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Free Schools: The Formative First Ten Years

An Analysis of the Impact of Free Schools Since 2010

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About this research

To mark the ten year anniversary since the introduction of the free schools programme, New Schools Network (NSN) commissioned the National Foundation for Educational Research (NFER) to conduct an independent data-led investigation into what impact free schools have had since their introduction in 2010.

The research examines the impact that free schools have had since 2010 through the lens of three broad research questions:

- How do pupils in free schools perform in terms of attainment outcomes compared to their peers in other types of schools, at different key stages of education?

- Have free schools managed to establish themselves with families as a credible and popular choice for educating their children?

- How do the demographics and supply dynamics of the teacher workforce in free schools compare to other schools?

This report focuses on mainstream free schools only (that is, special and alternative provision free school have been excluded). University Technical Colleges and studio schools are also excluded.

National Foundation for Educational Research

NFER is a leading independent provider of rigorous research and insights in education, working to create an excellent education for all children and young people. It is a not-for-profit organisation which produces robust and innovative research, assessments and other services, which are widely known and used by key decision-makers. Any surplus generated is reinvested in projects to support our charitable purpose.

New Schools Network

NSN is an independent charity providing advice and resources for those interested in starting a free school within the English state education system. NSN's ambition is to ensure every child has an equal chance to succeed, irrespective of their background, by supporting communities to establish, run and improve schools. Through a range of programmes, NSN partners with individuals, groups, trusts and business leaders with the aim to establish, run and improve pioneering and innovative schools.

To read New Schools Network response to the research findings, please visit newschoolsnetwork.org.

Acknowledgments

Executive Summary

This report was largely prepared before the Covid-19 pandemic, which has had a profound and widespread impact on our education system. Our findings and recommendations should be considered in this context.

It has been ten years since the free schools programme was introduced. Its intention was to bring new and innovative providers into a more autonomous and self-improving school system, and to drive up standards through greater school choice (Evennett, 2019). In this report, we examine what impact free schools have had since the introduction of the programme in 2010.

The number of free schools has increased rapidly since 2010

The first 24 free schools opened their doors in September 2011 and as of March 2020, the number opened has increased rapidly to a total of 537 free schools. Most of these - 444 - were mainstream free schools while the remainder were special and alternative provision free schools. By January 2019, the number of pupils being educated in a free school had reached the 100,000 mark. The closure rate for free schools, excluding fresh starts (that is, where a school closes to be replaced by a new free school, which can start again, free of any of the issues that beset its predecessor), was 3.7 per cent, which is slightly higher than the school closure rate in the wider non-free school population (3 per cent) since 2010.

The proportion of free schools judged outstanding by Ofsted was much higher than in other schools

In February 2020, some 35 per cent of primary and all-through free schools inspected had an outstanding rating compared to 17 per cent for other primary schools. In secondary, 26 per cent of free schools were judged to be outstanding, five percentage points higher than for other secondary schools. Of the 16-19 free schools (that is, free schools which are sixth form colleges for pupils aged 16 to 19) which had been inspected, over 50 per cent were rated outstanding. The proportion of free schools judged to be outstanding has remained consistently high since inspections of free schools began. However, around one-third of free schools, which opened more recently, were still to be inspected by Ofsted.

But about one in seven required improvement / were inadequate

The proportion of secondary free schools judged as requiring improvement or inadequate, at 15 per cent, was substantially lower than other secondary schools (22 per cent). Slightly more primary and all-through free schools were judged as requiring improvement or being inadequate (14 per cent) compared to other mainstream primary and all-through schools (12 per cent).

Free school pupils were not typical of the wider pupil population

Free school pupils were disproportionally likely to come from an ethnic background, have a first language other than English, and be based in London. Secondary free school pupils were also significantly more likely to be from a disadvantaged background, although this is largely because free schools are located in regions with higher levels of disadvantage. Free school pupils were also more likely to move from another school than other pupils, particularly during primary school.

Pupils who move school are at greater risk of underperforming compared to their peers (Claymore, 2019; Schwartz, 2017).

Attainment outcomes were mixed in the primary phase

Primary free schools outperformed other schools at KS1 (during Year 1 and 2) in reading, writing, maths and science in 2018-19. However, at KS2 (that is, during Years 3 to 6 inclusive), free school pupils were seven per cent less likely to reach the expected standard in reading, writing and maths compared to peers in other schools. This may in part be due to pupils who move school making up a greater proportion of a free school's KS2 cohort – as highlighted above; these pupils are at greater risk of underperforming. Another factor may be that data on KS2 outcomes was only available for a third of primary free schools.

Secondary free schools outperformed other schools at KS4

Free school pupils achieved the equivalent of a tenth of a grade higher in each subject at KS4 (during Years 7 to 11 inclusive) compared to their peers in other schools, once pupil and school-level characteristics were controlled for. Disadvantaged free school pupils also outperformed their peers in other schools, but this difference may have occurred by chance.

Free school performance outcomes at KS5 has been mixed

Free school performance at KS5 differed between 16-19 free schools, which provide sixth form education only, and secondary and all-through free schools that have a sixth form. Pupils attending 16-19 free schools outperformed pupils in other schools. However, sixth form pupils in secondary and all-through free schools performed worse than their counterparts in other schools.

Free schools continued to attract interest from parents

Both primary and secondary free schools were popular with families. Primary free schools received more first preferences from parents applying to schools, both in absolute terms and relative to the number of places available, compared to other school types. Secondary free schools received fewer first preferences from parents but they received a large number of first preferences compared to spaces available. Further, interest in primary and secondary free schools has generally grown the longer they have been open.

Popularity increased relative to nearest neighbouring schools

Both primary and secondary free schools are more popular than their neighbouring schools, who are likely to be operating in the same circumstances. Relative to their five nearest neighbouring schools, their popularity has also increased over time. This suggests that free schools have been successful in their original aims of providing greater school choice. However, free schools were also expected to open in areas with low academic standards, which may be a contributory factor to their relative popularity when compared to their nearest neighbours.

Teachers were not representative of the wider teacher workforce

Teachers in free schools tended to be younger and less experienced compared to their peers in other schools, across both phases. This is likely to reflect both the unique challenges which free schools head teachers face in recruiting teachers and the demographics of free schools. It has been documented that more deprived schools – which is the case for many free schools - tend to have younger and less experienced teachers (Allen and Simons, 2018). Despite the fact that

being taught by inexperienced teachers is associated with pupils making less educational progress (Allen *et al.*, 2016), teachers in secondary free schools appear to have overcome this hurdle as their pupils have achieved better KS4 outcomes than their peers in other schools.

Teacher retention in free schools was lower than in other schools

The probability of a teacher in a free school leaving the state-funded sector was around two percentage points higher than other schools. However, we found evidence that attrition rates in other new non-free schools[1] were also higher than the average. Out of the teachers who remain in the profession, free school teachers were no more likely to change schools than their peers.

Recommendations

Further research is needed to understand why KS2 attainment in primary free schools is lower than in other schools, and identify actions that can be taken to address this

Our research finds that there is scope for primary free schools to improve pupil attainment at KS2, particularly in terms of supporting pupils to achieve the expected standard. Further research is needed to establish what is driving lower KS2 attainment in free schools, in order to support teachers and school leadership in increasing pupil attainment.

Additional investigation is required to establish why teacher retention in newer schools is lower than in other schools, and identify measures that can be taken to reduce this difference

Our findings suggest that newer schools tend to have lower teacher retention rates than other more established schools. Research is required to establish what is driving these lower retention rates such that government and school leadership can better support teachers, and thereby retain more in the state system.

Lessons should be drawn from the successes of secondary and 16-19 free schools, and used to inform best practice

Our research has found that secondary free schools are outperforming other schools, despite facing a number of unique challenges such as having a relatively young and inexperienced workforce. We also found that pupils in 16-19 free schools also outperformed their peers in other schools. Research should identify the determinants of success in secondary and 16-19 free schools, such that best practice can be replicated in future waves of free schools and other schools.

Further research should consider the setup process used by schools

Free schools may be set up through different processes. While most new free schools are set up by submitting an application to the Department for Education (DfE), some free schools are set up by local

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[1] We calculated teacher retention and turnover rates for non-free schools which opened between 2011 and 2015. Retention was lower and turnover was higher when compared to other schools.

authorities first identifying the need for a new school and providers submitting applications to fulfil this need. These processes may lead to different school focuses: free schools set up by local authorities may be primarily focused on fulfilling a need for new places, whereas new free school proposers applying via the DfE route may have some additional objectives as well as fulfilling a need for places. Further research is needed to establish whether these two approaches lead to different levels of success in addressing local needs for new school places and in providing access to high-quality education.

1   Introduction

1.1   A brief history

The free schools programme was established by the Coalition Government in 2010, following the passing of the Academies Act of that year (West and Wolfe, 2018). Free schools are all-ability schools, directly funded by the government. Free schools have the same legal status and freedoms as academies, including having flexibility over decisions such as the curriculum they offer, setting teacher pay and conditions, and the length of the school day.

Free schools were originally set up with the intention of bringing new and innovative providers – including parents and teachers – into a more autonomous and self-improving school system, driving up standards through greater school choice (Evennett, 2019).

The free schools programme was originally similar to the Charter School system in the United States and the scheme in Sweden, where non-profit and profit-making groups can set up schools, which are funded by the government but are free from its control. Free school providers are not allowed to make a profit from running their schools.

Free schools, as with all new schools, face a large number of challenges when being set up and becoming established. As highlighted by the National College for School Leadership, these range from working within a restricted timetable, finding suitable premises, attracting pupils and staff, and building relationships within the local community (Dunford *et al.*, 2013).

Applications to open a free school are done in batches known as 'waves' (DfE, 2020a). For each wave, the government publishes a set of criteria for opening a new free school and invites bids. Proposer groups that are able to meet the criteria submit an application to the Department for Education (DfE) for approval. NSN offers support to new free school proposers in preparing their applications, and support in opening their schools where applications are successful. To date, there have been 14 free school waves, the most recent of which is ongoing. In February 2020, the DfE announced that they had received 89 applications to open a mainstream free school in wave 14.

Since 2015, schools set up through the local authority 'presumption' process are also considered free schools. This process involves local authorities, who have identified the need for a new school i.e. due to a new housing development, publishing a specification for the new school needed (DfE, 2020b). The government, in collaboration with the local authority, Regional School Commissioner (RSC) and key stakeholders, undertake a consultation process to appoint a provider for the new school.

Free schools established using the 'presumption' process may have different characteristics to free schools opened using the wave process. This may lead to different levels of school success in addressing local needs for new school places and in providing access to high-quality education. Unfortunately, we are unable to investigate these differences in our analysis as information on free schools' establishment processes is not consistently collected.

1.2 The emergence of free schools since 2010

1.2.1 Free school openings

By the end of the first wave, 24 free schools had been approved and were opened in September 2011. As shown in Figure 1, the numbers have grown significantly since, and by March 2020, 537 free schools had been established[2]. Of these, 444 were mainstream, while the remainder were special and alternative provision free schools. The focus of this report is on mainstream free schools.

Figure 1: Numbers have grown steadily throughout the ten years of the policy
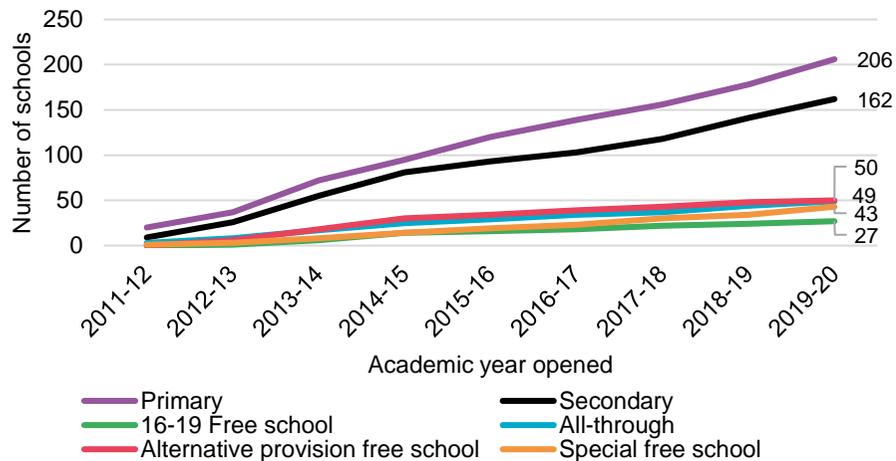
Source: NFER analysis of Get Information About Schools data

While primary free schools account for nearly half of all mainstream free schools, they only account for about one per cent of all primary schools in England. Secondary free schools have had more of an impact on their phase, making up five per cent of all mainstream secondary schools. But all-through free schools have had a bigger impact still, accounting for a quarter of the total.
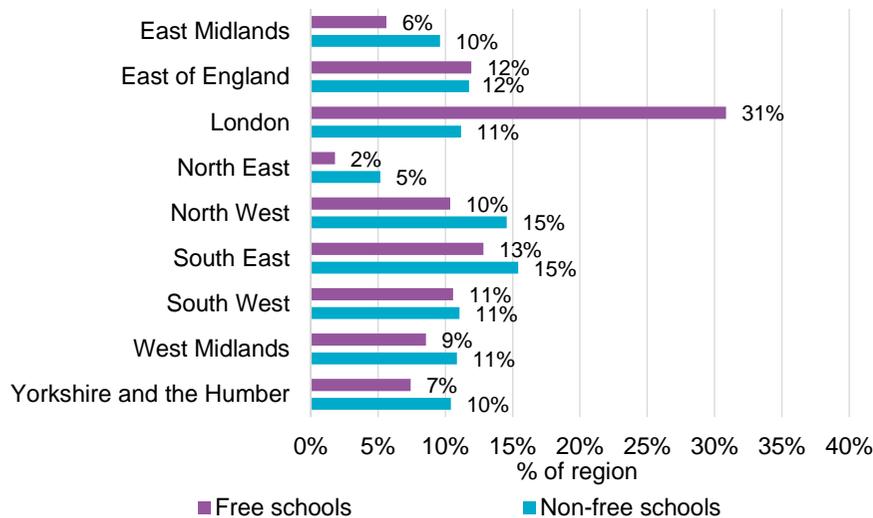
1.2.2 Geographical spread

While free schools have been established across the whole of the country, as Figure 2 shows, they have disproportionately been opened in London. At the end of March 2020, 31 per cent of the total free schools established had been opened in the London Government Office Region (GOR). This is nearly three times the share of all non-free schools which are in London (11 per cent).

Although the proportion of all free schools which were established in London is very high, the share at the end of March 2020 is actually the lowest level it has been since the programme commenced. For much of the last decade, the proportion of all free schools which were established in London had been between running between 35 and 38 per cent, but this had fallen in the last two years following a change of the criteria for new free school applications from wave 13. There is now a much greater expectation that a proposed free school will be in located in one of the specific areas identified by the DfE as having the lowest educational performance and the lowest capacity to improve; having both a basic need for new places and low standards; and

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[2] The number of free schools established is based on the total number of free schools to open in DfE Get Information About Schools data. Note that schools which closed and subsequently re-opened to make a fresh start will be counted as separate openings in the total.

having been largely untouched by the free schools programme to date (DfE, 2020a). If these criteria are maintained in future waves, we might expect to see the share of free schools which are in London continue to fall.

