances and thus outside wage opportunities. It is useful to us that this is the case because it means we can average retention across these cohorts to explore the impact of mis-matched data and missing records in the census in more detail.

Figure 3 uses the known size of the gap between true retention and census retention rates for Teach First to place an upper bound on all census estimates of retention of 6 percentage points. As stated earlier, we think this is an overstatement of the highest possible retention because we know the missing records problem in the census declines the longer the teacher remains in the profession and the longer they remain at a particular school.

Even taking into account considerable uncertainty regarding the true retention rates by route, we can assert that Teach First retention is higher than that of matched-PGCE students for year 2 but it is lower from year 3 onwards. The difference in retention rates between Teach First and matched-PGCE students by year 5 is anywhere between 12 and 24 percentage points.

Figure 2: Lower bound estimates of retention by route and cohort

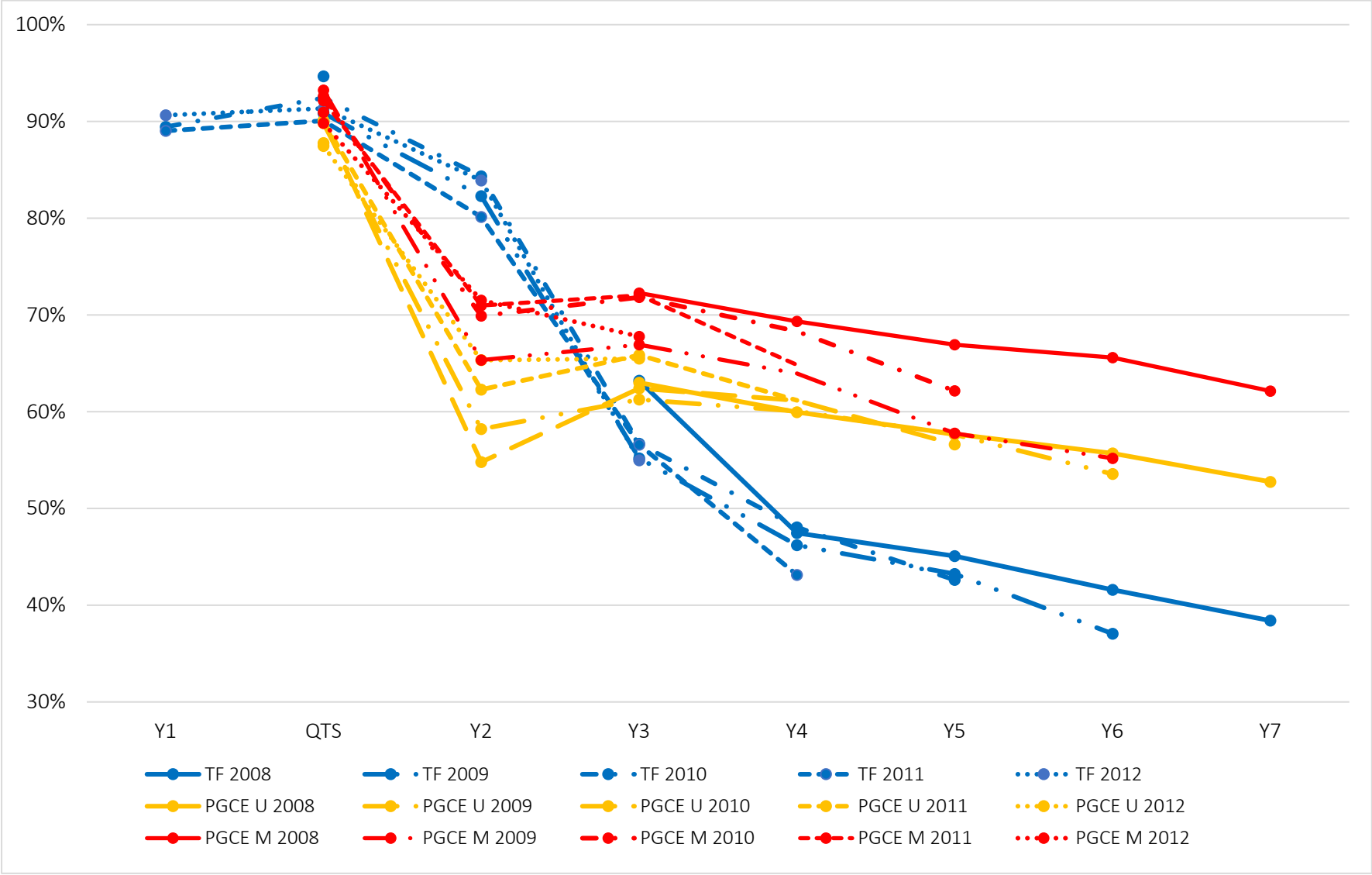
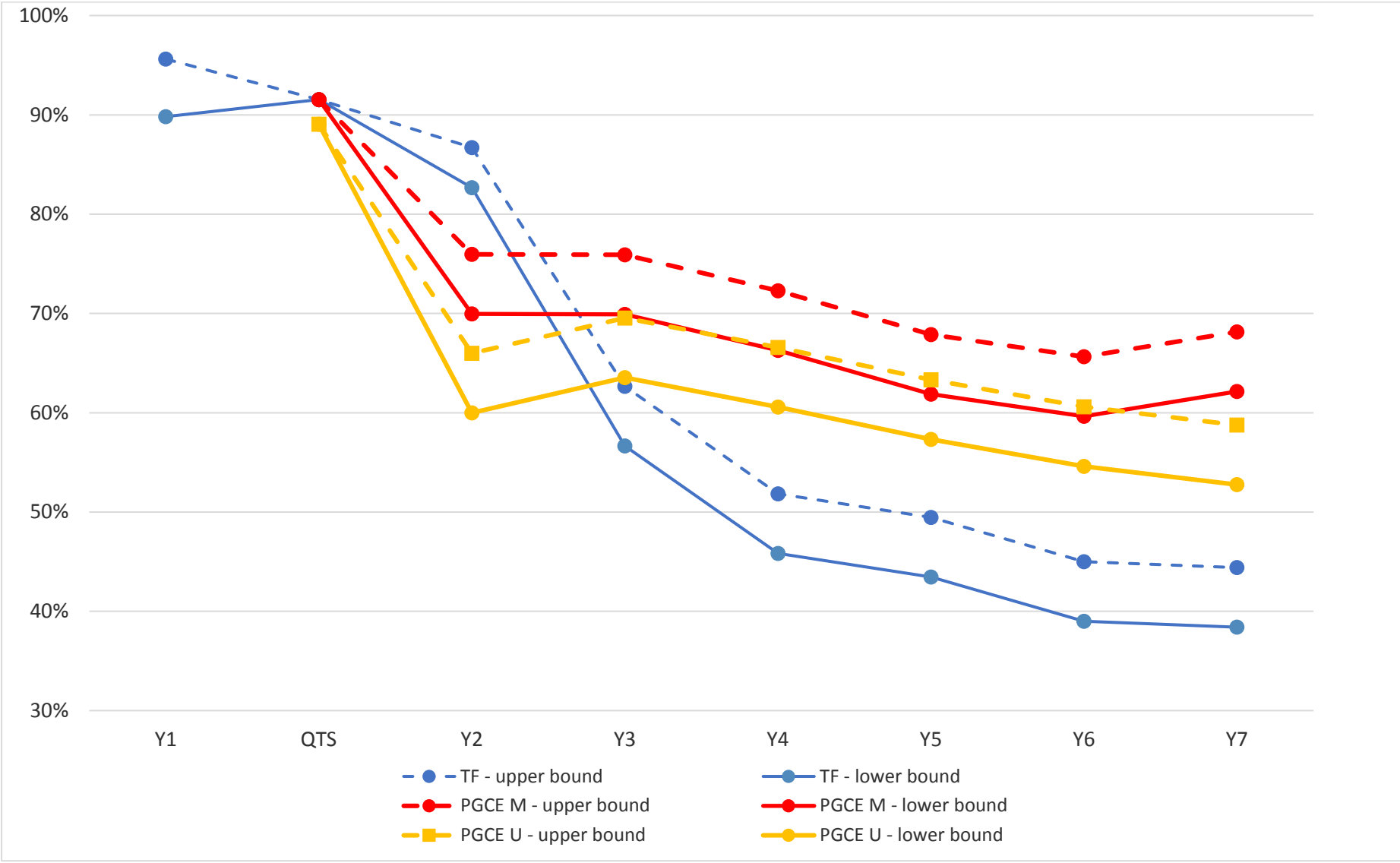


