

Better Schools for All?

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1 Executive summary

There is plenty of evidence to indicate that teacher quality matters for pupil attainment. But teachers do not work in a vacuum. They are employed to work in schools, usually under the direction of supervisors and a Head Teacher who, together with a governing board and officials in local and central government, make numerous decisions about their allocation within and across schools, the resources they have at their disposal, the support they receive, the curriculum they must teach and the way they are compensated. Furthermore, few think the quality of education received by pupils is determined solely by teacher inputs. The quality of leadership and decision-making throughout a school, the sorts of practices a school adopts, together with the nature of peers, and investments made by parents are all likely to influence educational outcomes. This study examines the role schools play in pupils' education through the analyses of large-scale data on workplaces and their employees to answer the following four questions:

- How much does it matter which school a pupil attends in terms of academic attainment?
- Do human resource management (HRM) practices affect school performance?
- How much does school leadership matter for school performance?
- How do school workers feel about their jobs and does it matter for school performance?

Our key findings include:

- Schools account for a relatively small share of the variation in pupil attainment (not usually more than 10%), although the extent of this differs according to the measure of attainment used.
- Schools tend to use a different mix of HRM practices to other workplaces, and the types of HRM practice that are linked to higher performance in schools differ from those linked to higher performance in other workplaces
- Having more teachers in middle leadership roles is associated with higher school performance, although this is not the case in Multi-Academy Trusts (MATs)
- School employees report greater organisational commitment than other employees, and higher organisational commitment is associated with better school performance.

We answer the above questions using quantitative analyses of large-scale data for schools, school workers and pupils, mainly for England (though one study includes England, Scotland and Wales). These data are:

- The School Workforce Census (SWF): an annual census of all workers in Academies and local authority-controlled schools conducted in England since 2010.
- The School Census: a census of all pupils and schools that takes place three times a year, covering all Academy and local authority-controlled schools in England (obtained through the National Pupil Database (NPD)).
- Annual data on pupil attainment in all Academy and local authority-controlled schools in England (obtained through the NPD).
- The Office for Standards in Education, Children's Services and Skills (Ofsted) inspection data rating English schools' performance on a range of metrics, with individual schools appearing periodically in the data depending on the inspection cycle.
- The Consistent Financial Reporting (CFR) and Academies accounts returns: annual school accounts providing detailed breakdowns of school incomes and expenditures for local authority-controlled schools and academies, respectively.
- The 2004 and 2011 Workplace Employment Relations Surveys (WERS) which surveys schools and other workplaces in Britain and up to 25 employees per workplace. With survey weighting these data are nationally representative of all workplaces with more than four employees and their employees.

1.1 How much does it matter which secondary school you go to?

The school attended by pupils only explains a relatively small fraction of the variance in attainment across secondary school pupils in a given year. Currently, government prioritises a pupil attainment metric called Progress 8, which aims to capture the progress a pupil makes from the end of primary school to the end of Key Stage 4 (KS4). It is a value-added measure, which means that pupils' results at the end of KS4 are compared to the progress of other pupils nationally with similar attainment at KS2.

In 2015/16 schools explained 15 per cent of the pupil-level variation in Progress 8.

However, part of this 'school effect' is related to the similarity of pupils within schools, so that pupils with characteristics associated with better or worse attainment cluster in schools.

Controlling for the similarity of pupils in schools means that schools account for around nine per cent of variance in pupils' attainment.

After controlling for the similarity of pupils within schools, between 2003/04 and 2015/16 the proportion of variance in value-added measures of pupil attainment accounted for by schools rises a little but remains below 10 per cent.

Our examination of other metrics of pupil attainment also indicates that schools explain a relatively small fraction of the variance in attainment across pupils in a given year. However, patterns over time are different for different measures. Notably, the attainment of five or more A*-C grades in GCSE or equivalent qualifications, including English and maths – the previous headline attainment measure – shows a reduction in the variance in attainment explained by schools of roughly one-third between 2003/04 and 2015/16, suggesting that schools were increasingly prioritising pupil progress (value-added) which was relevant across the full range of attainment as opposed to focusing on pupils close to the five A*-C grade threshold.

School level analysis highlights the importance of the composition of pupils in accounting for the school level variance in attainment, explaining roughly half the variance for measures that do not take into account prior attainment. The influence of school composition is much weaker for our value-added measure because prior attainment is also related to school composition, and in some years the value-added measure explicitly accounts for differences in pupil characteristics. Other school level indicators account for much less of the variation in school attainment. School competition, measured by the number of schools within 5.5 kilometres of each school, accounts for up to seven per cent of the variance in school level attainment, whilst the pupil-teacher ratio only accounts for around one per cent of the school level variation.

Overall, the contribution of the school attended to the variance in pupil attainment is relatively small. This means that attending a ‘good’ secondary school only adds a small amount more value than attending a ‘bad’ secondary school. Attending school continues to add value, but school choice may not be as important as the policy debate sometimes suggests. There is some scope to influence pupil attainment through school level initiatives, however, there appears to be more scope to influence pupil attainment through interventions targeted away from schools. For example, other studies have highlighted the importance of parental investments in their child’s education, as well as the value of investment in early years education.