Figure 2: A disproportionate number of free schools have been opened in London

East Midlands — Free schools 6%, Non-free schools 10%
East of England — Free schools 12%, Non-free schools 12%
London — Free schools 31%, Non-free schools 11%
North East — Free schools 2%, Non-free schools 5%
North West — Free schools 10%, Non-free schools 15%
South East — Free schools 13%, Non-free schools 15%
South West — Free schools 11%, Non-free schools 11%
West Midlands — Free schools 9%, Non-free schools 11%
Yorkshire and the Humber — Free schools 7%, Non-free schools 10%

% of region

■ Free schools   ■ Non-free schools

Source: NFER analysis of Get Information About Schools data
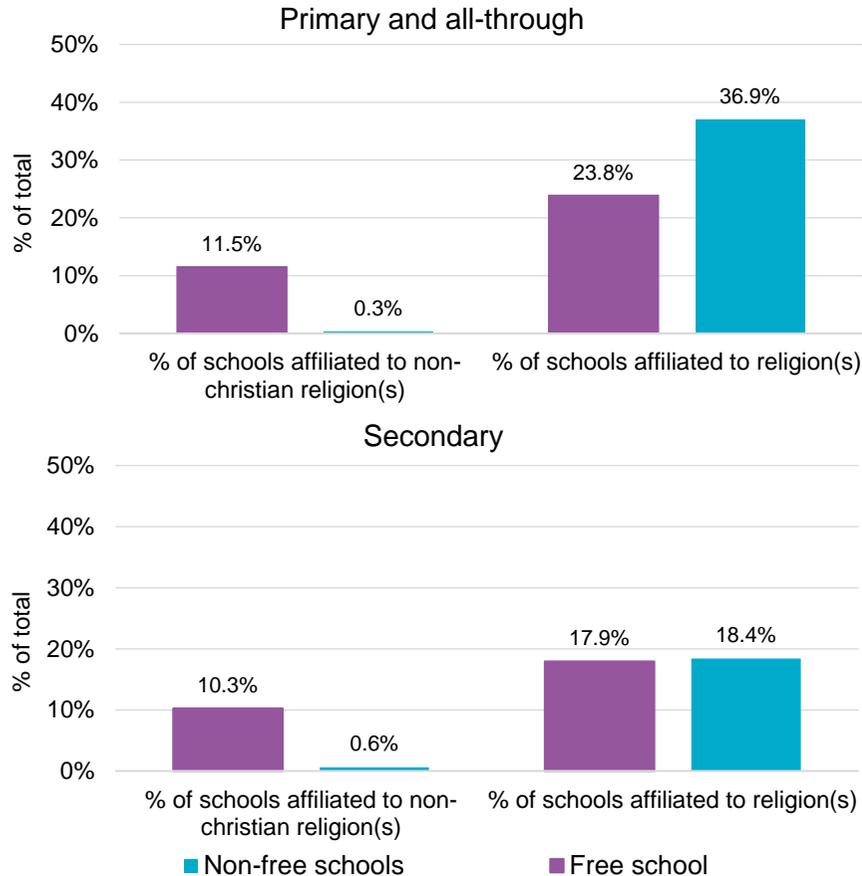
1.2.3   Religious denomination

Free schools with a faith designation account for 20 per cent of the total number established since 2011[3]. This is much lower than the 34 per cent of non-free schools nationally which are faith-based schools.

As shown in Figure 3, this is wholly driven by differences in the primary phase where the proportion of faith based primary free schools is 13 percentage points lower than other primary schools. This is primarily due to there being no free schools of the Roman Catholic faith designation, whereas almost ten per cent of primary non-free schools follow this faith. The lack of free schools set up by the Roman Catholic faith has been due to concerns that faith group have had with the '50 per cent rule', which stipulates that where newly established academies with a religious designation are oversubscribed, at least 50 per cent of their places must be open places; that is, allocated without reference to faith (Whittaker, 2018).

Of the new free schools with a faith designation, around half have been set up by non-Christian faith groups. By comparison, less than one per cent of non-free schools with a faith designation have been set up by non-Christian faith groups.

[3] Please note that some free schools may still have a faith ethos even if they do not have a faith designation.

Figure 3: Free schools are less likely to have a faith designation

Primary and all-through

- % of schools affiliated to non-christian religion(s): Free school 11.5%, Non-free schools 0.3%
- % of schools affiliated to religion(s): Free school 23.8%, Non-free schools 36.9%

Secondary

- % of schools affiliated to non-christian religion(s): Free school 10.3%, Non-free schools 0.6%
- % of schools affiliated to religion(s): Free school 17.9%, Non-free schools 18.4%

■ Non-free schools ■ Free school

Source: NFER analysis of Get Information About Schools data

1.2.4   Closures

While free schools have steadily expanded in number in the last ten years, not all have flourished. At the end of March 2020, some 26 mainstream free schools had closed, (of which eight were primary, 12 secondary, five all-through and one 16-19 free school), which represents 5.9 per cent of all mainstream free schools established.

There is a lot of regional variation in the free schools which have closed. Around a third were located in South West Government Office Region (GOR), which comprised about 20 per cent of the free schools established in that region. Only the North East GOR had a higher proportion of closures amongst its free schools established at 25 per cent, albeit this region only had eight free schools in total. Conversely, none of the 25 free schools in East Midlands or 33 free schools in Yorkshire and the Humber GORs that have been established had closed.

New schools may be anticipated to have a higher closure rate than established schools, as setting up and running a new school is likely to have greater inherent risks than running a longstanding school (Dunford *et al.*, 2013). For example, a new school may have difficulty establishing itself with parents and among other local schools who may not welcome the extra competition they bring in attracting pupils.

Further, many free schools have faced significant challenges in finding a permanent site (Dickens, 2016). Since 2017, the government has been supporting new schools in acquiring land and buildings through the *LocatED* program (DfE, 2017b).

However, half of the free schools which had closed as of March 2020 did so either to change trust sponsor or to make a fresh start - that is, the original school closed to be replaced by a new free school, which can start again, free of any of the issues that beset its predecessor. The closure rate falls to 3.7 per cent if free schools which closed to make a fresh start or change sponsor are excluded. This is higher, but much closer, to the closure rate in the wider non-free school population since 2010, which was 3 per cent.

1.2.5 Ofsted outcomes

In the early years of the programme, there was a lack of data on performance outcomes for free schools (which was due to the time it takes for pupils to pass through a school from the year of entry). In the absence of this data, there was much interest in Ofsted judgements as a method for judging the early success of the programme (NAO, 2013). This data was more timely as Ofsted typically start to inspect new schools in their third year of operation (Ofsted, 2019).

As shown in Table 1, the published statistics from Ofsted up to the end of February 2020, show that 35 per cent of the 168 primary and all-through schools inspected to date were judged to be outstanding. This was just over twice the rate in other schools (17 per cent). However, primary and all-through free schools were also slightly more likely to be judged as requiring improvement or as inadequate (14 per cent) compared to other maintained schools (12 per cent). Some 74 primary and all-through schools, which were set up in the last few years, were yet to be inspected by Ofsted.

In the secondary sector, of the 99 free schools inspected to the end of February 2020, 26 per cent were judged to be outstanding, five percentage points higher than for other maintained secondary schools. In addition, a lower proportion of secondary free schools were judged to be requiring improvement or as inadequate (15 per cent) compared to other schools (22 per cent). Some 51 newer secondary free schools were yet to be inspected.

Of the 18 16-19 free schools which had been inspected, over 50 per cent were rated outstanding. Further, none of these schools were rated as requiring improvement or as being inadequate as at February 2020. However, it is worth noting that there are only a small number of 16-19 free schools.

Table 1: In all phases, free schools have much higher levels of outstanding schools

Ofsted rating	Number of free schools	Free schools	Non-free schools
Primary and all-through			
Outstanding	59	35%	17%
Good	85	51%	71%
Requires improvement	18	11%	9%
Inadequate	6	4%	2%
Not yet inspected	74		
Secondary			
Outstanding	26	26%	22%
Good	58	59%	57%
Requires improvement	10	10%	16%
Inadequate	5	5%	5%
Not yet inspected	51		
16-19			
Outstanding	10	56%	26%
Good	6	33%	55%
Requires improvement	2	11%	15%
Inadequate	0	0%	4%
Not yet inspected	8		

Source: NFER analysis of Get Information About Schools data

Note: To compare to 16-19 free schools, we include all mainstream schools and colleges offering post-16 qualifications with Ofsted ratings, including providers on the further education Ofsted framework but excluding the 17 open sixth-form centres

1.2.6 Pupil numbers

As at January 2019, almost 10 years after the free schools programme had started, the number of pupils being educated in a free school reached the 100,000 mark. Around one per cent of primary and all-through pupils were being educated in a free school, while secondary free schools educated around two per cent of all secondary pupils.

Many of these free schools, particularly the newer ones, were still in the process of growing as they add new school years with each successive academic year that they are open. As existing pupil cohorts move through the school and new ones join, pupil numbers can be expected to continue to grow sharply in the coming years.

2 Attainment in primary free schools

2.1 Background

As of March 2020, there were 242 open primary and all-through schools. Most of these started by taking pupils into their reception year and built up their capacity as these pupils moved up through the school and successive cohorts joined to replace them. For primary and all-through free schools following this model, it takes seven years from the first cohort starting in the Reception Year to take their Key Stage 2 (KS2) tests at the end of Year 6.

Other free schools have operated different pupil recruitment strategies[4]. Some admitted new pupils to join in multiple school years, so these free schools will have pupils taking KS2 tests sooner. A small number of new free schools were independent schools, which chose to close and re-open as a free school. These will already have pupils in each school year, and they will therefore have pupils taking KS2 tests sooner.

By the end of the 2018-19 academic year, 81 primary and all-through free schools had pupils who had taken KS2 assessments that year, representing around a third of the total. Only 38 of these free schools – those which had opened in the 2011-12 and 2012-13 academic years – had pupils who had spent the whole of their time in primary education in a free school.

2.1.1 Pupil characteristics

Table 2 presents the characteristics of Year 6 free school pupils in 2018-19, when they take their KS2 assessments, relative to pupils in other primary schools. This shows that free schools pupils (67 per cent) were twice as likely to be from an ethnic minority as pupils in other schools (33 per cent).

Asian pupils in particular were over-represented in primary free schools: their proportion was almost three times larger in free schools than across all primary schools. This pattern cannot simply be explained by the large number of free schools that were located in London, the region with the highest share of non-white pupils. Indeed, across most of the English regions, free schools had on average, higher proportions of non-white pupils relative to non-free schools.

Free school pupils in Year 6 were more likely to have a first language other than English (40 per cent). This was nearly double the rate in all primary schools (21 per cent).

Table 2 also shows that a similar proportion of primary free school pupils in Year 6 were disadvantaged (30 per cent) relative to other primary schools[5]. In addition, Key Stage 1 (KS1) attainment for pupils in free schools (16.7 average score) was comparable to attainment in all primary schools (16.3 average score).

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[4] Based on NFER analysis of Get Information About Schools data.
[5] Where disadvantage is measured by whether they have been in receipt for free school meals in the last six years.

Table 2: Free school pupils in Year 6 were disproportionately likely to be from an ethnic minority

Pupil characteristics	Free schools	All state funded mainstream primary schools
Language		
English as an additional language	40%	21%
Ethnicity		
White British	33%	67%
White other	9%	7%
Asian	33%	11%
Black	10%	6%
Other	15%	9%
Disadvantage		
Pupils eligible for FSM	30%	30%
Gender balance		
Male	50%	51%
Prior attainment		
KS1 average point score	16.7	16.3

Source: NFER analysis of National Pupil Database data

As discussed, only about one-third of free schools had KS2 results in 2018-19. In order to establish whether these Year 6 pupils were representative of the overall primary free school pupil population, we compared their characteristics with free schools pupils in Year 2 (when these pupils do their KS1 tests), where we had pupil data for about three-quarters of open primary and all-through free schools. Table 3 shows that the characteristics of the Year 2 free school pupils. These were broadly comparable to pupils in Year 6 (see Table 2), which suggests that Year 6 pupils were broadly representative of the primary free school pupil population.

The main difference which could be observed between the two year groups was the Year 2 pupils had a lower relative share of pupils recorded as being disadvantaged. However, this may be because disadvantaged pupils are known to be under-recorded at KS1 due to the existence of universal free school meals.

Table 3: Free school pupils in Year 2 were more likely to be from an ethnic minority but less likely to be disadvantaged

Pupil characteristics	Free schools	All state funded mainstream primary schools
Language		
English as an additional language	36%	21%
Ethnicity		
White British	35%	66%
White other	12%	8%
Asian	26%	12%
Black	10%	5%
Other	18%	9%
Disadvantage		
Pupils eligible for FSM	17%	20%
Gender balance		
Male	50%	51%

Source: NFER analysis of National Pupil Database data

2.1.2   Movers

Primary free school pupils were substantially more likely to have moved school during KS2 (that is, during Years 3 to 6 inclusive) than their peers. Of the 2018-19 Year 6 cohort, 28 per cent moved into the school during their KS2 phase compared to 16 per cent of pupils in other primary schools (Figure 4).

Figure 4: Free school pupils were more likely to have moved during KS2
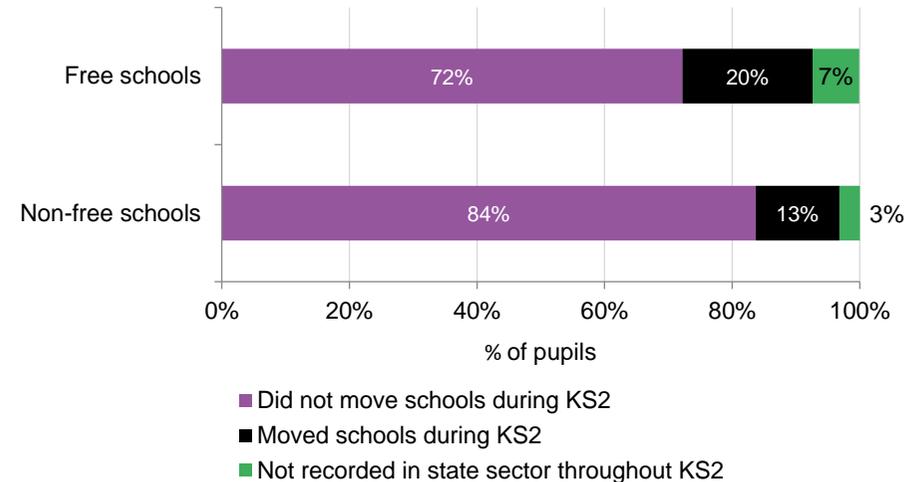
Source: NFER analysis of National Pupil Database data

Within the pupils who moved school, there were two distinctive groups. The first were pupils recorded as having attended two or more mainstream state schools during KS2. This would include pupils whose families moved area, pupils moving school as they were not happy at their previous school and pupils moving schools due to being excluded or as part of a managed move, where a pupil at risk of permanent exclusions moves from one school to another. One in five free school pupils were in this group compared to 13 per cent of pupils in other schools. Some of this movement may be due to parents not initially wanting to take the risk of sending their child to a new school, and instead waiting for the school to have an established performance

record. Equally, it may be that free schools tend to be located in areas which have a more transient population or simply that free schools do more to attract new pupils throughout KS2.

The second group comprised pupils who were not recorded as being in the state sector throughout their KS2. This group included pupils who moved to England during their KS2, pupils who moved from the independent into the state sector, and pupils who were simply misreported in the data. These groups represented seven per cent of pupils in primary free schools compared to three per cent of pupils in all primary schools[6], respectively.

Free school pupils who moved school during KS2 had, on average, different characteristics to pupils who had joined the free school by Year 2. For example, free school pupils who attended two or more schools during their KS2 were more likely to be from a disadvantaged background and have English as a first language relative to pupils who did not move.

There are several ways that the presence of movers may impact academic performance. Pupils who move may be more likely to have experienced a change in circumstance or have had difficulties in their previous schools. Hence, they may be at greater risk of underperforming compared to their peers (Claymore, 2019; Schwartz, 2017). The presence of movers may also negatively impact on the performance of non-movers[7]. For example, teachers may have had to spend additional time on movers' needs, leaving less time for other pupils.

2.2 Attainment at KS1

In the 2018-19 academic year, free school pupils taking their KS1 (covering Year 1 and 2) assessments outperformed pupils in other schools: 79 per cent of free school pupils reached the expected standard in reading compared to 76 per cent of pupils in LA maintained schools, 77 per cent of pupils in converter academies and 70 per cent of pupils in sponsored academies.

Table 4 shows that similar patterns can be observed across writing, maths and science. However, as we do not have a measure for attainment prior to KS1, we do not know whether free school pupils had made more progress relative to pupils in other schools or whether they already were at a higher standard when they started school.

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[6] This share may be higher in free schools due to pupils in former independents which have become free schools.
[7] We find that the share of movers in a school has a significant negative association with pupil performance.

Table 4: Pupils at KS1 were outperforming their peers in other school types

| % of pupils reaching expected standard in	Reading	Maths	Writing	Science
Free schools	79%	80%	73%	85%
Sponsored academies	70%	72%	65%	77%
Converter academies	77%	77%	71%	84%
LA maintained schools	76%	76%	70%	84%

Source: NFER analysis of National Pupil Database data

2.3 Attainment at KS2

2.3.1 Overview

In contrast to KS1, free school pupils taking their KS2 assessments were outperformed by their peers in most other school types in the 2018-19 academic year. As shown in Figure 5, 63 per cent of free school pupils reached the expected KS2 standard in reading, writing and maths relative to 67 per cent in LA maintained schools, 68 per cent in converter academies and 59 per cent in sponsored academies. However, as discussed in the previous section, there were considerable differences in characteristics between primary free school pupils and their peers which may account for these differences in relative performance.