Figure 3: Lower and upper bound estimates of retention by route



## II – Job choices in year 3 and year 5

In this section we explore the types of schools that continuing Teach First and matched PGCE teachers choose to teach in.

### Regional moves

Neither Teach First nor their matched PGCE students have a particularly high attachment to the region they train in. Table 2 shows that about a quarter of those remaining in teaching have left this region by year 3, either through choice or because they could not find work locally. There is little variation across regions in this figure, except for those Teach First participants placed in London where 93% decide to stay in the region. This 'stickiness' of the London region for Teach First is not mirrored for those undertaking PGCE training in London.

By year 5, the attachment to initial region looks quite different across Teach First and PGCE routes. The majority of PGCE trainees have remained in their training region, but many Teach First participants who were initially placed in the East of England, Yorkshire and the Humber and the Midlands have now left those regions. It will be interesting to see whether these retention rates within regions improve as Teach First becomes more established outside London.

Table 2: Percentage of those remaining in year 3 and 5 who leave their training region

| | Year 3 (cohorts 2008-2012) | | Year 5 (cohorts 2008-2010) | |
|---|---|---|---|---|
| | Teach First | Matched PGCE | Teach First | Matched PGCE |
| London | 6% | 22% | 15% | 23% |
| East Midlands | 28% | 41% | 50% | 45% |
| East of England | 27% | 36% | 67% | 38% |
| North East | 36% | 22% | | 15% |
| North West | 19% | 24% | 28% | 32% |
| South East | 30% | 25% | | 26% |
| South West | | 33% | | 36% |
| West Midlands | 25% | 22% | 44% | 20% |
| Yorkshire and Humber | 26% | 35% | 48% | 40% |

Table 3 shows the regional destinations of those who remain in teaching in year 3. For PGCE trainees, where they decide to leave their training region they most often take a year 3 job in an adjacent region. By contrast, quite large numbers of Teach First participants migrate to London if they are initially placed in a different region.

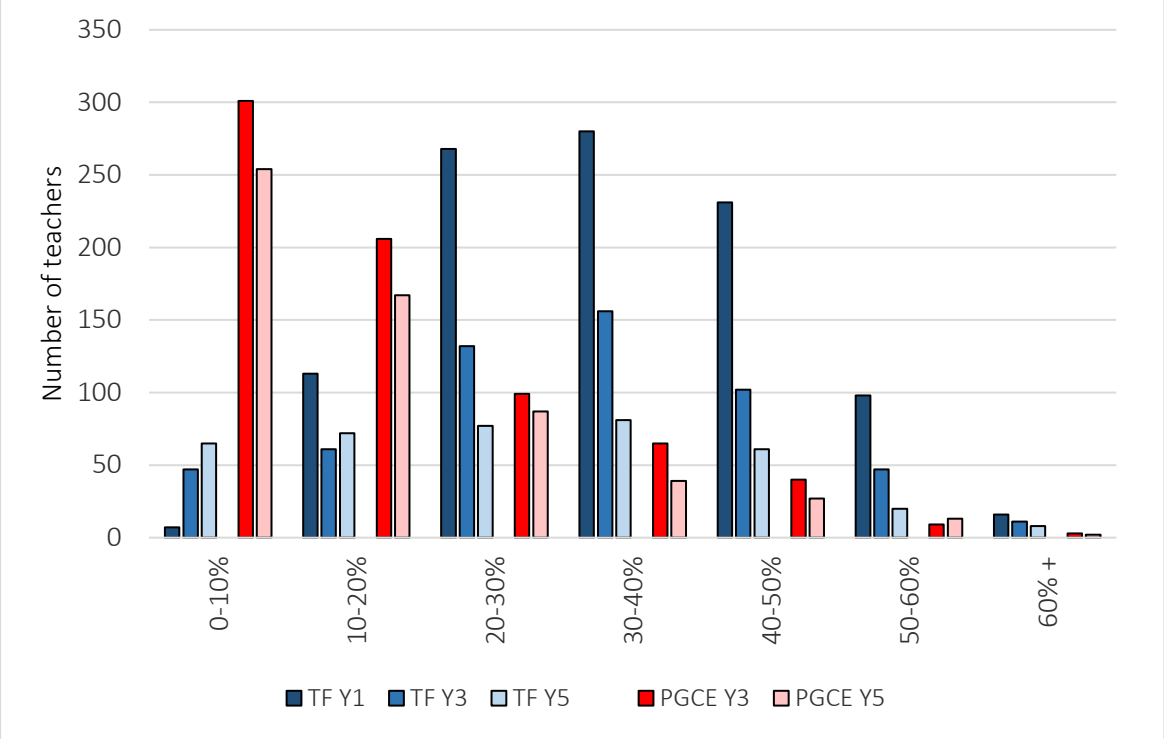
Table 3: Regional destinations of those leaving their training region