1.2 Does human resource management (HRM) improve school performance?

For decades private sector firms have been aware of the benefits they can derive by investing in the management of their employees through incentives, training, employee participation and other techniques, which collectively have come to be known as “Human

Resource Management” (HRM). Some recent studies suggest HRM may “work” in schools too, but ours is the first study to investigate whether “what works” in schools is the same or different to what usually works elsewhere.

We find:

- Schools and other workplaces are similar in terms of the intensity with which they deploy HRM.
- However, they tend to use a different mix of HRM (fewer incentives, targets and records, more employee participation practices).
- The intensity with which HRM is implemented in schools is positively associated with schools’ productivity, quality of output and financial performance, as it is elsewhere in the economy.
- But the types of HRM that are linked to higher performance in schools differ from the types of HRM linked to higher performance elsewhere in the economy. Schools benefit from increased use of rigorous hiring practices when selecting new recruits, employee participation mechanisms (such as team briefings), total quality management (TQM) and careful record-keeping, none of which seem to improve workplace performance elsewhere in the economy. By contrast, increased use of performance-related pay and performance monitoring, which do improve workplace performance elsewhere in the economy, are ineffective in schools. The only HRM practice that benefits both schools and other workplaces is more intensive provision of training.
- Although HRM practices are positively associated with higher productivity and financial performance, we are unable to find an association between HRM and school level pupil attainment.
- Private schools make less use of most types of HRM than their state sector counterparts and the link between HRM and improved performance is only apparent in the state sector, suggesting they make better use of HRM investments than private schools.

The findings are important for government policy. Governing boards and executive leaders have increasing autonomy over managerial decisions, not only in Academies where they are no longer local government-controlled, but across the whole schools’ sector, so it is important that they understand how to use that autonomy when adopting HRM. We find HRM is linked to improvements in schools’ financial performance, something that is vital given the parlous state of many schools’ finances. HRM is also beneficial in terms of

schools' labour productivity. But it does little to tackle teacher turnover, is linked to higher illness rates, and is not associated with higher pupil attainment. Our findings also raise concerns about the government's hopes that greater use of performance pay for teachers will bring about improvements in school performance. The government policy promoting private school sponsorship of state schools seems ill-conceived: if anything, state schools make more and better use of HRM practices than their private sector counterparts, so we are not optimistic that anything of substance on a large scale is likely to be gained by bringing in private school managers. Instead, the challenge for schools and government is to experiment with HRM to work out what works in a school context, then disseminate that across the sector to raise schools' performance everywhere.

1.3 How much does leadership matter for school performance?

Studies in economics and management suggest that the quality of leadership is a key determinant of organisational performance. It is often assumed that the same must be true for schools. Our study explores both the role of Head Teachers, and the leadership roles held by other teachers within schools. We examine the size of the leadership group within schools as well as change in Head Teachers. Throughout our focus is on leadership staff; we do not consider leadership in terms of broader governance arrangements of schools.

We find:

- There is considerable variation across schools in the number of “middle leaders” - classroom teachers who also hold leadership roles.
- On average Academy schools had a higher number of teachers engaged in middle leadership. There was some indication that schools increased the size of their middle leadership group on becoming an Academy.
- Schools with a higher number of teachers in middle leadership roles tended to be rated more highly by Ofsted in terms of leadership and management quality.
- The relationship between the size of the middle leadership group and pupil attainment varies by school type. In Single Academy Trusts, and to some extent in non-Academy schools, the number of middle leaders was positively associated with school performance, after accounting for fixed unobserved school characteristics. However, in schools which formed part of Multi-Academy Trusts no significant relationship was apparent.
- Head Teacher characteristics in our data generally explained a relatively small part of the variation in school performance.

- A change in Head Teacher was, on average, associated with lower school performance in the year in which the change took place. But, once we account for differences in school characteristics (matching schools where there has been a change in Head Teacher to schools where there has been no such change), we find no impact on attainment of a change in Head Teacher. However, effects may emerge over a longer time-frame.

1.4 How do school workers feel about their jobs and does it matter for school performance?

People tend to think that school employees are dedicated to their profession, motivated by a sense of “mission” rather than money, and that they are overworked and suffer greatly from work-related stress. However, few studies compare school employees with employees elsewhere so it is hard to know whether their experiences differ from other employees. Nor do we know the consequences for school performance, since studies rarely combine information on employees and their employers. Our study differs in these two respects by using nationally representative survey data for workplaces in schools and the rest of the economy which is linked to their employees.