Figure 5: A lower proportion of free schools pupils were working at the expected KS2 standard relative to most other school types

Average % of pupils reaching the expected KS2 standard in reading, writing and maths
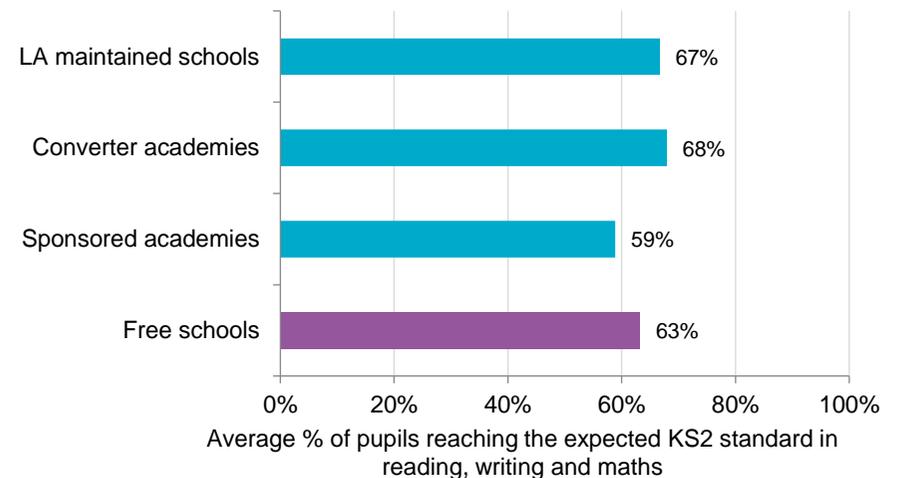
Source: NFER analysis of National Pupil Database data

Table 5 shows progress scores in reading, writing and maths at KS2, which measures a pupil's attainment at KS2 against the average score of pupils with the same prior attainment. These show that free school pupils had also made less progress in all subjects relative to their peers[8].

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[8] A negative progress score indicates that a pupil's actual KS2 result was lower than the average result of pupils with the same prior attainment.

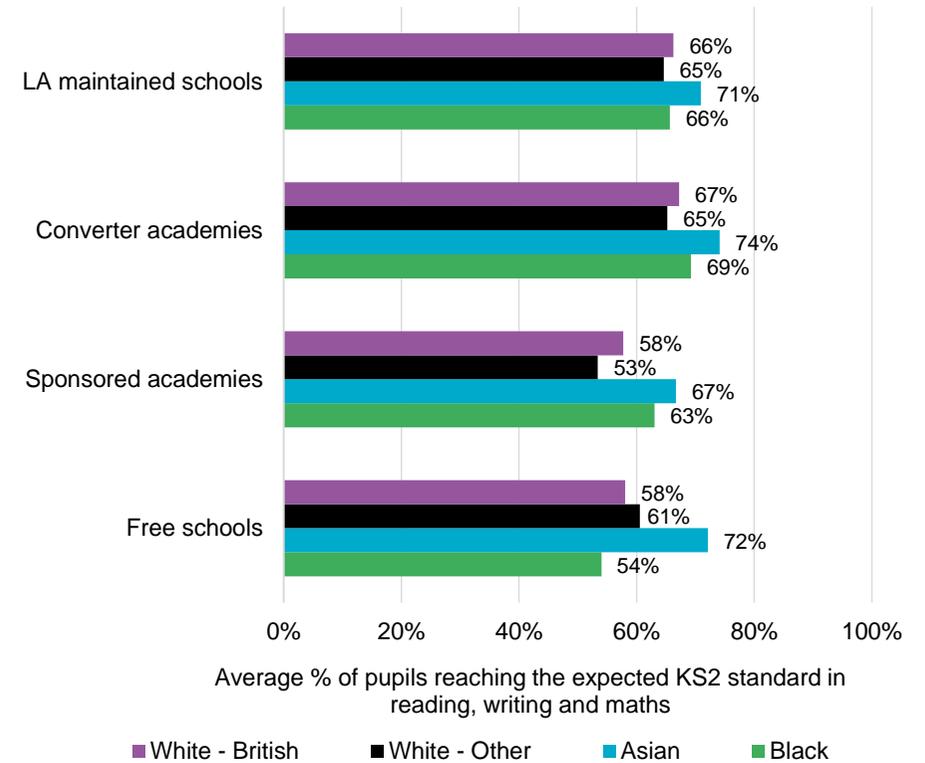**Table 5: Progress was also lower on average among pupils in free schools at KS2**

Type of school	Progress in reading	Progress in writing	Progress in maths
Free schools	-0.6	-0.5	-0.7
Sponsored academies	-0.6	0.1	-0.3
Converter academies	0.1	0.1	0.2
LA maintained schools	0.2	0.1	0.1

Source: NFER analysis of National Pupil Database data

The relative performance of free school pupils varied with different pupil characteristics. As shown by Figure 6, white British and black pupils in free schools were outperformed by their peers in other schools. In contrast, free school pupils from Asian backgrounds performed at a comparable level to their peers[9].

Figure 6: Only pupils from an Asian background in free schools performed comparably to their peers in other schools at KS2

Average % of pupils reaching the expected KS2 standard in reading, writing and maths

■ White - British   ■ White - Other   ■ Asian   ■ Black

Source: NFER analysis of National Pupil Database data

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[9] It is important to note that results could be driven by differences across pupils with a given characteristics between free schools and other schools. For example, an Asian pupil who attended a free school may have different characteristics to Asian pupils at other schools.

Figure 7: Free school pupils whose first language is English were working at a lower level at KS2 compared to their peers
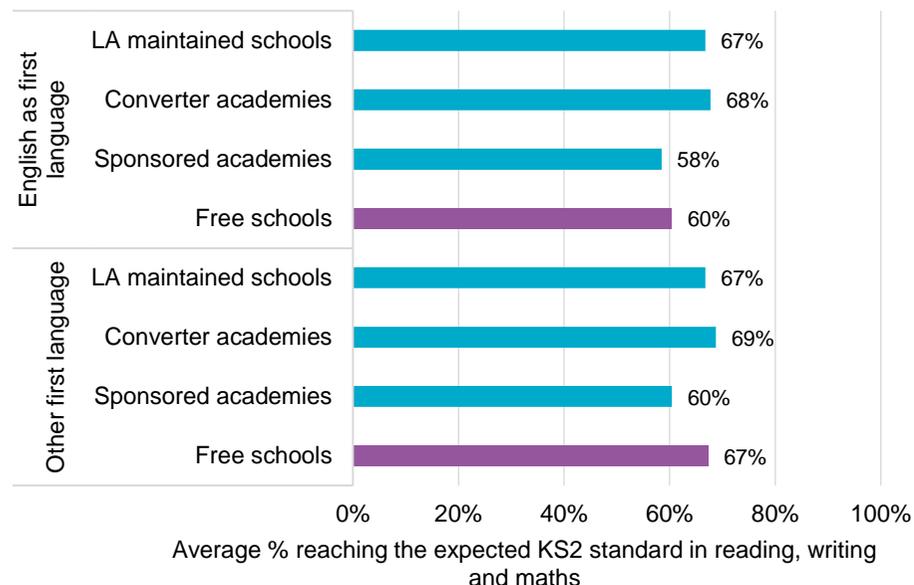
Source: NFER analysis of National Pupil Database data

As shown in Figure 7, 67 per cent of free school pupils with English as an additional language (EAL) were working at the expected level at KS2 in 2018-19. This was much higher than the 60 per cent of free school pupils whose first language was English. We cannot tell from our analysis why, but it may be because EAL pupils tend on average to make better progress than pupils whose first language is English. It may also be due to the EAL group making up a larger proportion of

free schools' cohorts compared to other schools and the additional support they receive from their teachers to get to the required standard.

2.3.2 Comparison to neighbouring schools

One of the original aims of the free schools programme was to provide greater school choice (Evennett, 2019). Therefore, an important consideration when assessing the performance of free schools was to explore how their performance compared to other local schools which free school pupils could have otherwise realistically attended. As geographical proximity is an important factor in school choice, we compared KS2 performance for free school pupils to pupil performance in their five nearest schools.

We find that in 2018-19, on average, free school pupils were outperformed by their peers at their five nearest schools: 67 per cent of free school pupils reached the expected standard in reading, writing and maths compared to an average of 69 per cent in their nearest five schools[10]. However, this is not to say that all primary free schools were outperformed by all of their neighbouring schools. Two in every five free schools had a higher share of pupils reaching the expected standard relative to their five neighbouring schools.

This said, as one of the objectives of the free schools programme was to open free schools in areas with under-performing schools so they could help to raise standards, this does not appear to have had the desired impact yet. This is not the case at secondary where free

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[10] Figures are not directly comparable to the other estimates presented for the share of pupils reaching the expected standard. See the Appendix for further details.

schools are outperforming their neighbouring schools (see Section 3.2.2).

2.3.3 Controlling for differences

The main issue with directly comparing attainment outcomes of primary free school pupils to those in other primary schools is that we know that their characteristics differ. This means we cannot tell whether the differences in outcomes are real or simply due to differences in their characteristics. To overcome this difficulty, we use a statistical method known as regression analysis to identify the impact of studying at a free school, over and above the potential outcome from attending an alternative school (but realistic school for a pupil with such characteristics). This method controls for differences in characteristics of the cohorts of pupils in free schools compared to other schools.

More detail on our methodology can be found in Appendix B.

We find that the average probability of reaching the expected standard in reading, writing and maths was seven per cent lower in free schools relative to other schools, as shown by Table 6. This difference, which is statistically significant, would have been unlikely to simply occur by chance.

This probability was even lower for disadvantaged pupils with a differential of nine per cent. However, if anything, the gap in attainment between free school and non-free school pupils has been narrowing slightly over time, but these year-on-year changes are not statistically significant.

Table 6: Free school pupils were outperformed by their peers at KS2

Sample	2018-19	2017-18	2016-17
All free school pupils	-0.07*	-0.07*	-0.09*
Disadvantaged free school pupils	-0.09*	-0.11*	-0.15*
Free school pupils who remained in the same schools for their entire KS2	-0.06*	-0.05*	-0.07*

Source: NFER analysis of National Pupil Database data
Note: *Significant at 5% level

As free school pupils were more likely to have moved schools during their KS2, we also considered the sample of pupils who remained in the same school for their entire KS2. However, this does not change the result. That is, the average probability of reaching the expected standard in reading, writing and maths was six per cent lower for pupils who were educated in the same free school throughout their KS2 relative to pupils in other schools who were in the same non-free school throughout their KS2 phase.

It is not clear why primary free school performance is better than other primary schools at KS1 but lagging behind at KS2. There are a number of possibilities. One explanation may be that the larger number of pupils moving into free schools during KS2 may be impacting on overall performance.

Another factor could be that the KS2 outcomes of the first cohorts of primary free schools pupils may have been negatively impacted by being the first cohorts to progress through these schools. As free schools become more established, younger cohorts may not be impacted to the same extent. Finally, it may be that the quality of teaching and other factors which impact pupil performance in free schools were inferior at KS2 relative to KS1.

2.4   Summary

Primary free school pupils were not typical of the primary school pupil population. Indeed, a larger proportion of these pupils were from ethnic minorities and had a first language other than English. Further, pupils in free schools were 12 percentage points more likely to have moved schools during their KS2 relative to pupils in other schools.

Free school pupils at KS1 were outperforming their peers in other schools, across all subjects. However, we do not know whether free school pupils had made more progress relative to pupils in other schools or whether they already were at a higher standard when they started school.

It is still early days in terms of assessing KS2 attainment outcomes for primary and all-though free schools. The number of free schools with KS2 outcomes is still relatively small and results may change as more pupils take their KS2 tests at free schools in future.

The current evidence suggests that primary free school pupils are outperformed by pupils from other schools at KS2, regardless of their disadvantage status. Indeed, pupils in free schools were on average seven per cent less likely to reach the expected standard at KS2 in reading, writing and maths relative to other schools.

Free school pupils from white English and Black backgrounds seemed to perform particularly poorly relative to their peers, while Asian pupils performed comparably to pupils in other schools. Similarly, while EAL pupils performed comparably with pupils in other schools, pupils with English as a first language are outperformed by pupils in other schools at KS2.

As KS1 outcomes for primary free school pupils are better their than peers, this indicates that these schools were not performing poorly throughout, and may suggest that KS2 results may improve as more primary free schools also have pupils at KS2. However, higher performance at KS1 will make it more difficult for free schools to achieve good progress scores at KS2 going forward.

These findings suggests that there is room for primary free schools to improve pupil attainment, particularly in terms of supporting pupils to achieve the expected standard at KS2. Further research is needed to establish what is driving lower KS2 attainment in free schools; in order to support teachers and school leadership in increasing free school pupil attainment.

3 Attainment in secondary free schools

3.1 Background

As of March 2020, there were 194 open secondary and all-through schools. Of these, 104 had KS4 (covering Year 7 to 11 inclusive) results in 2018-19, representing just over half of secondary and all-through free schools.

There were also 26 open 16-19 free schools as at March 2020.

3.1.1 Pupil characteristics

Table 7 presents the characteristics of free school pupils in Year 11 in 2018-19 relative to those in all state-funded mainstream secondary schools.

As with primary free school pupils, secondary free school pupils were significantly more likely to be from an ethnic minority than those in other secondary schools, with 55 per cent of pupils in free schools from an ethnic background compared to 30 per cent across all secondary schools.

Unlike primary free school pupils, secondary free schools pupils were more likely to be disadvantaged: 31 per cent of free school pupils had been eligible for free school meals compared to 26 per cent of pupils in all secondary schools.

Secondary free schools also had more male pupils (54 per cent) on average than in all secondary schools. This imbalance in gender is driven by the distribution of single-sex free schools. There are more male single-sex free schools (12 schools) than female (eight schools).

Secondary free school pupils were, however, comparable to pupils in all secondary schools in terms of prior attainment.

Table 7: Free school pupils in Year 11 are more likely to be from an ethnic minority and more likely to be disadvantaged

Pupil characteristics	Free schools	All state funded mainstream secondary schools
Language		
English as an additional language	28%	16%
Ethnicity		
White British	45%	70%
White other	8%	6%
Asian	23%	11%
Black	12%	6%
Other	13%	8%
Disadvantage		
Pupils eligible for FSM	31%	26%
Gender balance		
Male	54%	51%
Prior attainment		
KS2 average point score	28.7	28.7

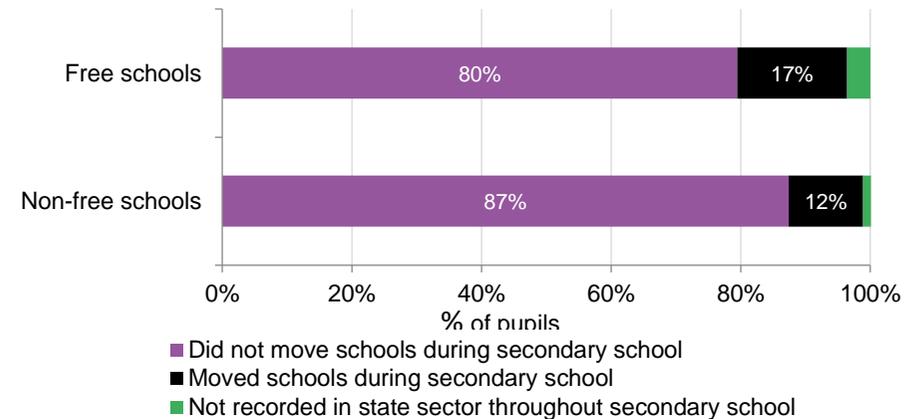Source: NFER analysis of National Pupil Database data

Comparing across primary and secondary free school pupils, the latter were more likely to be both disadvantaged and have higher KS2 attainment. Further, while both primary and secondary free schools had relatively high proportions of pupils from ethnic minorities and with a first language other than English, these groups were more over-represented in the primary phase.

3.1.2 Movers

Secondary free school pupils were more likely to have moved school during their KS4 relative to their peers[11]. Of the 2018-19 Year 11 cohort, 20 per cent of free school pupils joined the school during their KS4 compared to 13 per cent of pupils in other secondary schools (Figure 8). Of these, 17 per cent of free school pupils were recorded as having attended two or more secondary state schools during their KS4 relative to 12 per cent of pupils in other schools. Four per cent of free school pupils were not recorded in state sector throughout their KS4 compared to one per cent of pupils in all mainstream schools.

As highlighted in Section 2, there are a number of ways in which the presence of movers might impact free school performance. However, the impact of movers for secondary is likely to be lower than for primary. This is because primary free school pupils were 12 percentage points less likely to have remained in the same school throughout their KS2 than pupils in other schools, whereas the difference was lower in the secondary sector.

Figure 8: Free school pupils were more likely to have moved during KS4 than in other secondary schools

Source: NFER analysis of National Pupil Database data

3.2 Attainment at KS4

3.2.1 Overview

In the 2018-19 academic year, free school pupils taking their KS4 assessments largely outperformed their peers in other schools.