| | Region of school in year 3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | L | EM | EE | NE | NW | SE | SW | WM | YH |
| **Teach First origin:** | | | | | | | | | |
| London | 94% | 0% | 1% | 0% | 0% | 2% | 1% | 0% | 1% |
| East Midlands | 12% | 72% | 2% | 0% | 0% | 6% | 4% | 4% | 0% |
| East of England | 20% | 2% | 73% | 0% | 0% | 6% | 0% | 0% | 0% |
| North East | 7% | 4% | 4% | 64% | 7% | 7% | 0% | 0% | 7% |
| North West | 9% | 1% | 1% | 1% | 81% | 2% | 1% | 3% | 2% |
| South East | 26% | 0% | 0% | 0% | 0% | 70% | 4% | 0% | 0% |
| West Midlands | 15% | 1% | 1% | 1% | 0% | 3% | 4% | 75% | 0% |
| Yorkshire and Humber | 8% | 3% | 1% | 3% | 5% | 1% | 1% | 3% | 74% |
| **PGCE origin:** | | | | | | | | | |
| London | 78% | 0% | 8% | 1% | 0% | 11% | 1% | 1% | 1% |
| East Midlands | 5% | 59% | 19% | 0% | 1% | 3% | 1% | 10% | 2% |
| East of England | 13% | 4% | 64% | 1% | 2% | 8% | 2% | 5% | 2% |
| North East | 5% | 0% | 4% | 78% | 4% | 3% | 0% | 1% | 6% |
| North West | 6% | 1% | 1% | 0% | 76% | 3% | 0% | 3% | 8% |
| South East | 14% | 0% | 4% | 0% | 1% | 75% | 4% | 1% | 2% |
| South West | 7% | 1% | 5% | 1% | 0% | 14% | 67% | 5% | 1% |
| West Midlands | 4% | 4% | 2% | 0% | 2% | 4% | 4% | 78% | 1% |
| Yorkshire and Humber | 2% | 9% | 6% | 4% | 5% | 4% | 1% | 3% | 65% |

## Demographic profile of schools

One unusual feature of Teach First is that it solely places teachers in schools with a higher free school meals proportion than average. This is illustrated in Figure 4 where the darkest blue bar shows the distribution of participants by free school meals proportion of their initial placement school in year 1. As individuals either leave teaching or move schools, the distribution of Teach First Ambassadors across schools in years 3 and 5 changes somewhat: they do migrate to more affluent schools, but the average Teach First Ambassador's school still has a far higher free school meals proportion than the average school. We do not know where PGCE students train, but by years 3 and 5 we can see that the schools our matched-PGCE students choose to teach in are reasonably similar to the national distribution.

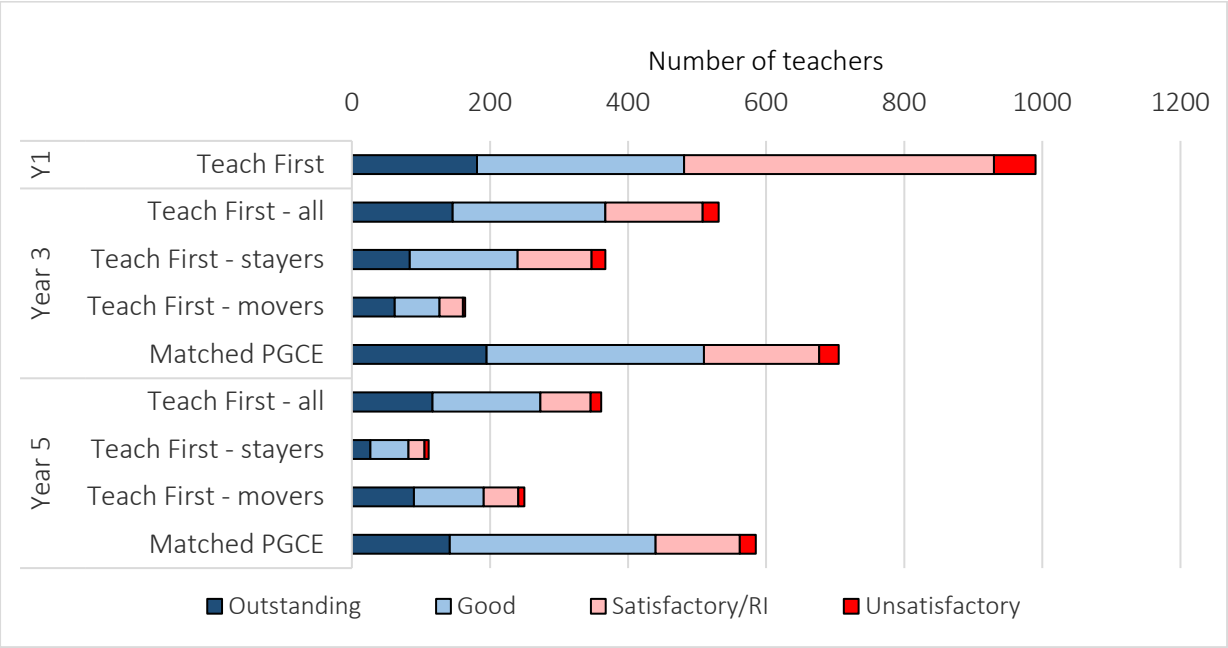
Figure 4: FSM percentage at school in year 1, 3 and 5 (2008-2010 cohorts)




## Ofsted rating of schools

Figure 5 shows that large numbers of Teach First participants are placed in schools with a Satisfactory (now Requires Improvement) or Unsatisfactory Ofsted judgement. By years 3 and 5, when left to their own devices about which school to teach in, the vast majority of Teach First Ambassadors choose schools with a Good or Outstanding Ofsted judgement. This does not mean that those who taught in the less well judged schools left teaching (we know from earlier analysis that this was not true); simply that if they decide to stay in teaching, they will move to a school that Ofsted judges to be more effective. Slightly larger numbers of matched-PGCE students are teaching in schools with a poorer Ofsted rating in years 3 and 5.

Figure 5: School Ofsted rating (2008-2010 cohorts)




## III – Rates of promotion

In this section we explore how the early careers of those who choose to remain in teaching develop. School Workforce Census does not reliably record the responsibilities that teachers acquire as they become more experienced, although we can observe their promotions to Assistant Head, Deputy Head and Headship. Instead, we use the wage data to infer that a teacher is likely to be taking on additional roles, such as a Head of Department or Head of Year.

We have adjusted all the wage data we use in this report for both the year (all wages are inflated to 2014 levels using the published pay scales) and for London (we remove the published inner, outer and fringe weightings).

Table 4 summarises the overall promotions and wages of Teach First and matched PGCE teachers. It splits each cohort into groups by the last year we observe them in the School Workforce Census. So, for example, the '2009 cohort, still in 2012' are those who began training in 2009, were in the November 2012 census but were not in the 2013 or 2014 census. It is worth noting that the PGCE-trained teachers will have completed one less year as an employee in the classroom than the Teach First-trained teachers. However, they achieved QTS at the same date and so the comparison would seem to be as fair as any we could make.

Table 4 shows that relatively few teachers from these cohorts have so far made it to senior leadership positions, but the rate of promotion to these positions is far higher for Teach First Ambassadors than it is for matched-PGCE teachers. For example, for those in the 2008 cohort who were still teaching at the most recent census, Teach First has 1 head, 2 deputies and 22 assistant heads, compared to just 1 deputy and 2 assistant heads from the PGCE route. The wage data suggests Teach First Ambassadors are taking on significant middle leadership responsibilities early on in their careers.

Table 4: Summary table of promotions and wages

| | Teach First | | | | | | | | | Matched PGCE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Last post | | | | Mean adjusted wages | | | | | Last post | | | | Mean adjusted wages | | | | |
| | CT | AH | DH | H | Y3 | Y4 | Y5 | Y6 | Y7 | CT | AH | DH | H | Y3 | Y4 | Y5 | Y6 | Y7 |
| **2008 cohort** | | | | | | | | | | | | | | | | | | |
| Still in 2014 | 119 | 22 | 2 | 1 | 26,908 | 29,678 | 32,718 | 35,329 | 38,182 | 140 | 4 | 0 | 0 | 23,966 | 26,197 | 28,453 | 31,763 | 32,937 |
| Still in 2013 | 17 | 3 | 0 | 0 | 27,373 | 29,313 | 31,566 | 36,593 | | 20 | 0 | 0 | 0 | 24,157 | 27,478 | 28,490 | 30,831 | |
| Still in 2012 | 21 | 1 | 0 | 0 | 26,256 | 29,179 | 31,639 | | | 22 | 0 | 0 | 0 | 23,895 | 25,423 | 28,123 | | |
| Still in 2011 | 18 | 0 | 0 | 0 | 26,551 | 29,050 | | | | 18 | 0 | 0 | 0 | 23,094 | 25,591 | | | |
| Still in 2010 | 36 | 0 | 0 | 0 | 25,942 | | | | | 36 | 0 | 0 | 0 | 23,341 | | | | |
| **2009 cohort** | | | | | | | | | | | | | | | | | | |
| Still in 2014 | 167 | 18 | 0 | 0 | 26,460 | 29,903 | 32,743 | 36,048 | | 181 | 3 | 1 | 0 | 23,987 | 25,854 | 28,095 | 29,982 | |
| Still in 2013 | 34 | 1 | 0 | 0 | 25,774 | 29,419 | 32,336 | | | 35 | 0 | 0 | 0 | 23,568 | 25,704 | 27,648 | | |
| Still in 2012 | 24 | 2 | 1 | 0 | 26,496 | 32,207 | | | | 27 | 0 | 0 | 0 | 23,735 | 25,709 | | | |
| Still in 2011 | 51 | 0 | 0 | 0 | 25,576 | | | | | 51 | 0 | 0 | 0 | 23,860 | | | | |
| **2010 cohort** | | | | | | | | | | | | | | | | | | |
| Still in 2014 | 220 | 16 | 0 | 0 | 25,685 | 28,667 | 32,438 | | | 235 | 1 | 0 | 0 | 23,866 | 25,955 | 27,859 | | |
| Still in 2013 | 43 | 1 | 0 | 0 | 25,193 | 28,676 | | | | 44 | 0 | 0 | 0 | 23,648 | 24,892 | | | |
| Still in 2012 | 58 | 0 | 0 | 0 | 25,602 | | | | | 58 | 0 | 0 | 0 | 23,905 | | | | |
| **2011 cohort** | | | | | | | | | | | | | | | | | | |
| Still in 2014 | 314 | 14 | 0 | 0 | 25,617 | 28,902 | | | | 327 | 1 | 0 | 0 | 23,652 | 25,196 | | | |
| Still in 2013 | 115 | 0 | 0 | 0 | 25,482 | | | | | 115 | 0 | 0 | 0 | 23,793 | | | | |
| **2012 cohort** | | | | | | | | | | | | | | | | | | |
| Still in 2014 | 539 | 2 | 0 | 0 | 24,779 | | | | | 541 | 0 | 0 | 0 | 23,419 | | | | |