Attainment 8 measures the achievement of a pupil across eight qualifications including mathematics, and English. Each individual grade a pupil achieves is assigned a point score, which is then used to calculate a pupil's Attainment 8 score (DfE, 2016). As shown by Figure 9, the average attainment 8 score was 48.8 in free schools is

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[11] See Section 2.1.2 for further discussion on how pupil movers are defined.

broadly the same as in converter academies, but higher than other school types.

**Figure 9: Attainment is higher on average among pupils in free schools at KS4**
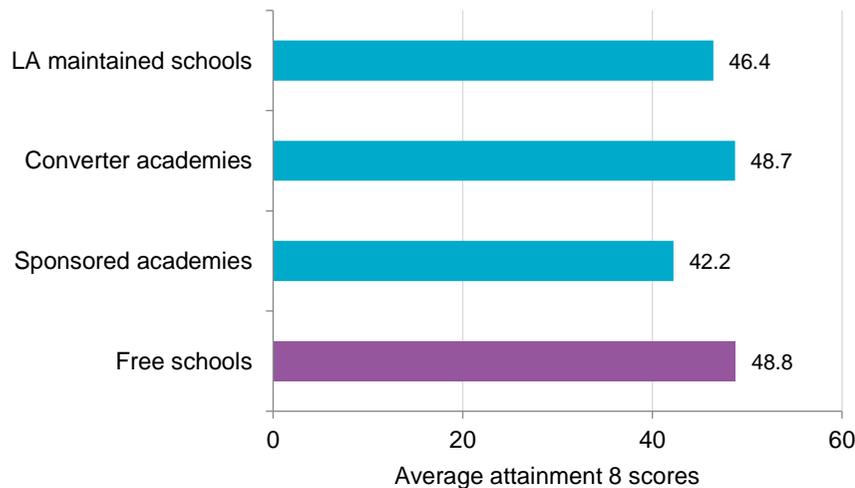
The performance gap between secondary free school pupils and other schools was even larger when we consider progress scores which account for a pupil's prior attainment. Progress 8 measures a pupil's attainment 8 score against the average attainment 8 score of pupils with the same prior attainment.[12] Figure 10 shows that secondary free

school pupils had an average progress 8 score of 0.22 relative to 0.08 in converter academies, the next best.

Figure 10: Progress is also significantly greater on average among pupils in free schools at KS4
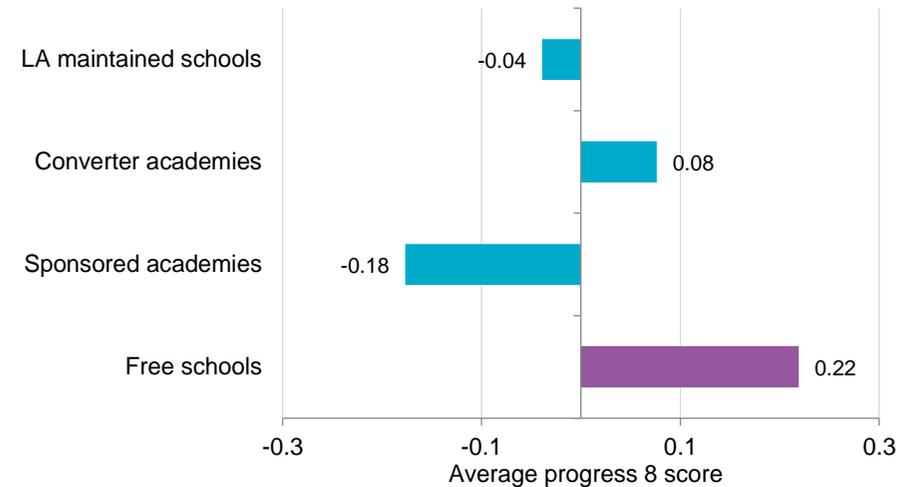
Whether disadvantaged or not, pupils in free schools outperformed pupils in other schools. Figure 11 shows that, if anything, the gap in progress between pupils in free schools and other schools was wider for disadvantaged pupils than non-disadvantaged pupils. Indeed, disadvantaged pupils in free schools make vastly more progress than

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[12] A positive progress 8 means that a pupil made greater progress than other pupils who had the same prior attainment, while a negative score means the pupil made less progress compared to their peers. Note that a negative progress 8 score does not indicate that a pupil has not made progress but that pupils with the same prior attainment have made more progress.

pupils in other types of school. However, a large amount of the performance differential between disadvantaged pupils in free schools and non-free schools can be accounted for by differences in ethnicity.

Figure 11: Regardless of disadvantage status, pupils in free schools outperform their peers at KS4
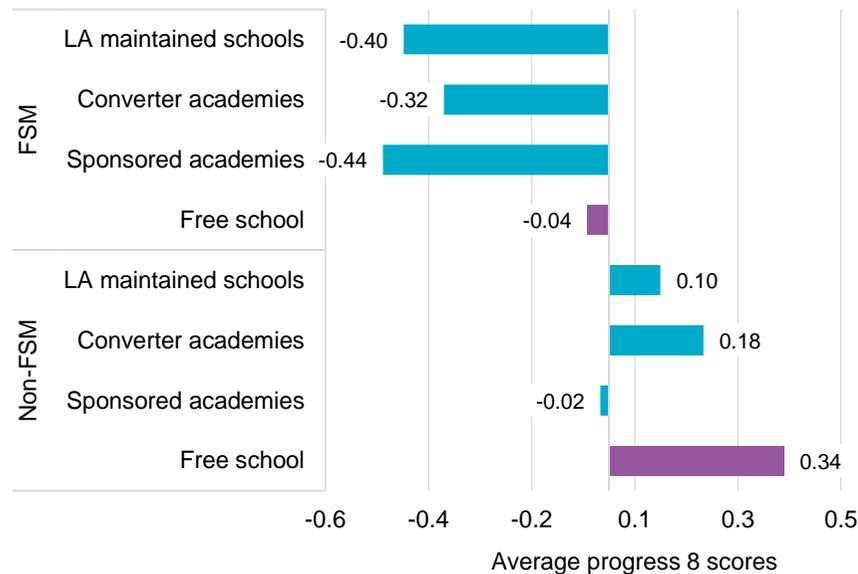
Source: NFER analysis of National Pupil Database data

As with primary free schools, EAL pupils in free schools did better, in relative terms at KS4 than free school pupils whose first language is English. Figure 12 shows that free school pupils with English as a first language performed comparably to pupils in other schools whereas pupils with a first language other than English outperformed pupils across all other schools.

Figure 12: Free school pupils with a first language other than English outperformed pupils in other schools
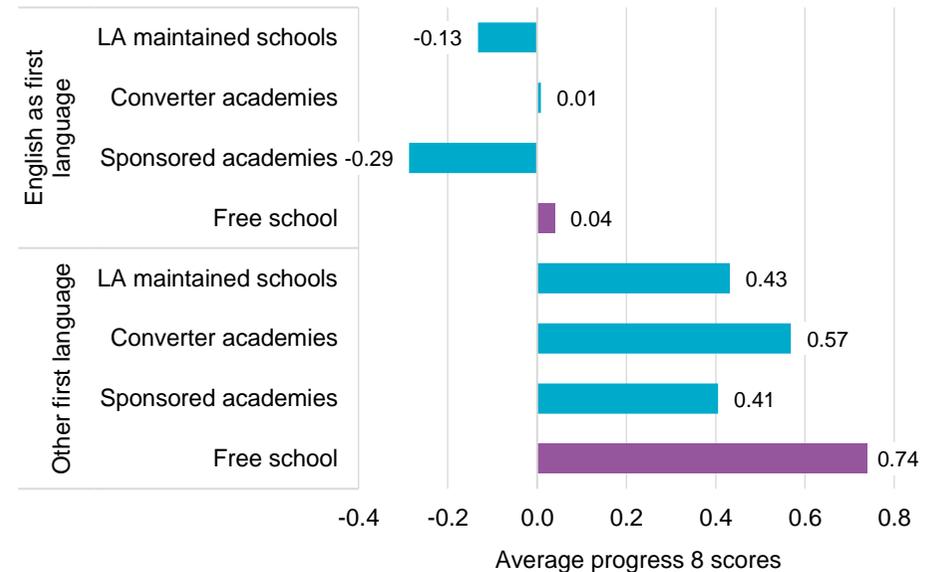
Source: NFER analysis of National Pupil Database data

3.2.2 Comparison with neighbouring schools

We compare performance in secondary free schools against the performance in their five nearest schools, which were likely to have been the main outside options available to free school pupils.

Free school pupils outperformed their five nearest schools on average: the average attainment 8 score for free school pupils was 47.7 relative to 46.1 in their nearest five schools. Note this does not mean that all secondary free schools were outperforming their nearest

neighbouring schools. We found that three-fifths of secondary free schools outperformed their five nearest neighbour, while the remaining two-fifths did worse.

3.2.3 Controlling for differences

As discussed Section 2, we used a statistical model to identify the impact of studying at a free school, over and above the potential outcome from attending an alternative (but realistic for a pupil with such characteristics) school. More detail on our methodology can be found in Appendix B.

We find that secondary free school pupils achieved just over a grade higher at KS4 than their counterparts in other schools once pupil- and school-level characteristics are controlled for (see Table 8). The pattern is similar for progress: secondary free school pupils achieve one-eighth higher progress across all eight attainment 8 subjects compared to their peers with similar prior attainment.

Comparing disadvantaged pupil in free schools to disadvantaged pupils in other schools, we find that, while disadvantaged free school pupils also seem to have consistently outperformed their counterparts by around a grade, differences in performances are not statistically significant. However, the lack of statistical significance may simply be driven by the smaller relative sample size.

When we exclude pupils who moved school during KS4 and consider just those who remained in the same school throughout their entire KS4, we find that the impact of attending a free school is larger than for the full-sample. This suggests that the average impact of studying

at a free school is being affected by the relatively large share of movers in free schools.

Table 8: Free schools pupils outperform other pupils at KS4 once pupil characteristics were controlled for

Sample	2018-19	2017-18	2016-17
Attainment 8			
All free school pupils	1.1*	1.2*	1.3*
Disadvantaged free school pupils	1.2	1.4	2.3**
Free school pupils who remained in the same schools for their entire KS4	1.6**	1.7**	2.3**
Progress 8			
All free school pupils	0.12**	0.12*	0.10*
Disadvantaged free school pupils	0.12	0.13	0.23**
Free school pupils who remained in the same schools for their entire KS4	0.17**	0.18**	0.23**

Source: NFER analysis of National Pupil Database data
Note: * Significant at 10% level, ** Significant at 5% level

Our estimates suggest that, while free schools outperformed non-free schools, the performance differential has narrowed slightly over time, but these year-on-year changes are not statistically significant and may have occurred by chance.

Attainment 8 measures the achievement of a pupil across eight qualifications which fall into four 'buckets', namely English, mathematics (both of which are double weighted), three English Baccalaureate (EBacc) subjects and three other approved. As shown by Table 9, amongst the four Attainment 8 'buckets', free school pupils have higher scores in English (scoring a quarter of a grade higher), maths (scoring a third of a grade higher) and the EBacc (scoring three quarters of a grade higher) subjects. However, there were no significant differences in performance in open slot subjects between free schools and other schools.

Table 9: Free schools pupils outperform other pupils at KS4 in English, maths and the EBacc subjects

Attainment 8 slot	2018-2019
Maths	0.26**
English	0.32**
EBacc	0.73**
Open	-0.17

Source: NFER analysis of National Pupil Database data
Note: * Significant at 10% level, ** Significant at 5% level

3.3 Attainment at KS5

In 2018-19, only 34 secondary and all-through free schools had KS5 results. This represents 30 per cent of the 113 open secondary and all-through schools with sixth forms.

Nearly all (85 per cent) of 16-19 free schools had KS5 attainment results. However, as the population of 16-19 free schools is small, results were still based on only 22 schools.

For schools with KS5 results, we find that both secondary and 16-19 free schools had relatively high proportions of students achieving at least two Level 3 qualifications (Table 10). Indeed, 87.3 per cent and 88.6 per cent of secondary free schools and 16-19 free school pupils, respectively, achieved at least two substantial Level 3 qualifications relative to 86.5 per cent of pupils in all state-funded schools and 72.8 per cent of pupils in Further Education (FE) colleges.

Table 10 also shows that 16-19 free schools outperformed other schools in terms of average point score per Level 3 entry. In contrast, pupils in secondary free schools with a sixth form achieved the lowest average point score per Level 3 entry. The average point score for secondary free schools was 30.1, compared to 37.5 for 16-19 free schools. These patterns were mirrored when only A-level entries were considered.

Table 10: Secondary free schools achieved a low average point score at KS5, while 16-19 free schools achieved a high score

Type of school	Percentage of students achieving at least 2 substantial Level 3 qualifications	Average point score per level 3 entry
Free schools (secondary)	87.3%	30.1
Free schools (16-19)	88.6%	37.5
All state-funded schools	86.5%	32.8
FE sector colleges	72.8%	30.6

Source: A level and other 16 to 18 results: 2018 to 2019 (revised)

These results suggest that while 16-19 free schools were performing strongly at KS5, secondary free schools were performing poorly. However, as noted, these estimates are based on a sample of only 34 schools, so may be subject to wide variation. A comprehensive assessment of free school performance at KS5 will be needed when more secondary free schools have cohorts completing their KS5.

3.4 Summary

As with primary free school pupils, secondary free school pupils were not typical of the state-funded mainstream school pupil population. Free school pupils were more likely to be from a disadvantaged background, from an ethnic minority and have a first language other than English.

Currently, just over half of all secondary and all-through free schools have attainment results at KS4. Based on this information, secondary free school pupils were outperforming their peers in other schools at KS4. Indeed, free school pupils achieved on average just over one grade higher than their peers at KS4, once pupil and school-level characteristics have been controlled for. Their average progress score is about one-eighth of a grade higher than their peers across eight of the qualifications taken at KS4.

On average, disadvantaged free school pupils outperformed free school pupils in other schools. However, most of this difference was accounted for by differences in ethnicity between free school pupils and pupils in other schools. Once individual characteristics were accounted for, the difference in between disadvantaged free school pupils and disadvantaged pupils in other schools remains positive but not statistically significant.

Free school performance at KS5 was more mixed. While 16-19 free schools outperformed other schools, free school pupils in secondary free schools were performing poorly relative to other schools. However, the number of free school pupils with KS5 outcomes is still small and could be subject to change as more pupils take their KS5 exams at secondary free schools in future. If differences do persist as information for more schools becomes available, these patterns should be investigated further.

4 Free school popularity

4.1 Background

Almost since the introduction of the free schools programme, there has been a desire to assess how they are bedding in and performing. With most new free schools following the model of building up their pupil numbers over several years as new cohorts join and move through the school, it was going to take a long time before academic outcomes results became available. Therefore other metrics were identified which might provide some insight into how well these new free schools were faring.

One of the earliest indicators, which was primarily employed by DfE, was to look number of preferences expressed by families to send their child to a free school. In 2011, DfE reported that two thirds of the free schools which opened in the first wave had been oversubscribed for their first year, and demand for some of these free schools was three times more than the places available (DfE and Hill, 2011). Three years later, the DfE surveyed free schools and reported that they were hugely popular with parents, with almost three applications for every place (DfE, 2014). Most recently, in September 2017, the DfE again said that free schools were popular with parents (DfE and Nash, 2017).

As part of our assessment of the impact that free schools have made in their first ten years, we have examined the available data to judge whether they have proved popular with parents. We have used the DfE's own school preference and school capacity data for the period 2015-16 to 2019-20 to make this assessment.

4.2 Measures of free school popularity

There are several ways which a school's popularity can be measured, which are discussed in our previous research report into free schools (Garry *et al.*, 2018). In this report, we look at the following measures:

(a) The number of first preferences that a school receives.

(b) The ratio of first preferences received to the number of pupil places in the school's intake year

(c) The ratio of the number of first to third preferences received to the number of pupil places in the school's intake year.

When submitting applications for primary or secondary school, families were allowed between three to six choices depending on where they live. Families were advised to list schools in order of preference. If they do, the main advantage of measure (a) above is that it should identify which schools were most sought after. Subsequent preferences may be viewed as backup choices and arguably immaterial in this debate.

There may, however, be other factors that families consider when choosing a preferred school for their children; for example, the likelihood of being offered a place at their preferred school. This may depend on the number of places available, which may be less for free schools compared to well established non-free schools, especially in the secondary phase, and the number of preferences a family thinks will be expressed for those places, which may influence their own behaviour. It is also important to assess the extent to which a school is filling its capacity. A school could conceivably get a high number of first preferences and appear popular, but if it does not fill all of its

available places, this will suggest a different story. Given these factors, we look at two other measures, (b) and (c) above, which take account of the number of places available in a school.