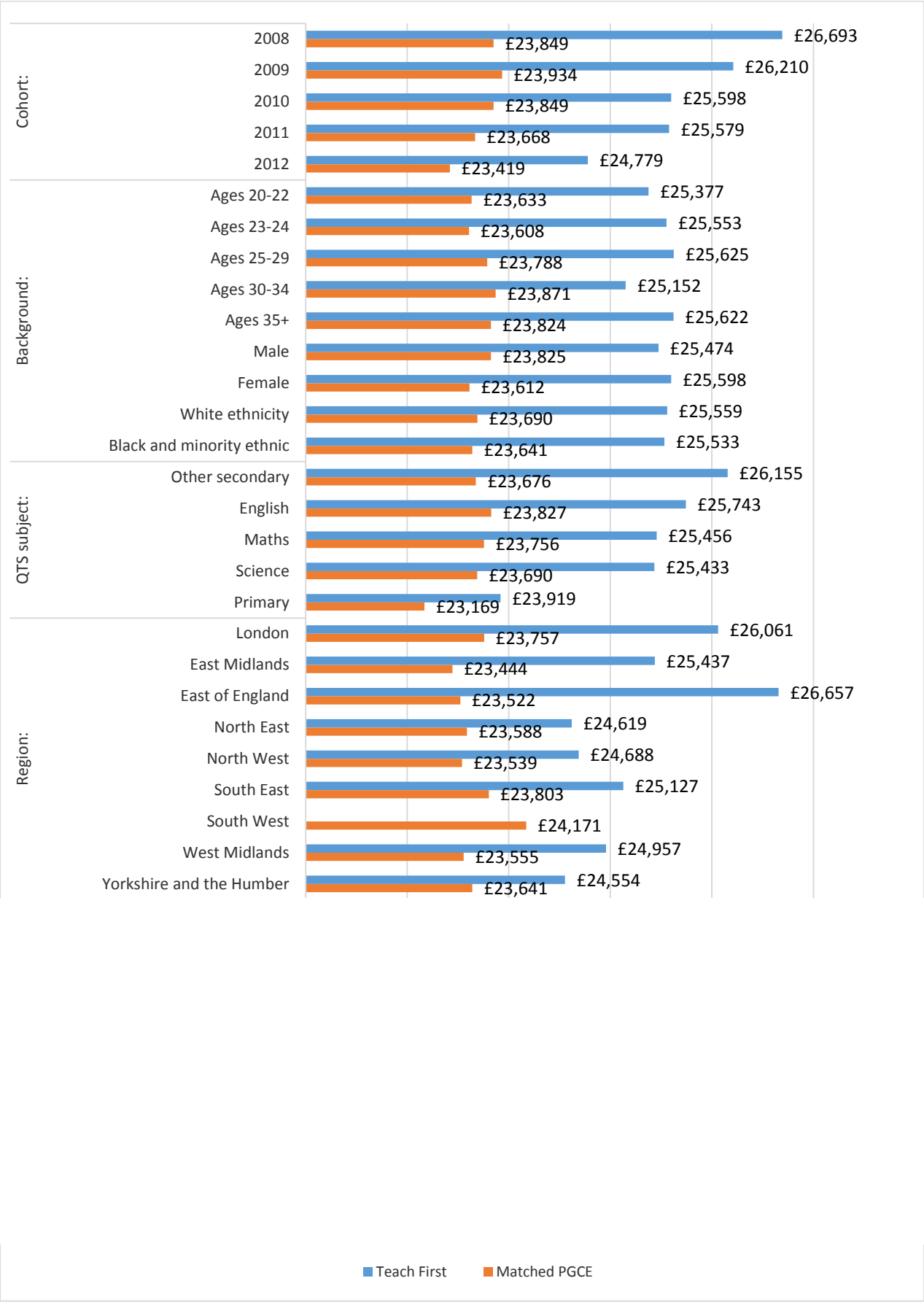
## Comparisons between PGCE and Teach First

Figure 6 shows the average wage in year 3 (adjusted to 2014 non-London weighting) for Teach First and matched PGCE route teachers by individual background characteristics. There are four striking wage patterns in this data:

1. More recent cohorts are earning less by year 3 and this is especially true for Teach First. In the case of Teach First, the expansion of the programme means that Teach First Ambassadors are now more scarce, but it is also true that the most recent cohorts have faced a toucher funding environment where the availability of responsibility points has declined.
2. Primary QTS teachers are earning less across both routes, perhaps because opportunities to take on extra responsibilities are less prevalent
3. There is great variation in pay by region for Teach First participants, but this is less true for PGCE trained teachers
4. Those who performed best at the Teach First selection stage are earning more by year 3.

If we model the wage data for the Teach First and PGCE trained teachers we can see that the Teach First route is associated with higher wages in the order of £3k by year 3 and £6k by year 5. The lower wages for primary QTS are particularly pronounced for the Teach First route; less so for PGCE. It may be that there are fewer career promotion opportunities for those taking the Teach First primary QTS route. For Teach First it is the East and West Midlands that are associated with the lowest pay by year 5. Those who trained via the PGCE route as mature students (aged 35 and over) and now earning considerably more than their younger peers who trained via the same route. However, this wage premium for mature starters is not present in the Teach First cohort.

Figure 6: Year 3 wage differentials by individual characteristics

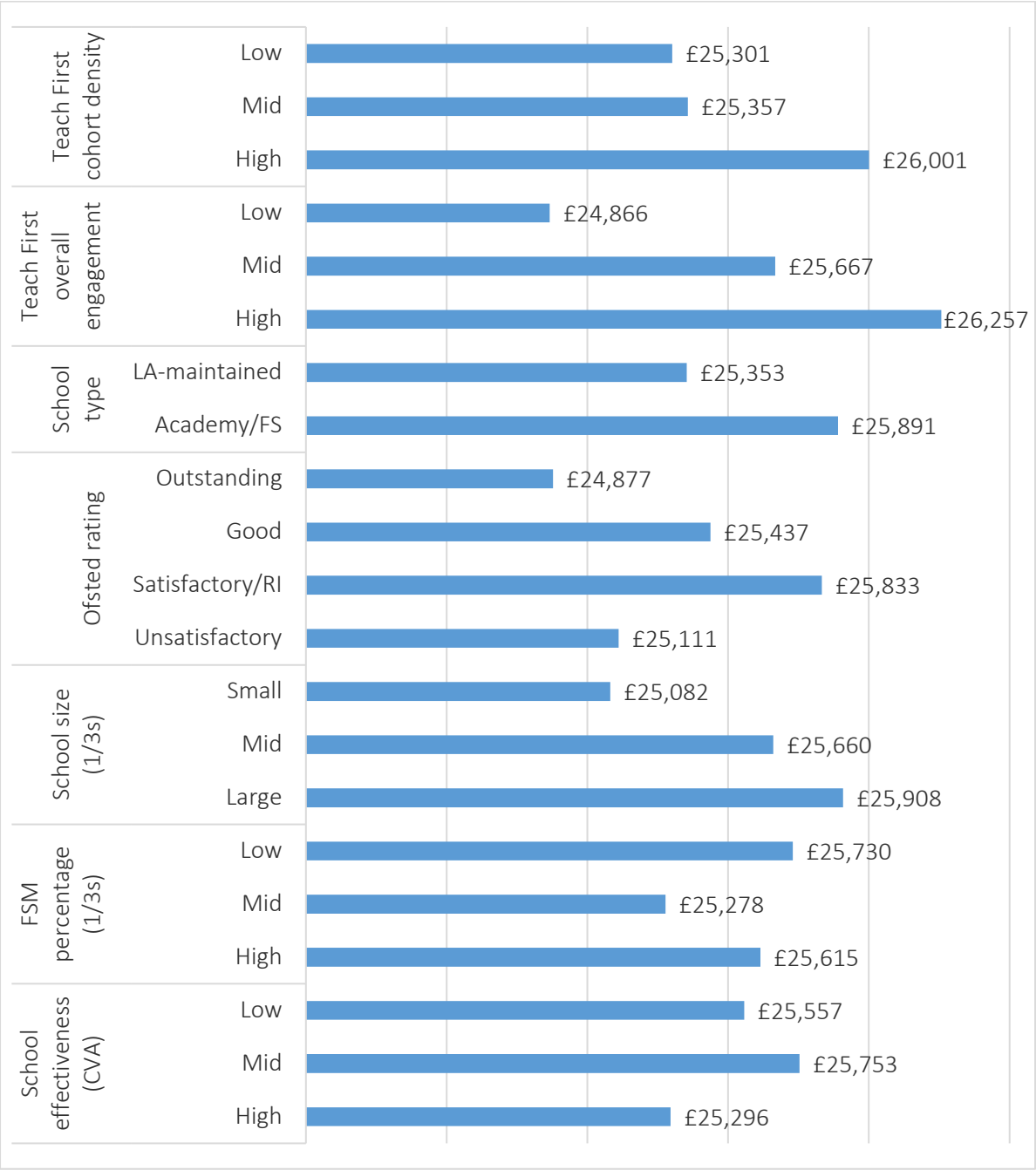


## Teach First initial placement characteristics

We can explore the relationship between the initial school placement characteristics and the wages a Teach First Ambassador achieves later on their career. Figure 7 shows the average wages achieved by year 3. A few patterns are clear in this data:

1. Starting a career in a school with many Teach First participants and Ambassadors is associated with higher wages by year 3.
2. Those who started in Academies are earning more by year 3.
3. A lower Ofsted rating is associated with higher wages by year 3. Selection is important here: these are just the wages of those who choose to remain in teaching and not those who left. It is possible that having an initial placement in a school judged unsatisfactory is challenging, such that succeeding in the placement and choosing to remain in teaching reflect a particular talent for the job.
4. Initial placements in larger schools is associated with higher wages by year 3. Larger schools often have greater internal promotion opportunities.

Figure 7: Year 3 wages by initial placement characteristics



# Data

The analysis combines four sources of data

1. Teach First's own internal database of all participants
2. The Initial Teacher Training Performance Profile (ITTPP), which contains a record for every individual recorded on an initial teacher training programme each year (with incomplete Teach First records since their HEI-partners do not always record them correctly)
3. The School Workforce Census (SWC), an annual census of every individual working in a state-maintained school in England. Data is available for five years from November 2010 to 2014.
4. The National Pupil Database (NPD), which gives school contextual and pupil attainment information

## Teach First data

Teach First provided us with their management records on participants for analysis. We created a master record for each individual by stitching together six separate records via an 18-digit Teach First identifier:

- general participant data;
- higher education data;
- peer group data;
- placement data;
- performance assessment data; and
- personal identifiers such as gender and ethnicity.

For this study we took information on five cohorts that we can match to School Workforce Census as follows:

Table 5: Data availability from Teach First records

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 |
|---|---|---|---|---|---|---|---|
| 2008/09 cohort | Internal data only | Internal data only | Nov 2010 SWC | Nov 2011 SWC | Nov 2012 SWC | Nov 2013 SWC | Nov 2014 SWC |
| 2009/10 cohort | Internal data only | Nov 2010 SWC | Nov 2011 SWC | Nov 2012 SWC | Nov 2013 SWC | Nov 2014 SWC | |
| 2010/11 cohort | Nov 2010 SWC | Nov 2011 SWC | Nov 2012 SWC | Nov 2013 SWC | Nov 2014 SWC | | |
| 2011/12 cohort | Nov 2011 SWC | Nov 2012 SWC | Nov 2013 SWC | Nov 2014 SWC | | | |
| 2012/13 cohort | Nov 2012 SWC | Nov 2013 SWC | Nov 2014 SWC | | | | |

Teach First were able to provide Teacher Reference Numbers (TRN) for most participants and where it was missing from the original records we used the participant name and date of birth to attempt to identify them in School Workforce Census.

We made significant adjustments to the following data:

*Region:* Teach First regions do not map onto Government Office Region but rather reflect the organisational operations and are not stable over time. We re-mapped all participants onto Government Office Regions to ensure alignment with the PGCE participants.