It should be noted that there is a wide-range of other measures which could be used to assess the relative popularity of free schools[13]. We focus on measures (a), (b) and (c) as they provide a high-level assessment of free school popularity which does not require any assumptions about the determinants of school-choice.

4.3 Primary free schools

4.3.1 Applications for the 2019-20 academic year

Primary and all-through free schools[14] received 52 first preferences on average for entry into the 2019-20 academic year. As shown in Figure 13, this was much higher than the other main school types. They also received more second, third and other preferences, which suggests they were seen by parents as being a good backup choice. On average, they received 140 preferences in total for the 2019-20 academic year, 60 per cent more than converter academies, the next highest group.

Figure 13: Primary and all-through free schools receive more preferences on average than other school types
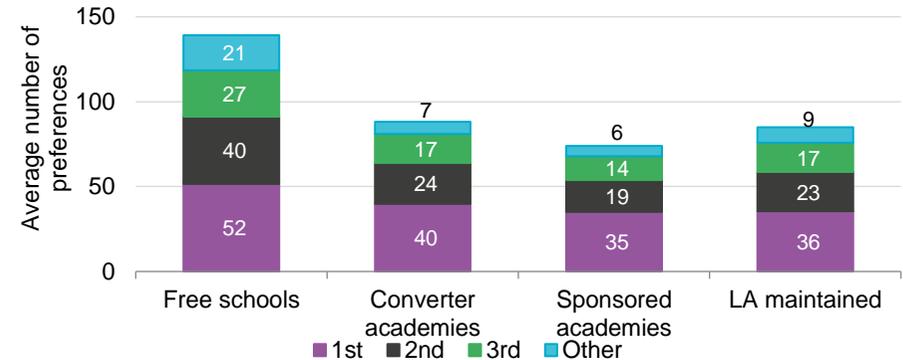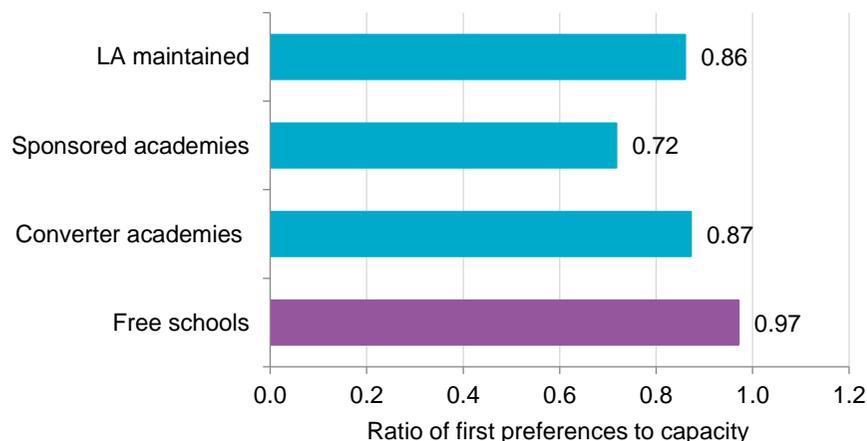

Source: NFER analysis of Get Information About Schools and School level application and offer data

As a new school without a track record, a free school may be more likely than other schools to be operating below capacity in the early years while becoming established. Yet when we examine first preferences received as a proportion of places available in the school per year group (Figure 14), we find that primary free schools received nearly one first preference choice per place available for the 2019-20 academic year. This was higher than for all other school types.

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[13] For example, see Mills *et al.*, (2019).
[14] Primary stage only.

Figure 14: Primary free schools receive more first preferences per available space than other school types

x-axis: Ratio of first preferences to capacity

- LA maintained: 0.86
- Sponsored academies: 0.72
- Converter academies: 0.87
- Free schools: 0.97

Source: NFER analysis of Get Information About Schools and School level application and offer data

It is also the case that primary and all through free schools received more top three preferences to as a proportion of places available in school's reception year for the 2019-20 academic year. They received 2.3 top three applications to places available on average. This compares to nearly 1.9 top three applications to places available on average for LA maintained schools, 1.8 for converter academies and 1.4 for sponsored academies.

4.3.2 How have applications changed over time?

When looking at applications data for the 2019-20 academic year, the measures we have used suggest that primary and all-through free schools were proving to be popular with parents. However, is this a recent phenomenon or have primary and all-through free schools always been more popular?

To answer this, we have looked back over DfE's preference data for the last five years to 2015-16. We find that since 2016-17, primary and all-through free schools have indeed had more first preferences and first to third preferences compared to other school types[15].

However, the stock of free schools has constantly changed since 2015-16 as new free schools have opened and some have closed. It is therefore difficult to know whether free schools were actually getting more popular the longer they were open or whether recently opened free schools were distorting this picture.

Figure 15 shows average first preferences to capacity ratios for primary and all through free schools by the year that of opening. It demonstrates that free schools which opened in the first three years of the programme had higher ratios than those which opened from 2014 onwards. However, the picture is mixed when looking at trends in the first preferences to capacity ratios, newer primary and all-through free schools tend to start from a lower base initially but have strong growth in subsequent years.

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[15] Only converter academies had more first preferences than free schools in 2015-16.

Figure 15: Established primary free schools were more popular than newer free schools, but newer ones were improving fast
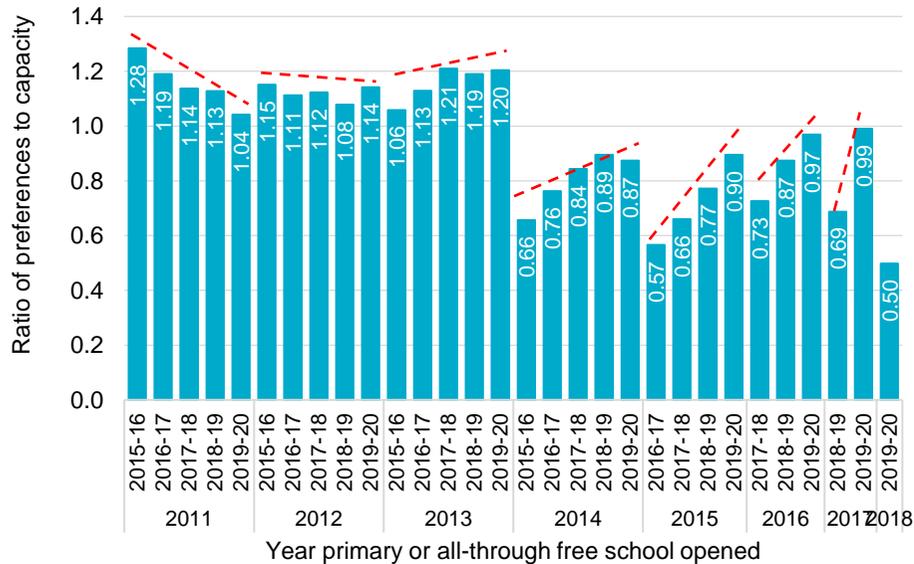
Source: NFER analysis of Get Information About Schools and School level application and offer data

To assess whether primary and all-through free schools were growing in popularity the longer they have been opened compared to other school types, we have also examined applications for schools which were open throughout the period 2015-16 to 2019-20. As shown in Figure 16, we find that the primary and all-through schools ratio of first preferences to capacity for the academic year 2015-16 were broadly similar to converter academies and LA maintained schools. The gap has widened since then, as the free school ratio has increased, while this has declined for converter academies and LA maintained schools.

Figure 16: The first preferences to capacity ratio for primary / all-through free schools has grown since the 2015-16 academic year
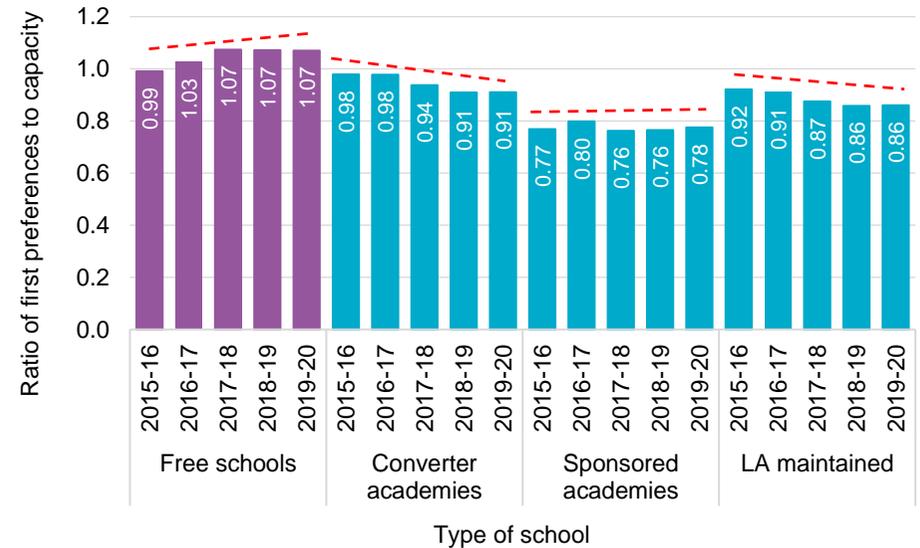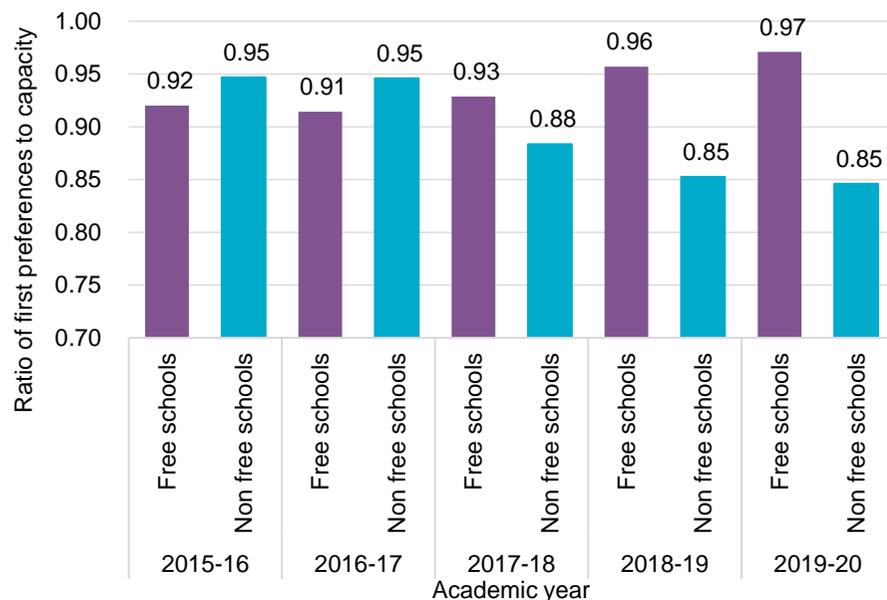

Source: NFER analysis of Get Information About Schools and School level application and offer data

4.3.3   Comparison to nearest neighbours

One of the criteria since the early waves for setting up a free school is that there should be a need for additional school places in the local area. It could be argued that it not surprising that primary and all-through schools have higher first and top three preference rates when compared to other school types, which may have a large number of schools in areas where there is not a shortfall of pupil places.

Figure 17: The first preferences to capacity ratio in primary / all-through free schools is now higher than in neighbouring schools

Source: NFER analysis of get Information About Schools and School level application and offer data

To explore this, we compared the ratio of average first preferences to capacity for primary and all-through free schools to their closest five neighbouring schools who were likely to be facing similar conditions, for academic years starting in 2015-16 to 2019-20. As illustrated in Figure 17, we found that in the first two academic years, the ratio for free schools was lower than their neighbouring schools. However, this flipped for the academic year starting in 2017-18 and the gap in the ratio has widened since in favour of free schools. This is partly

because the ratio of average first preferences to capacity has increased for primary and all-through free schools and partly because it has decreased for other school types.

This picture is largely replicated for the top three preferences to capacity ratio, albeit that free schools had similar average ratios as their five nearest neighbours in 2015-16 and 2016-17.

This analysis suggests that primary and all-through free schools were more popular than other nearby schools that were likely to be operating in similar conditions to them. As one of the original aims of the free schools programme was to provide greater school choice, this analysis suggests that they have been a success in this regard. However, it is important to note that it is exactly because some free schools were opened in areas with low standards that we might expect free schools to be more popular.
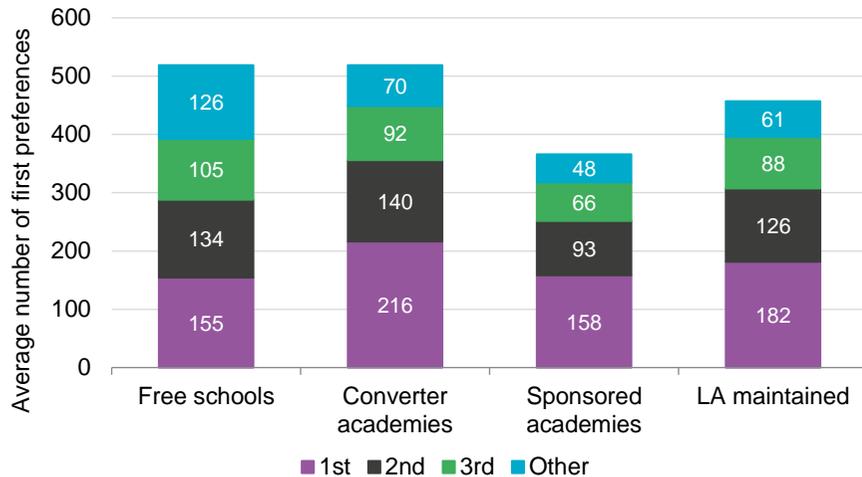
4.4 Secondary free schools

4.4.1 Applications for the 2019-20 academic year

We use the same measures to assess how popular secondary free schools were proving to be with parents. We find there were some differences between the primary and secondary phases.

As shown in Figure 18, in contrast to primary and all-through free schools, secondary free schools received the fewest first preferences for the academic year starting in 2019-20. They received nearly 30 per cent fewer than converter academies and 15 per cent less than LA maintained schools. However these gaps were narrowed considerably when looking at the average number of top three preferences received.
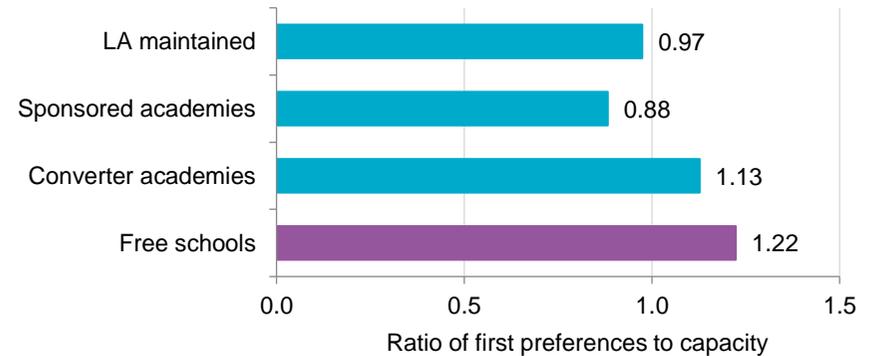
Figure 18: Secondary free schools receive less first preferences on average than other school types

Source: NFER analysis of Get Information About Schools and School level application and offer data

However, despite having the lowest number of first applications on average, secondary free schools have the highest first preferences to places available to capacity ratio (Figure 19) of all school types. This equates to approximately 12 first choice preferences per ten places available. The ratio of average top three preferences to capacity in secondary free schools is also the largest of all school types.