*Delayed start:* We used the date of application and date of start of programme to create a flag for individuals who started their programme one year later than expected.

*First degree and QTS subject mis-match:* We mapped the description of the individual's first and further degrees onto the Joint Academic Coding System (JACS) codes in a manual exercise. JACS codes were then mapped to curriculum areas using a mapping that the Department of Education created for use with the School Workforce Census (supplemented with the manual allocation of curriculum areas for the small number of JACS codes that do not feature in the mapping). We then identified whether an individual achieved QTS in a subject they had studied for in a previous degree, or not.

*University selectivity:* The selectivity of universities is measured using average UCAS points, taken from The Complete University Guide (http://www.thecompleteuniversityguide.co.uk/league-tables/). For those higher education institutions (HEIs) not included in this league table, average UCAS points have been imputed. Irish universities have been allocated a score by taking a league table of Irish HEIs (http://www.webometrics.info/en/europe/ireland%20) and pegging them to universities from the UK league table. Other HEIs for which selectivity scores were required (generally smaller universities, and colleges of art or music) have also been allocated a score by pegging them to a UK university for which average UCAS points are known.

## Initial Teacher Training Performance Profile

National College for Teaching and Leadership (NCTL) holds records of Initial Teacher Training (ITT) trainees who have undertaken training in England, collected via annual surveys of all teacher training providers. Statistics are published each summer as the ITT Performance Profiles (ITTPP) and records go back at least as far as academic year 1998/99. NCTL provided us with a dataset containing all cases of teacher trainees, regardless of whether or not they achieved QTS and went on to employment in a state-funded school in England.

We used the ITTPP to identify trainee teachers on a full-time HEI-led PGCE course starting September 2008 or later. The database includes some basic information about the trainees, including their gender, ethnicity, age at end of course, year in which training commenced, the QTS subject of the teacher trainee (which we recode into five broader subject areas for analysis – maths, science, English, other secondary and primary) and region in which they train, which we derived from the ITT provider name.

A small number of trainees in the ITTPP had begun multiple different training courses at different times. Where this has happened, we always take their earliest attempt at a course as their route

attempted. In these circumstances we collect information on whether QTS is ever achieved from across all their records.

## School Workforce Census

The School Workforce Census is an annual survey of all staff employed in publicly-funded schools, with the teacher records held against individuals' Teacher Reference Numbers. We have five census from November 2010 to November 2014 available to us. Where an individual teaches in more than one school – for example, peripatetic music teachers – they can have featured on more than one school's census return. In the version of the data we are using, the census is linked across years with one main record per individual per year.

The School Workforce Census contains:

- basic biographical information
- details of the school at which an individual is working
- details of QTS status and qualification date
- the contract under which the individual is employed
- details of the position held
- pay data
- some limited details of the individual's origin

### Resolving missing records in SWC

A teacher may be teaching in a school and yet not recorded in the November School Workforce Census for a number of reasons:

1. The school may have entirely failed to make a Census return. Where this happened in 2010, 2011, 2012 and 2013, the Database of Teacher Records has been used to impute the missing information (basic information on the individual and school) from Teachers' Pensions Scheme records. But there is considerable lag between a teacher's arrival at a school and their appearance in the Database of Teacher Records, so new teachers to the profession are particularly likely to be missed.
2. The school may have inadvertently failed to record an individual teacher, and this may be more likely where that teacher is new to payroll and was not included in the previous year's census return.
3. The school may have decided not to provide a return for teachers currently training in their school if they did not consider them to be 'full' employees, even though the completion guidance makes it clear they should be included if they are salaried employees.

The missing record problem appears to be significant for those who are new to the profession or to the school and so we risk seriously understating teacher retention. We attempt to resolve this in part using a field that records the date of arrival in school of the teacher to write in missing records from earlier census years. So, for example, if a teacher appears in SWC 2012 with a date of arrival in school of 01/09/2010 then we should find the same teacher in the same school in SWC 2011 and SWC 2010. Assuming the date of arrival in school is accurate, if we cannot find them in earlier years then we know the records are missing and can write the records back into SWC. We do this for both open and closed contracts in SWC.

Table 6 summarises the success of the use of arrival date to recover Teach First participant records that are known to be missing. It shows the importance of this write back approach for participants in the first year of the programme, with fewer records written back in year 2. There are still some records missing for each cohort and year.

Table 6: Success rate in identification of Teach First records in School Workforce Census

| | | Cohort starting the programme in: | | |
|---|---|---|---|---|
| | | **2010** | **2011** | **2012** |
| **Year 1:** | % of starting cohort found in SWC | 81% | 79% | 82% |
| | % found using open contract start dates | 7% | 8% | 6% |
| | % found using closed contract start dates | 1% | 1% | 2% |
| | % found somewhere in SWC | 89% | 88% | 90% |
| | % of starting cohort that TF record as still teaching | 96% | 96% | 96% |
| **Year 2:** | % of starting cohort found in SWC | 81% | 76% | 77% |
| | % found using open contract start dates | 2% | 1% | 1% |
| | % found using closed contract start dates | 0% | 1% | 3% |
| | % found somewhere in SWC | 83% | 78% | 81% |
| | % of starting cohort that TF record as still teaching | 90% | 85% | 86% |

### Creating adjusted salary data

Implausible salaries have been recoded, based on teacher pay scales and the given individual's previous year's pay.

Throughout this report we use an adjusted gross pay figure so that we can achieve consistency across years and regions. We first inflate all pay to 2014 levels using the published pay scales and then we remove the Inner, Outer and Fringe London weightings.

## Consistently identifying teachers across datasets

To estimate teacher retention, we need to:

1. Consistently identify individuals where they appear on multiple occasions in the ITTPP. For our analysis in this report we wish to draw information on their first attempt to achieve QTS and the earliest date at which QTS was achievable. Individuals will have multiple records if they were registered on a course that took longer than one year, if they registered on multiple courses, if two different providers involved with training registered them or if a provider recorded them in a year by error.
2. Consistently identify individuals within the five annual sweeps of the School Workforce Census. For the purpose of this study, we use the linked database that aims to contain one record per teacher per year. The matching approach implemented by the Department of Education to create this database principally relies on the Teacher Reference Number (TRN) and selects a single contract for teachers who work in multiple schools.
3. Successfully identify teachers in both the ITTPP and the SWC if they go on to teach in state-maintained schools in England.

### Using the Teacher Reference Number (TRN) as an identifier across datasets

The Teacher Reference Number is a 7-digit identifier that is principally used to administer the Teachers' Pension Scheme and record whether a teacher has QTS. It is issued by the National College for Teaching and Leadership (NCTL) in batches to training providers, schools and Teachers' Pension who all assign them as needed. It should, in theory, be a unique identifier for teachers but it is not for several reasons:

- Many teachers get allocated more than one TRN during their training and career
- A small number of teachers (those unqualified and not opting into Teachers' Pension) have no TRN
- A larger number of teachers do not have a TRN recorded in one or more of our datasets
- TRNs are entered with error in the datasets, whether deliberately (e.g. 9999999) or not (e.g. 1234567 is entered as 1234576).

### Data availability for fuzzy matching of teachers

Fuzzy matching is a technique used to link records within and between databases where matches may be less than 100% perfect. We use it here to consistently identify individuals within each of our databases and between our databases. The TRN remains a key identifier, but we now assume it may be coded with error or that individuals may hold several TRNs simultaneously. In addition we are able to draw on personal identifiers – names, date of birth, gender and ethnicity – across our databases.

We draw records from all our databases and implement a fuzzy match to create an alternative consistent teacher identifier. At the start of this process we clean the names text fields to remove errant characters, prefixes, suffixes and so on to improve the chances of consistency across databases.

## National Pupil Database

The National Pupil Database (NPD) is a pupil level database, which matches pupil and school characteristic data to pupil level attainment. It covers pupils at nursery, primary, middle, secondary and special schools. It provides information on all pupils in state schools in England, linked to their schools, as they progress through primary and secondary school.

Data from the NPD for the six academic years 2008/09 through to 2013/14 were included in this analysis in order understand the effects of school placement characteristics on employment outcomes for PGCE and Teach First trainees. These school characteristics were:

- Government Office Region
- School type at time of entry
- Ofsted rating at time of entry
- School size (total number of pupils)
- % FSM
- School Contextual Value Added (CVA) in year before teacher's arrival
- Number of participants in Teach First trainee's school cohort (cohort density)
- Total number of Teach First participants at that school (overall density)

Ofsted grading and school type information were matched in from the Department for Education (DfE) school level annual census. The most recent Ofsted grading available for each of the academic years 2008/09 through to 2012/13 was matched in for schools.

School CVA in the year before a teacher's arrival was derived from FFT estimates for CVA overall mean KS2 grade for primary schools and CVA overall mean GCSE grade points for secondary schools. For each of the academic years 2008/09 to 2013/14, each school's CVA was converted into standardised score (z-score) for ease of comparison between schools and over time. For all through schools, the Key Stage 4 (GCSE) CVA measure was used.

Teach First participant cohort density was calculated by totalling up the number of Teach First participants in a school cohort, multiplying this value by the national average school size (in terms of number of pupils) and then dividing by the number of pupils in that particular school for that academic year. Higher cohort density values mean more Teach First cohort participants per pupil in that school in that academic year. Teach First overall density is simply the cumulative sum of Teach First cohort density measures for every academic year in this analysis.

### School and departmental effectiveness

The analysis on school and departmental effectiveness in secondary schools is also based on data derived from the NPD. The following indicators were used for each year of this analysis, in addition to all measures listed in the previous section:

- Year 11 % female
- Year 11 % White/White British
- Year 11 % FSM
- Year 11 average KS2 overall, maths, English and science fine grade
- School average capped point score (Best 8 GCSEs)
- School average grade in maths, English and science (coded between 0 and 8)
- School % 5 A*-C GCSEs including English and mathematics

Measures on Year 11 pupil characteristics (% female, % White/White British, %FSM) were calculated using data from spring term data. Only Year 11 pupils who were on roll and attending the school as their main institution were included in the calculation. The Year 11 average KS2 overall grade was based on individual pupils KS2 overall fine grade.

School average capped point score, % 5 A*-C GCSEs including English and mathematics, and average grade in maths, English and science were calculated from pupil level measures from the NPD Key Stage 4 Indicators file. These pupil level measures were on the pupil's best 8 capped point score, their grade in mathematics, English and science GCSE (ranging from 0 for U or no grades to 8 for A* grades), and an indicator of whether or not they had achieved 5 A*-C grades at GCSE including English and mathematics. A broad range of eligible qualifications were included as a Science GCSE.

## Method – Matching TF participants to PGCE students

We match Teach First participants to a group of full-time PGCE students who have similar individual characteristics so that we can compare their career decisions. We do this by implementing coarsened exact matching in Stata using `cem` to reduce imbalance on covariates between the Teach First and PGCE groups.[4] This is a conceptually simple method with attractive statistical properties. We simply temporarily coarsen the data by banding teachers into age groups and then find a PGCE student who exactly matches each Teach First participant across all of the following characteristics:

- Gender (binary)
- Ethnicity (white, BME)
- QTS subject (maths, English, science, other secondary, primary)
- Age (16-19, 20-22, 23-24, 25-29, 30-34, 35-39, 40-65)
- Cohort (2008-2012)

There are five Teach First participants for whom we cannot find an exact match using this method. They are all BME and so we match them to a white ethnicity PGCE trainee. Unfortunately we do not have other background information about the full-time PGCE students from the ITTPP. As a result we do not believe this matching approach allows us to make causal statements about the impact of the Teach First programme. This would require us to meet the conditional independence assumption that requires us to include all characteristics of individuals that correlate with both their selection onto the programme and our outcomes of interest. However, we do believe it is informative to compare Teach First participants to those who are reasonably similar in their personal backgrounds but who take the PGCE course.

[4] Blackwell, M., Iacus, S., King, G. and Porro, G. (2009) cem: Coarsened exact matching in Stata, *The Stata Journal,* 9 (4) pp. 524-546.