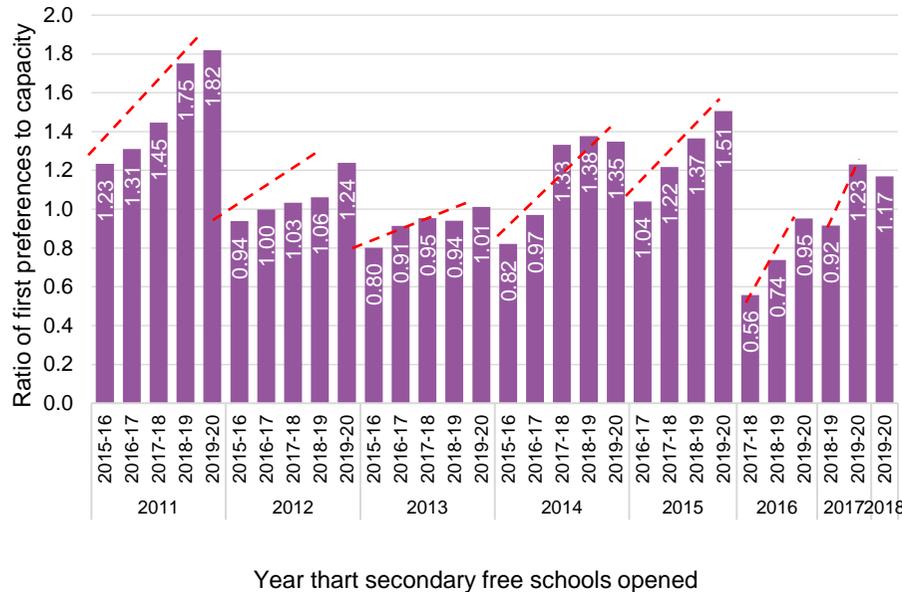**Figure 19: The ratio of average first preferences to capacity in secondary free schools is higher than other school types**

Source: NFER analysis of Get Information About Schools and School level application and offer data

4.4.2 How have applications changed over time?

As with primary and all-through free schools, we examined whether the patterns observed with applications for the academic year 2019-20 were a recent phenomenon or not. When looking at average first preferences for all secondary free schools which had been open in an academic year, we find they have been rising steadily, from 98 in the 2015-16 academic year to 155 in 2019-20. This increase may be expected given there has been an overall increase in demand for secondary places over this period. Indeed, one of the main reasons for opening a free school is to increase capacity. Average first preferences increased for all of the types of school during this period, although growth was lower in other school types, which means secondary free schools were rapidly narrowing the gap.

Figure 20: Average first preferences of secondary free schools have increased sharply for all free school cohorts

Year thart secondary free schools opened

Source: NFER analysis of Get Information About Schools and School level application and offer data

As before, we also examined average first preferences to capacity by year the secondary free schools opened (Figure 20). All of the secondary free schools cohorts have had strong year-on-year growth. This pattern is also replicated across our other measures.

Figure 21: The secondary free schools first preferences to capacity ratio has grown sharply since 2015-16
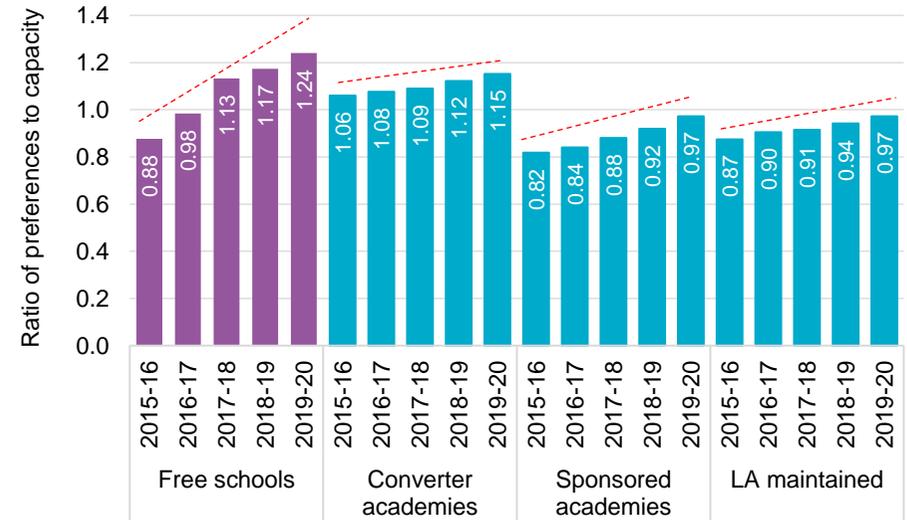
Source: NFER analysis of Get Information About Schools and School level application and offer data

On the face of it, secondary free schools do appear to be increasing in popularity with parents, but what impact, if any, is the changing stock, as new free schools have been opened and some have closed, having on these patterns? We examined applications for secondary schools by type, which had been open throughout the period 2015-16 to 2019-20. As shown in Figure 21, we find that the ratio of first preferences to capacity for secondary free schools in the academic year 2015-16 was broadly similar LA maintained schools but well below that for converter academies. However, the secondary free

school ratio had increased sharply since then, more so than for other school types which had also increased, and it is now the highest.

4.4.3 Comparison to nearest neighbours

As noted, there has been strong demand for secondary places in recent years as increased pupil numbers in the primary phase in the first half of the decade fed through in the secondary phase. A key reason for setting up a free school is to add extra supply where it is needed. Against this backdrop, we may expect that secondary free schools would receive a lot of applications from parents, whose concern about missing out on being offered a place at a school of their choice might overcome any reluctance to apply to a new school without a track record.

To explore this, we compared the ratio of average first preferences to capacity for secondary free schools to their closest five neighbouring schools who were likely to be facing similar conditions, for academic years starting in 2015-16 to 2019-20. As illustrated in Figure 22, we find that in 2015-16 and 2016-17, the ratio for secondary free schools was on a par with their neighbouring schools. However, the ratio for secondary free schools has grown strongly since the 2017-18 academic year. Although the first preferences to capacity ratio also grew for neighbouring schools, the rate of increase was slower. This has resulted in a large gap opening up by the 2019-20 academic year applications round.

Figure 22: The first preferences to capacity ratio in secondary free schools is higher than in neighbouring schools by 2019-20
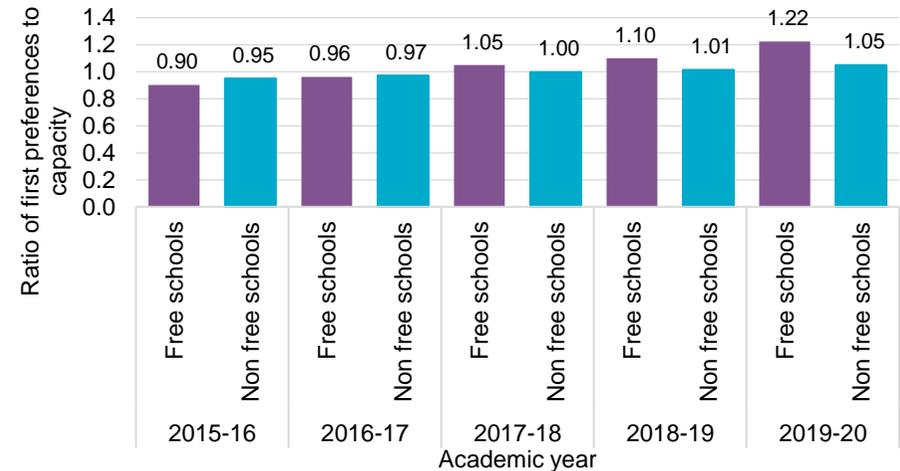
Source: NFER analysis of Get Information About Schools and School level application and offer data

This pattern is also replicated for the top three preferences to capacity ratio, albeit that secondary free schools were already slightly higher than their five nearest neighbours in 2015-16 and 2016-17.

Based on the average first preference measure, secondary free schools had lower levels compared to their neighbouring schools. This will partly reflect the fact that the neighbouring schools were typically both larger in size and more established, both in reputation and in being the recognised secondary school for local primaries. Even so, the average first preference gap between secondary free schools and their neighbours has been closing rapidly.

This analysis suggests that secondary free schools were more popular than other nearby schools, who were likely to be operating in similar conditions to them, when capacity is taken into account. But as one of the objectives of the free schools programme was to open free schools in areas with low standards, assuming they were able to establish themselves and were relatively successful, we may have expected them to increase in their relative popularity compared to their neighbouring schools. Our analysis suggests that secondary free schools have succeeded in this regard, providing greater choice to families.

4.5 Summary

Our analysis shows that free schools were attracting a good degree of interest from parents relative to other school types, across both the primary and secondary phases. We also find that generally this interest is increasing as free schools become more established, showing that they have been successful in establishing and growing their reputations to attract parents. Our analysis also shows that they have gained in popularity relative to their nearest neighbours, which suggests that they have been successful in providing greater school choice.

5   The teacher workforce in free schools

5.1   Workforce characteristics

In 2018-19, free schools employed roughly 7,800 teachers, which represents around two per cent of the state-funded teacher workforce. Around three-quarters were employed in secondary free schools with the remainder employed in primary.

The composition of teachers in free schools was not representative of the wider teacher workforce. However, we found a lot of commonality between the characteristics, experience and work patterns of classroom teachers and senior leaders that work in primary and secondary free schools.

5.1.1   Age

Both primary and secondary free school teachers were, on average, younger than the workforce as a whole. Figure 23 shows that nearly two-fifths of primary free school teachers were under 30 years of age, compared to a quarter of those in other primary schools. Conversely primary free schools had fewer teachers who were aged 40 or over. The average age of primary free school teachers (34.6 years) was nearly four years younger than teachers in other schools (38.4 years).

The picture was similar for secondary free school teachers, albeit slightly less pronounced. Nearly a third were aged under 30, compared to one-fifth of teachers in other secondary schools. The average age of secondary free school teachers (35.8 years) was slightly higher than primary free school teachers, but just over three years less than secondary teachers in other schools (39.0 years).

Figure 23: Free schools tend to have a younger workforce compared to other schools
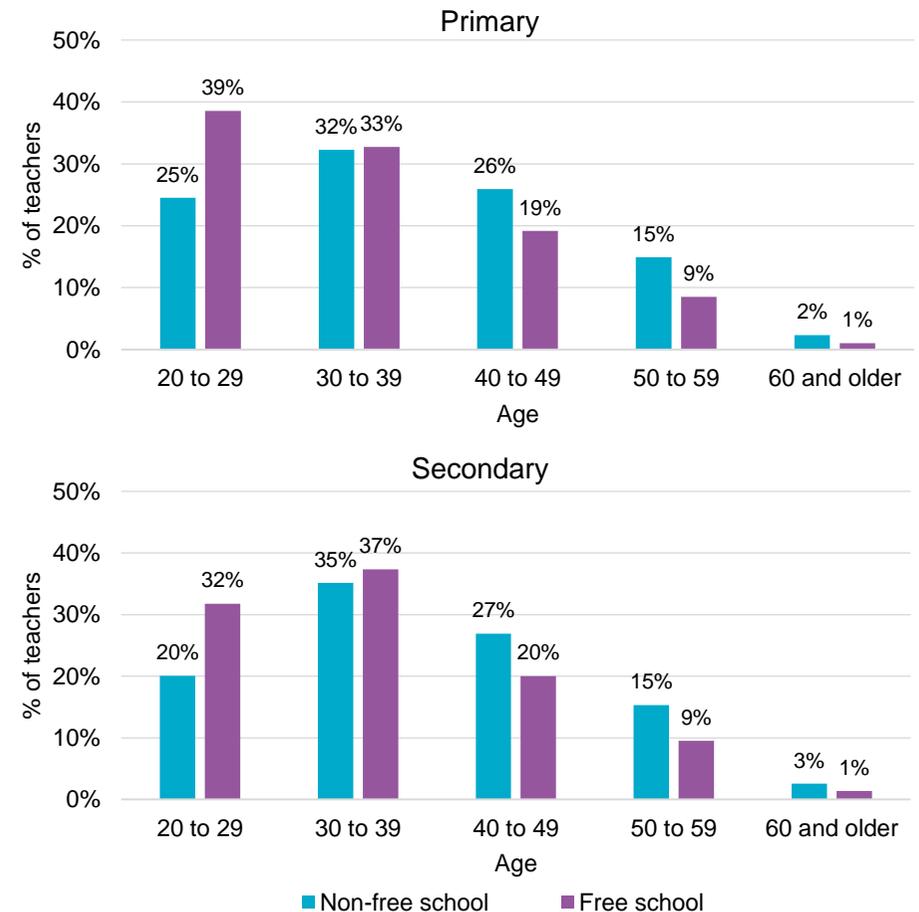
Source: NFER analysis of School Workforce Census data

5.1.2 Experience

As with the age profile, free school teachers also tended to have fewer years' experience in teaching[16] on average relative to teachers in other schools. This is unsurprising because age and experience are closely related to each other.

Figure 24 shows the distribution of teachers' experience for primary and secondary free schools compared to other school types. Both phases tended to have more inexperienced teachers compared to other non-free schools.

We looked at average experience of classroom teachers and senior leaders separately. Primary classroom teachers had six years of experience on average, whereas teachers in other primary schools had almost 11 years' experience on average. Senior leaders in primary free schools also tended to have less experience (nearly 16 years) than their counterparts in other schools (around 19 years).

The picture in the secondary phase is similar, with classroom teachers in free schools having less experience on average (seven years) than in other secondaries (just over ten years' experience). The averages for senior leaders in secondary were similar to primary levels.

5.1.3 Newly qualified teachers (NQT)

Teachers in free schools were significantly more likely to be NQTs relative to teachers in non-free schools. As also shown by Figure 24,

while nearly half of teachers in primary free schools were NQTs, compared to just over a quarter of teachers in other primary schools.

Figure 24: Teachers in free schools had less experience than teachers in other schools
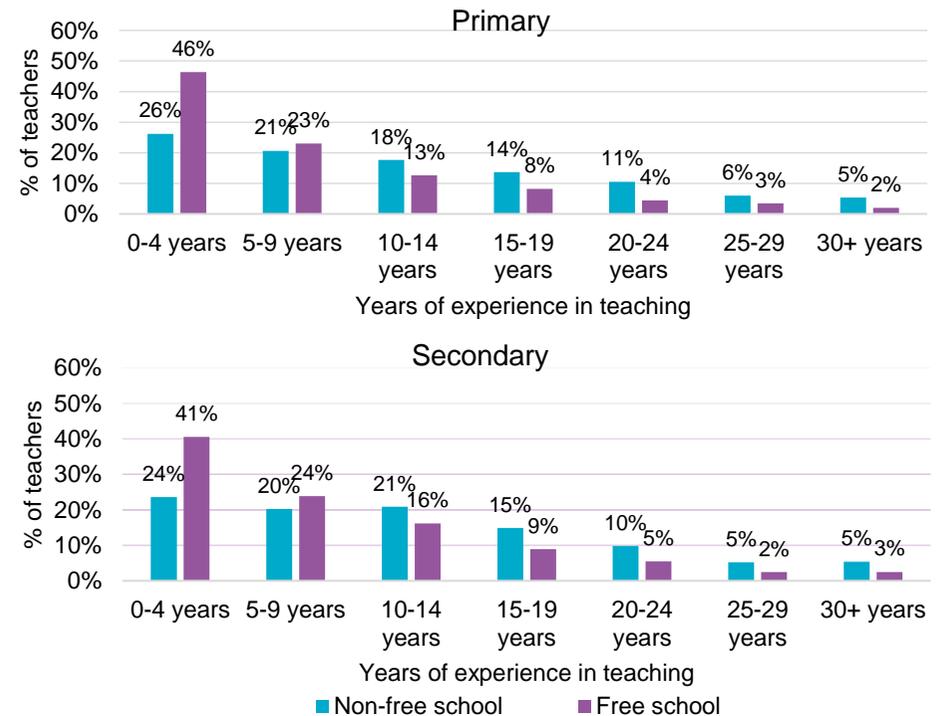
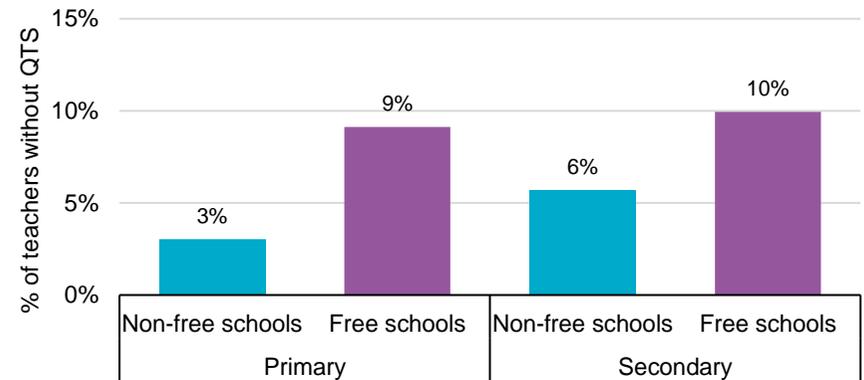Source: NFER analysis of School Workforce Census data

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[16] The School Workforce Census does not contain data on the number of years of teaching experience a teacher has completed, so we use the following measure: the number of years between the current year and the year when that teacher first taught in the state sector.

This gap was smaller in secondary free schools but still substantial: just over four in ten secondary free schools teachers were NQTs compared to just under a quarter in other secondary schools. A possible explanation is that free schools need to hire a large number of teachers when they first open and NQTs will represent a substantial share of teachers looking for a new role in any given year. Whatever the reason, our analysis shows that free schools are playing an important role in helping to provide opportunities for NQTs to build up their knowledge and experience of teaching, which contributes to maintaining the teacher workforce.

5.1.4 Qualified teacher status (QTS)

Teachers in free schools were also less likely to hold a formal teaching qualification. Figure 25 shows that in primary, nine per cent of free schools teachers did not have QTS in 2018-19, which is three times higher than in other primary schools. Similarly, a greater proportion of teachers in secondary free schools were unqualified compared to teachers in other secondary schools. Some of these unqualified teachers go on to become qualified teachers, so free schools are helping to contribute to the available pool of teachers in the workforce.

Figure 25: Teachers in free schools were less likely to have QTS than teachers in other schools

Source: NFER analysis of School Workforce Census data

5.1.5 Part-time working

Free schools teachers were less likely to be working part-time relative to teachers in other schools. As shown by Table 11, this gap was particularly large in primary. In both primary and secondary free schools, 15 per cent of teachers were working part-time. This compared to 27 per cent of teachers in other primary schools and 20 per cent of teachers in other secondary schools.

These differences were likely to be driven by the younger age profile of teachers who work in free schools compared to those in other schools because teachers in their twenties are the least likely to work part time (Worth *et al.*, 2018).

Table 11: Teachers in free schools were less likely to work part time, but more likely to have a permanent contract

	Free schools	Non-free schools
Primary		
Teachers working part-time	15%	27%
Teachers working on a fixed-term or temporary contract	8%	11%
Secondary		
Teachers working part-time	15%	20%
Teachers working on a fixed-term or temporary contract	5%	8%

Source: NFER analysis of School Workforce Census data.

5.1.6 Nature of contracts

Table 11 also shows that teachers in free schools were more likely to be on a permanent contract. While 11 per cent of teachers in primary non-free schools were working on a fixed-term or temporary contract, eight per cent of teachers in primary free schools were on a fixed-term or temporary contract. The same pattern can be observed in secondary with five per cent and eight per cent of teachers working on a fixed-term or temporary contract in free schools and non-free schools, respectively.

5.1.7 Summary

Teachers in free schools tend to be younger and less experienced compared to their peers in other schools, across both phases.

This is likely to be due to factors which are out of free school senior leaders' control. Head teachers of new free schools need to recruit a number of teachers at once, ahead of the new school opening, at a time when there are shortages in teacher supply (Worth and Van den Brande, 2019). Further, older, more experienced teachers may be less mobile due to family circumstances; more established in their current setting; in more senior positions which might be less available in new schools in their early years; and less willing to take a chance on a new and what they may regard to be more risky venture.

More teachers in free schools were newly-qualified or did not hold a formal teaching qualification. Again, this may partly be due to free school heads needing to recruit a number of teachers just before the school opens and partly because NQTs making up a large proportion of the available supply at that time when the school is recruiting.

Another reason why some free schools recruit younger and less experienced teachers may be down to the demographics. It has been documented that more deprived schools tend to have younger and less experienced teachers (Allen and Simons, 2018).

A lower proportion of the teacher workforce in free schools work part time compared to other schools. This is true of both sectors, but particularly in the primary phase. This is likely to be largely due to the fact that the workforce in free schools is much younger than in other

non-free schools and this age group are less likely to work part-time (Worth *et al.*, 2018).

Being taught by inexperienced teachers is associated with pupils making, on average, less educational progress (Allen *et al.*, 2016). The fact that free schools had more of these teachers may be a contributory factor as to why primary free schools had a lower proportion of pupils working at the expected level in KS2. However, pupils in secondary free schools were outperforming their peers in other schools, suggesting that this achievement is all the more impressive.

5.2   Teacher retention

The current shortage of teachers, particularly in secondary schools, means that increasing teacher retention is crucial across state-funded schools as every teacher encouraged to stay in the profession means one fewer needs to be recruited (Worth *et al.*, 2019).

As shown in Figure 26, a greater proportion of teachers in both primary and secondary free schools leave the profession relative to teachers in other schools from the same phase. Over most of the time period since 2011-12, the proportion of free school teachers leaving teaching from one year to the next has been around 15 per cent in both phases. This compares to a leaving rate of around ten per cent in other schools.

Figure 26: Teachers in free schools were more likely to leave the profession than teachers in other schools
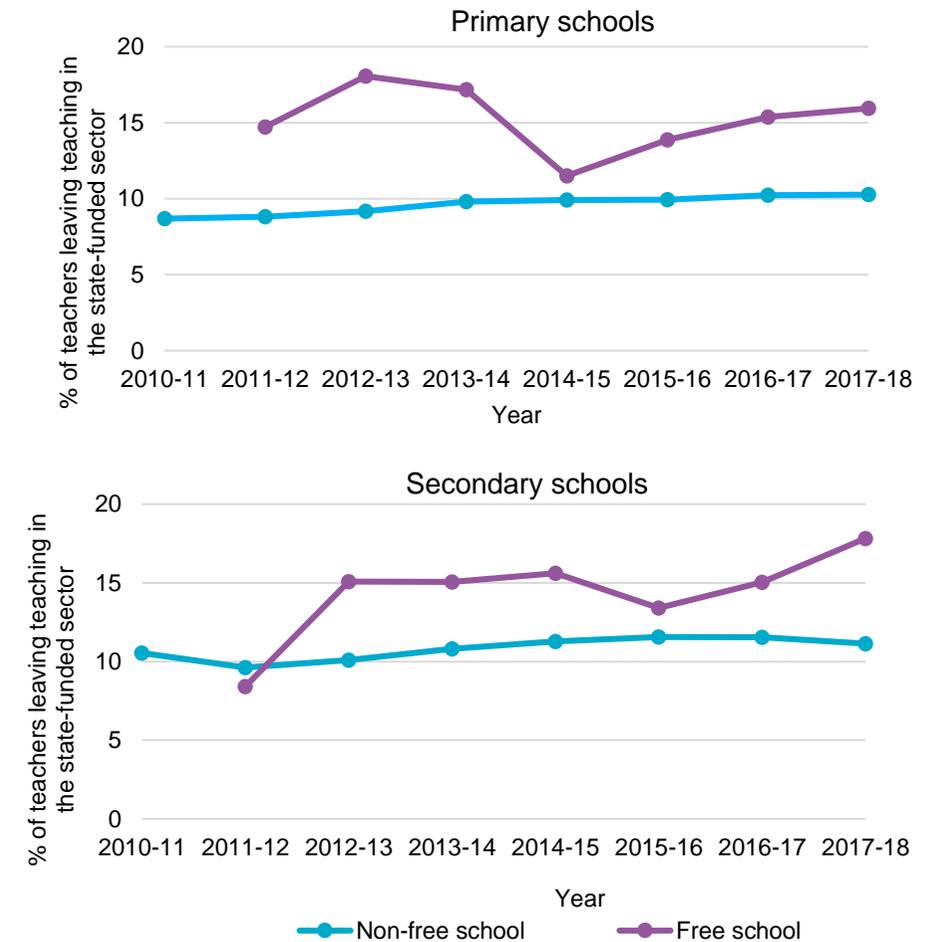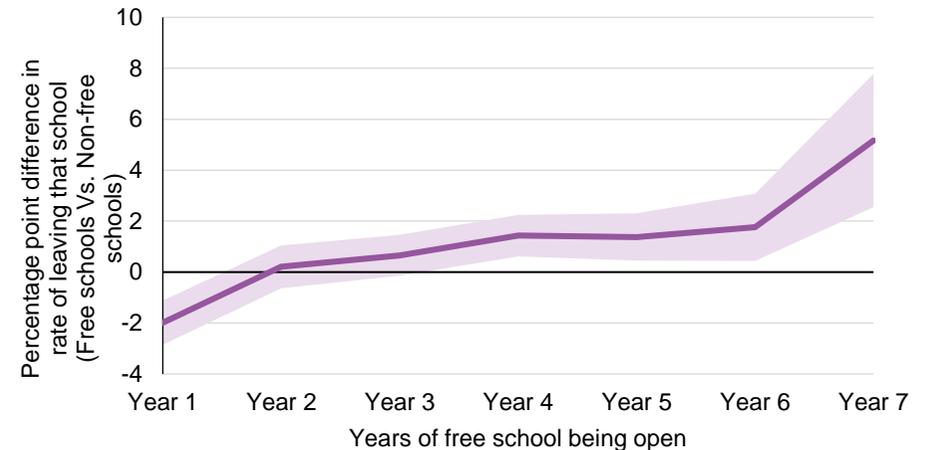

Source: NFER analysis of School Workforce Census data

However, as explained in Section 5.1, teacher characteristics vary considerably between free schools and non-free schools. For example, teachers in free schools tend to be younger, and we know younger teachers are more likely to leave the profession. It is therefore important to take account of these factors when comparing rates of teachers' rates of leaving the profession. We used regression analysis to control for differences in characteristics of teachers in free schools compared to other schools.

Figure 27 presents the percentage point difference in the rate of leaving teaching in the state-funded sector between free schools and non-free schools once school and teacher characteristics were controlled for. This includes teacher age, gender, experience and the number of years the teacher has been in their current role in their current school. This latter characteristic was particularly important as free school teachers, on average, will be much more likely to have been in their current role for a small time relative to teachers in other schools. The purple area represents the confidence interval around our estimate. This widens with the number of years a free school has been open due to the smaller number of free schools open for that length of time.

Figure 27: After controlling for differences in characteristics, teachers in free schools were more likely to leave the profession

Source: NFER analysis of School Workforce Census data

Figure 27 shows that, within several years of free schools opening, free school teachers were significantly more likely to leave the profession than teachers in non-free schools[17]. However, it should be noted that this result may be a reflection of the fact that teachers who choose to join a newly or recently opened school in the first place may be atypical. Furthermore, it is possible that new schools tend to suffer from higher attrition rates compared to established schools. We estimated teacher retention and turnover rates for non-free schools which opened between 2011 and 2015, and found that retention was

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[17]It can be noted that free school do have lower turnover in their first year of opening. However, this result can be largely explained by the short time that all free school teachers will have been in their roles.

lower and turnover was higher when compared to other established schools.

These findings suggest that there is room for free schools to improve their retention for both classroom teachers and senior leaders. Further research is needed to establish what is driving lower retention in free schools; and how government and school leadership can better support teachers to keep them in the profession.

5.3   Teacher turnover

Teacher turnover measures the rate at which teachers leave their school, either to move to another school or to leave the teaching profession altogether.

As with teacher retention, teachers in both primary and secondary free schools have a higher probability of leaving their school relative to teachers in other schools in the same phase (see Figure 31 in Appendix A). This pattern holds across all age groups.

Figure 28 shows the percentage point difference in teacher turnover between free schools and non-free schools, once teacher and school characteristics were controlled for. This demonstrates that after several years of opening, teachers in free schools were slightly more likely to leave their school relative to teachers in other schools.
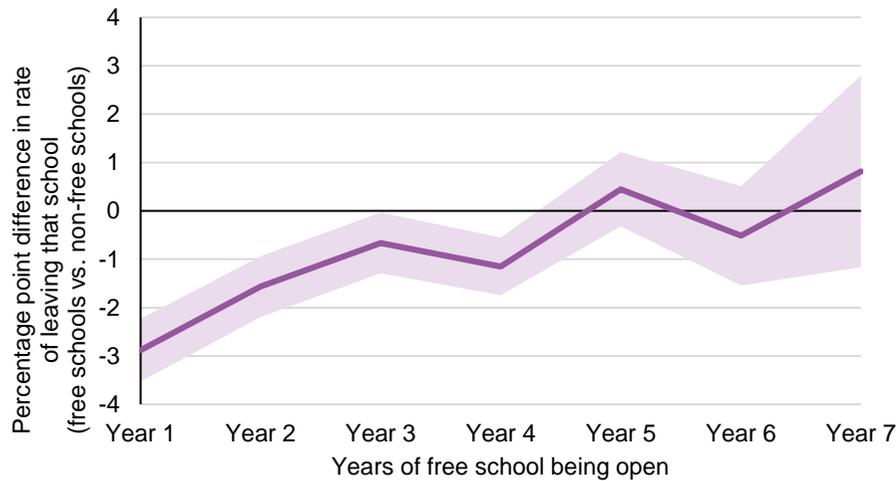
Figure 28: Teachers in free schools were more likely to leave a school to leave the profession or move school
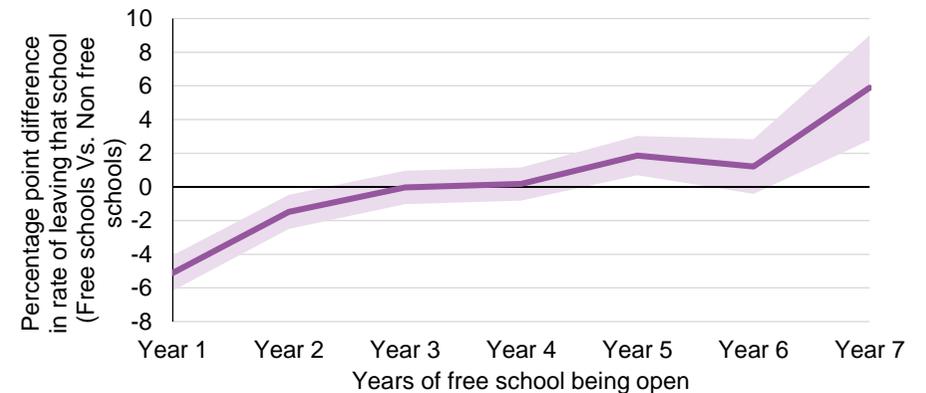
Source: NFER analysis of School Workforce Census data

However, this pattern is largely driven by the fact that free school teachers were more likely to leave the profession (see Section 5.2). Our analysis finds that, when excluding teachers who leave the profession, free school teachers were no more likely to move school than other teachers, as shown by Figure 29.

Figure 29: Taking account of school movements, free school teachers were no more or less likely to move to another school
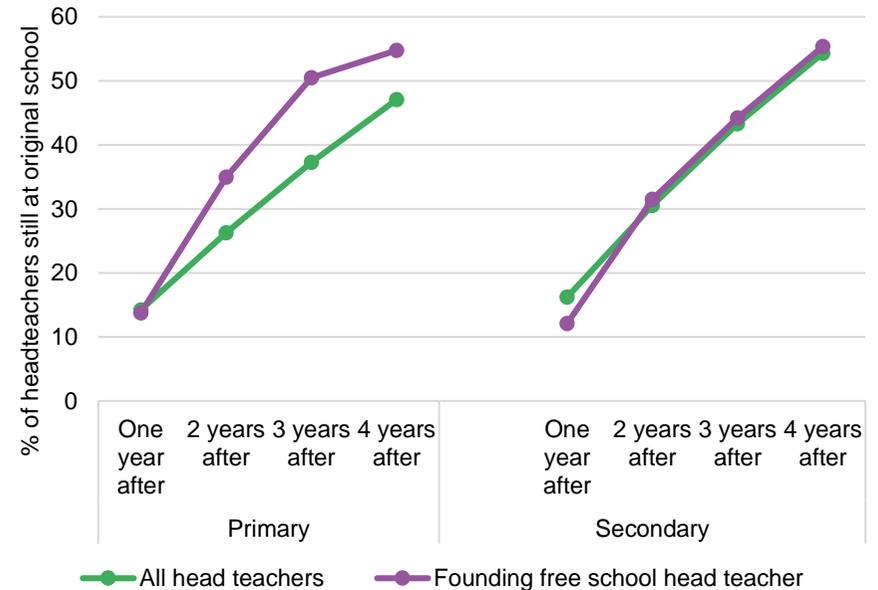
Source: NFER analysis of School Workforce Census data

5.4 Head teachers

We also examined whether founding head teachers in free schools were more likely to leave their school compared to their peers in other schools. As shown in Figure 30, our analysis found that primary free schools heads were more likely to leave their school after two to four years compared to other primary heads. However, there were no observable differences in the proportion of secondary free school head teachers leaving their school compared to other secondary schools.

Figure 30: Founding head teachers in free schools were more likely to leave the school

Source: NFER analysis of School Workforce Census data

One possible explanation for this pattern is that free school head teachers tend to become involved with their schools long before they are opened. They will be leading work to set up the new free school, recruiting new teachers and other staff, promoting the new school around their local communities to attract future pupils, etc. Therefore, their term of office is likely to be longer than implied in DfE's School Workforce Census, which only collects data about open schools.

Another explanation could be that the nature of the work done by head teachers in free schools changes substantially as the school becomes more established. This may lead to more turnover relative to schools where the nature of a head teacher's role has been stable over time. More evidence is required to properly evaluate the turnover of head teachers in free schools.

5.5 Summary

The composition of the free school teaching workforce is different from the wider teacher workforce. Free school teachers tend to be younger and less experienced. Reflecting the younger workforce in free schools, free school teachers were less likely to work part-time and more likely to be on permanent contracts.

Being taught by unqualified or inexperienced teachers is associated with pupils making, on average, less educational progress. However, teachers in secondary free schools appear to have overcome this hurdle as their pupils have achieved better KS4 outcomes than their peers in other schools.

Our findings also suggest that there is room for free schools to improve their retention of both classroom teachers and senior leaders, which is lower than in other schools. Further research is needed to establish what is driving lower retention in new schools such that government and school leadership can better support teachers, and thereby retain more in the school and the system.

References

Allen, R., Mian, E. and Sims, S. (2016). *Social Inequalities in Access to Teachers* [online]. Available: https://www.smf.co.uk/wp-content/uploads/2016/04/Social-Market-Foundation-Social-inequalities-in-access-to-teachers-Embargoed-0001-280416.pdf [18 September, 2020].

Allen, R. and Sims, S. (2018). 'Do pupils from low-income families get low-quality teachers? Indirect evidence from English schools', *Oxford Review of Education*, **44**, 4, 441-458 [online]. DOI 10.1080/03054985.2017.1421152.

Mills, B., Hunt, E. and Andrews, J. (2019). *Free schools in England: 2019 Report* [online]. Available: https://epi.org.uk/wp-content/uploads/2019/10/Free-schools-in-England-2019_EPI.pdf [18 September, 2020].

Claymore, Z. (2019). *Being Present: the Power of Attendance and Stability for Disadvantaged Pupils* [online]. Available: https://www.nfer.ac.uk/media/3338/being_present_the_power_of_atte ndance_and_stability_for_disadvantaged_pupils.pdf [18 September, 2020].

Department for Education and Hill, J. (2011). 'New free schools are a popular choice for parents', 5 September [online]. Available: https://www.gov.uk/government/news/new-free-schools-are-a-popular-choice-for-parents [18 September, 2020].

Department for Education (2014). 'Parents flock to free schools', 15 April [online]. Available: https://www.gov.uk/government/news/parents-flock-to-free-schools [18 September, 2020].

Department for Education (2016). *How Progress 8 and Attainment 8 Scores are Calculated* [online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/u ploads/attachment_data/file/561021/Progress_8_and_Attainment_8_h ow_measures_are_calculated.pdf [18 September, 2020].

Department for Education and Nash, J. (2017a). 'Back to school for thousands of pupils as new free schools open', 18 September [online]. Available: https://www.gov.uk/government/news/back-to-school-for-thousands-of-pupils-as-new-free-schools-open [18 September, 2020].

Department for Education (2017b). 'Government launches company to create more free schools', 28 March [online]. Available: https://www.gov.uk/government/news/government-launches-company-to-create-more-free-schools [18 September, 2020].

Department for Education (2020a). *How to Apply to set up a Mainstream Free School* [online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/u ploads/attachment_data/file/830148/How_to_apply_guide_W14_v3.pd f [18 September, 2020].

Department for Education (2020b). *Academy and Free School Presumption: Departmental Advice for Local Authorities and New School Proposers* [online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/844346/Free_school_presumption_051119.pdf [18 September, 2020].

Dickens, J. (2016). '£2bn fund revealed for DfE free school property company', *Schools Week*, 9 August [online] Available: https://schoolsweek.co.uk/2bn-fund-revealed-for-dfe-free-school-property-company/ [18 September, 2020].

Dunford, J., Hill, R., Parish, N. and Sandals, L. (2013). *Establishing and Leading New Types of School: Challenges and Opportunities for Leaders and Leadership* [online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/308765/establishing-and-leading-new-types-of-school-full.pdf [18 September, 2020].

Evennett, H. (2019). *Free Schools: Contribution to Improving Educational Standards: Debate on 10 January 2019.* House of Lords: Library Briefing [online]. Available: https://dera.ioe.ac.uk/32720/1/LLN-2019-0001.pdf [18 September, 2020].

Garry, J., Rush, C., Hillary, J., Cullinane, C. and Montacute, R. (2018). *Free for All? Analysing Free Schools in England, 2018* [online]. Available: https://www.nfer.ac.uk/media/2734/free.pdf [18 September, 2020].

National Audit Office (2013). *Establishing Free Schools* [online]. Available: https://www.nao.org.uk/wp-content/uploads/2013/12/10314-001-Free-Schools-Book.pdf [18 September, 2020].

Office for Standards in Education, Children's Services and Skills (2019). *Selecting New Schools For Inspection* [online]. Available: https://www.gov.uk/guidance/selecting-new-schools-for-inspection [18 September, 2020].

Schwartz, A.E., Stiefel, L. and Cordes, S.A. (2017). 'Moving matters: the causal effect of moving schools on student performance', *Education Finance and Policy*, **12**, 4, 419-446 [online]. DOI 10.1162/edfp_a_00198.

West, A. and Wolfe, D. (2018). *Academies, the school system in England and a vision for the future*. Clare Market Papers (23) [online]. Available: http://eprints.lse.ac.uk/88240/1/Academies%20Vision%20Report%202%20JUNE.pdf [18 September, 2020].

Whittaker, F. (2018). 'Catholics pray for free schools miracle', *Schools Week,* 23 February [online] Available at: https://schoolsweek.co.uk/catholics-pray-for-free-schools-miracle/ [18 September, 2020].

Worth, J., Lynch, S., Hilary, J., Rennie, C. and Andrade, J. (2018). *Teacher Workforce Dynamics in England: Nurturing, Supporting and Valuing Teachers* [online]. Available: https://www.nfer.ac.uk/media/3111/teacher_workforce_dynamics_in_england_final_report.pdf [18 September, 2020].

Worth, J. and Van den Brande, J. (2019). *Teacher Labour Market in England: Annual Report 2019* [online]. Available: https://www.nfer.ac.uk/media/3344/teacher_labour_market_in_england_2019.pdf [18 September, 2020].

Appendix A: Additional tables

Figure 31: Teachers in free schools were more likely to leave their school than teachers in other schools

Primary schools

Secondary schools
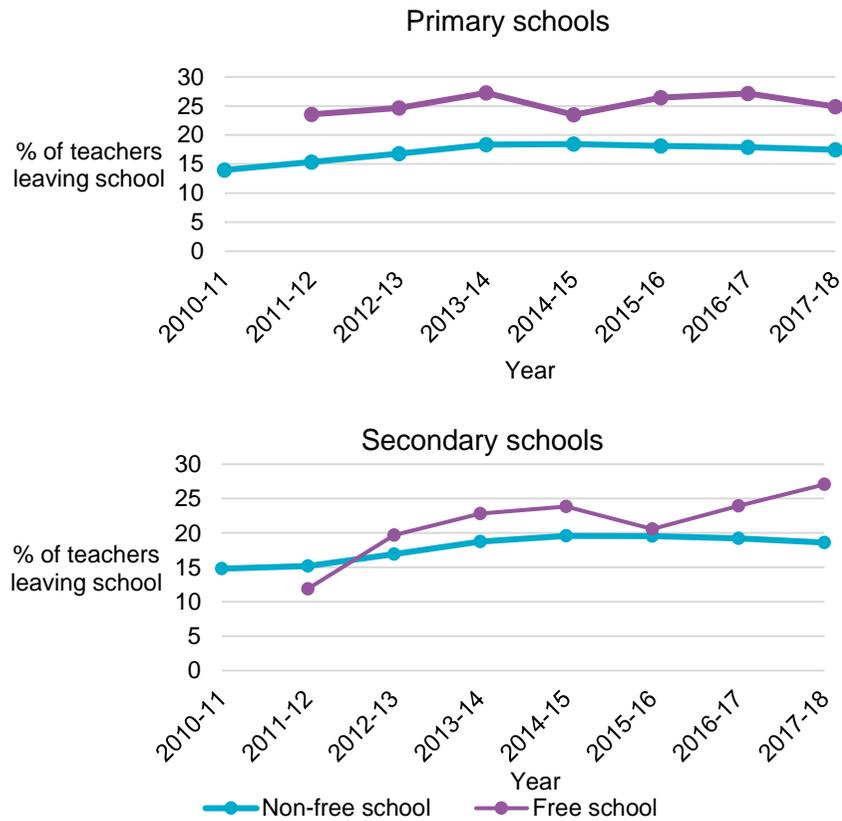
Source: NFER analysis of School Workforce Census data

Appendix B: Methodological Annex[18]

Descriptive analysis

The analysis presented in Section 1 was based on data in the DfE Get Information About Schools database as of March 2020. Unless otherwise specified, all tables were based on data for all open schools.

Nearest neighbour analysis of pupil performance

In order to compare free school performance to their neighbouring schools, we estimated the straight distance between each free school and all other schools. We then constructed a sample of schools which were in the five closest schools to each free school. Schools which were in the five neighbouring schools for multiple free schools were counted multiple times.

To compare performance between free schools and the sample of the nearest five schools, we then took an unweighted average of the average performance in free schools and neighbouring schools respectively. As we wanted to compare average performance at the school level, it was not appropriate to weight by school size.

In turn, these figures are not directly comparable to the other figures presented for the share of pupils reaching the expected standard

(KS2) or Attainment 8 scores (KS4). This is because these main estimates presented are weighted for the size of pupil cohorts across schools.

Econometric modelling of pupil performance

A pupil's decision to attend a free school depends on a large number of factors such as their prior attainment, family background and individual characteristics. As a result, we used econometric modelling methods to identify the impact of studying at a free school, over and above the potential outcome from attending an alternative (but realistic for a pupil with such characteristics) school.

Our preferred model uses a two-stage matching approach to identify the impact of studying at a free school by:

1. Matching free schools with other similar schools based on region and pupil intake.

2. Estimating the effect of attending a free school against all matched schools, controlling for prior attainment, family background, peer characteristics and individual characteristics.

In the first stage, we matched free schools with other similar schools based on region and pupil intake using a 1:1 Mahalanobis match with replacement[19]. In the second stage, we used an Ordinary Least Squares (OLS) regression to estimate the effect of attending a free school against all matched schools controlling for prior attainment,

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[18] This section does not provide detail on the methodology for free school popularity as this is already discussed in the main body of the report.

[19] As free schools are new schools, we have to match free schools based on pupil intake information, which is, by design, dependant on whether a school is a free school. As a result, our analysis will estimate the effect of attending a free school relative to schools that were comparable at the time when pupil intake information is recorded. For our analysis, we use intake information for the cohort being evaluated, as this should proxy the perceived school standard when pupils entered the school as closely as possible.

family background, peer characteristics and individual characteristics. Standard errors were clustered at the school-level. For binary dependant variables, a logit estimation was used instead of OLS.

This approach has the advantage of closely mimicking a free school pupil's outside option. As far as possible, we were comparing a free school pupil's attainment to pupil-level attainment in schools that they would have reasonably attended. The disadvantage of this approach is that our result could have been sensitive to the counterfactual set of schools chosen for the matching.

We tested the sensitivity of our results to our choice of counterfactual by also estimating two further specifications. Our first sensitivity analysis used a one-stage matching approach to match free school pupils with similar non-free school pupils based on pupil and school level characteristics. In order to minimise the bias, that is the mean level difference of pupil and school level characteristics between the treatment and control group, a nearest neighbour matching with a calliper threshold[20] with replacement was used[21]. Standard errors were bootstrapped.

Our second sensitivity analysis used an OLS model to estimate the effect of attending a free school against all other alternatives controlling for prior attainment, family background, peer characteristics and individual characteristics. Standard errors were clustered at the school-level. As with our preferred specification, a Logit estimation

was used instead of Ordinary Least Squares for binary dependant variables.

We find that our results were robust to considering alternative specifications as shown by Table 12 and Table 13 below.

Table 12: KS2 regression results were robust to alternative specifications

Sample	Preferred analysis	Simple regression	Pupil-level match
All pupils	-0.07*	-0.07*	-0.05*
Pupils eligible for FSM	-0.09*	-0.09*	-0.09*
Pupils who did not move schools during KS2	-0.06*	-0.06*	-0.04*

Source: NFER analysis of National Pupil Database data
Note: *Significant at 5% level

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[20] A calliper with a width of 0.05 times the standard deviation of the propensity score was used.
[21] A nearest neighbour matching was used rather than Mahalanobis distance as it was more effective at reducing bias between treatment and control groups.

Table 13: KS4 regression results were robust to alternative specifications

Sample	Preferred analysis	Simple regression	Pupil-level match
Attainment 8			
All pupils	1.1*	1.6**	1.5**
Pupils eligible for FSM	1.2	2.1**	1.6**
Pupils who did not move schools during KS4	1.6 **	1.9**	1.8**
Progress 8			
All pupils	0.12**	0.17**	0.15**
Pupils eligible for FSM	0.12	0.19**	0.16**
Pupils who did not move schools during KS4	0.17**	0.20**	0.19**

Source: NFER analysis of National Pupil Database data
Note: * Significant at 10% level, ** Significant at 5% level

It should be noted that there are many factors which determine whether a pupil attends a free school and our analysis has not controlled for all aspects that could differ between pupils or schools (for example, parental involvement in education).

Teacher workforce analysis

We analysed data from nine consecutive waves (2010-2018) of the Department for Education's School Workforce Census (SWC), which is the premier data source about teachers in England. This contains information on all teachers employed in state-funded schools in England.

The SWC data covers:

- teachers' personal characteristics – e.g. age, gender, ethnicity, when they first entered the state-funded sector

- the nature of teachers' employment – e.g. ID of the school where the teacher works, permanent or temporary contract, part-time or full-time status

- secondary teachers' timetables – e.g. weekly timetabled hours spent teaching different subjects and year groups.

We supplemented the teacher-level information in the SWC with other information from a number of sources, including school information from Get Information About Schools.

Strengths and limitations of SWC data

The SWC has a number of key strengths for analysing and understanding the teacher labour market. It covers almost every teacher in England's state-sector schools, has good coverage for many variables and, as a result, has good representativeness. Its longitudinal nature also means teachers can be tracked from year to year, enabling a detailed analysis of labour market dynamics to be undertaken. It has important educational information on teachers,

such as the subject they teach and the ability to match in detailed information about the school where the teacher works.

However, the SWC also has a number of important limitations for gaining a complete picture of the teacher labour market. It contains a number of teacher characteristics, but the data is not as rich as in survey-based datasets such the Labour Force Survey. For example, it does not contain data on how many hours teachers actually work, their job satisfaction or information about their family circumstances. There is also no reliable destination data in the SWC, other than distinguishing those that have left teaching in the state-funded sector to retire and those that have not retired.

The SWC has a small amount of missing data, which means that measures of rates of teachers leaving the profession are likely to be slightly overestimated. This is because we infer that a teacher has left the profession when they may simply be missing from the data. Some of the missing data is filled in by cross-referencing the SWC with the Database of Teacher Records (DTR - a database drawn from teachers' pension contributions). Earlier censuses have been cross-referenced with the DTR, but not the most recent years, meaning that trends over time should be interpreted cautiously . As the full extent of missing data is not known, it is not possible to make an explicit correction for this overestimate. However, missing data should not be a problem for comparisons between groups of teachers and schools, as long as the rate of missing data is similar between groups.

Econometric modelling of teacher workforce

We used a logistic regression model to investigate the relationship between teaching at a free school and the probability of both leaving the profession and of moving school. This statistical technique enabled us to assess the importance of a variable in predicting the probability of an event, taking into account a set of other characteristics that are included in the model.

We estimated two different sets of models: the first predicted the probability that a teacher leaves the profession in the following academic year, while the second predicted the probability that a teacher moves to a different school in the following academic year.

We refer to teachers 'leaving the profession' in this report, although it actually refers to teachers leaving teaching in the English state-funded sector. A teacher is considered as having left the teaching profession if they appear in one wave of the SWC but not in the following one. This usually happens because a teacher leaves the teaching profession: to retire, look after family, or pursue a different career. However, the SWC only collects information on teachers that are working in state-sector schools. Therefore, teachers also leave the SWC if, despite continuing to work as a teacher, they move to an independent school, a further education college, to teach in Wales or Scotland, or to teach abroad. They may also take up a non-teaching role in a school, which cannot be identified from the data we have analysed. The proportion of teachers that leave the profession is the number of teachers who left the profession between one year and the next divided by the total number of teachers in the dataset in the base year.

The definition of a teacher that moves school is simply a teacher who appears in two consecutive waves of the SWC, but is employed in different schools in those censuses. Our first measure of the

proportion of teachers that move school is the number of teachers moving to a different school divided by the total number of teachers in the initial year, including those who leave the profession as having moved school. Our second measure of the proportion of teachers that move school is the number of teachers moving to a different school divided by the total number of teachers in the initial year but does not include those who leave the profession as having moved school[22].

[22] We identify schools according to their Unique Reference Number (URN) and carefully identify schools that are unchanged except for changing URN, e.g. because of becoming an academy.

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