We find:

- School employees express greater job satisfaction and job contentment than employees in other workplaces.
- However, when comparing “like” employees who are observationally equivalent there are no differences in the satisfaction and contentment expressed between school and non-school employees.¹
- The key factor explaining greater job satisfaction among school employees is having higher job quality than “like” employees elsewhere.
- Organisational commitment is higher in schools than in other workplaces. This organisational commitment “premium” in schools remains large and significant among “like” employees.
- The aspects of the job and working environment that engender higher satisfaction and contentment are common across school and non-school employees: higher pay, greater job control, reduced job demands, managerial support and greater job security. All these factors also mattered for employees’ organisational commitment,

¹ When we refer to “like” employees, or “like” workplaces, we mean that we are comparing outcomes having controlled for observed differences among employees (workplaces). This is discussed further in section 2.2 of the report.

with one exception: pay was linked to organisational commitment in non-school environments, but not schools, confirming the limited value of pecuniary rewards for commitment in an environment where employees are mission-oriented.

- Changes in job satisfaction and job contentment are not linked to changes in school performance.
- Increased organisational commitment is associated with improvements in schools' financial performance, labour productivity, and quality of service. It is also linked to lower staff quit rates.
- Improvements in organisational commitment do not bring about the same performance enhancements in non-schools, although non-schools do benefit from higher job satisfaction (which leads to improved financial performance) and higher job contentment (associated with improved perceptions of the climate of employment relations).

Investing in school employees' job quality is a "win-win" for employees and employers because it is strongly associated with both employee wellbeing and, via organisational commitment, to improvements in school performance.

2 Introduction

In recent years, governments have spent considerable time, effort and political capital on education reforms in the expectation that pupil attainment will improve. Since the mid-1990s reforms in England have focused on school governance issues, notably the weakening of local government control over schools via the Academy system; greater pay flexibility for teachers – even within local authority-controlled schools; reforms to the teacher training and recruitment systems; and pedagogical innovations in the classroom. Since Theresa May became Prime Minister there has been an increased focus on the value of grammar schools and selection more generally, issues that were last discussed seriously over 30 years ago.

England is not alone in seeking to improve pupil attainment and the performance of its schools. Education is a policy priority for many countries across the world: it is commonly accepted that a nation's competitive performance in a global economy reflects the skills and education of its workers which means they must either grow that talent from within or rely on high-skilled migrant labour.

Yet despite government efforts, academic and policy concern regarding pupil attainment in primary and secondary schools persists. These concerns reflect perceptions of high variance in educational attainment both across and within schools, even when accounting for differences in pupil intake. There is also some disappointment about the most recent results from the Programme for International Student Assessment (PISA) in 2015, which indicated little or no change in pupil performance in England since 2006 (Jerrim and Shure, 2016). Geographical variance in attainment is growing, as indicated by PISA scores for Scotland and Wales, and there are concerns regarding regional variance in attainment within England with some pointing to a new North-South divide (Ofsted, 2016), while others point to a problem in coastal towns (Ovenden-Hope and Passy, 2015). It is, perhaps, for this reason that parents have become more aware of the need to investigate the quality of education offered by competing schools.

So, what works in schools and how can governments bring in successful policies? Despite a growing literature investigating the determinants of pupil achievement, there remain substantial gaps in the evidence base in relation to how to improve both school and teacher effectiveness. For many years governments have focused, perhaps rightly, on the quality of teacher training and the adequacy of conditions attracting able individuals into the profession. The Department for Education continues to provide further support and opportunities for new entrants to the profession (Department for Education, 2017). The importance of pedagogy has also been increasingly recognised, and recent years have seen substantial growth in the evidence base on interventions designed to improve pupil

attainment, especially among the most disadvantaged, notably through much of the work funded by the Education Endowment Foundation. Increasingly though, the research focus has followed the policy debate in investigating the importance of school leadership and school governance, most notably in terms of the advent of Academy schools and the growing autonomy that school leaders have over key decisions relating to the deployment of resources.

Reflecting this shift in emphasis, analyses are increasingly conducted at school level. School level analyses draw attention to the importance of an array of inputs that may affect educational outcomes for children that can be overlooked when focusing on the pupil-teacher interaction. These include the importance of non-teacher as well as teacher staffing; the mix of activities undertaken at a school and the time devoted to them; and teacher interactions, for example in terms of the mix of seniority in a school or within a team within a school. School level analysis draws attention to possible trade-offs Head Teachers and others face when devoting resources to one issue, sometimes at the expense of another. The emphasis on school leadership is akin to that on firm leadership in the Chief Executive Officer (CEO) literature. It seems likely that the way senior staff are paid, the autonomy they have, and how they are governed could be as important as the interface between the teacher and the pupil.

2.1 Aims of the study and the issues it addresses

The study addresses four linked questions with important policy implications for schools.

First, how much does it matter which school a pupil attends in terms of academic attainment? Policy debates and the discourse around parental choice tend to assume that the school attended is likely to have an important influence on the way a child learns and her academic attainment, but the question is rarely addressed empirically. We assess the role played by school attended in accounting for the variance in pupil attainment at English secondary schools, and how this has changed over time. The analysis covers the period 2003-2016, explores trends for a range of pupil attainment measures, and isolates the roles played by pupil intake, school competition, pupil-teacher ratios and a 'pure' school effect.

Second, do human resource management (HRM) practices affect school performance? HRM is known to influence organisational performance in other sectors, but less is known about the role of management practices in a school environment. Increased managerial autonomy for schools means they have more scope to choose how they manage the school and the HRM practices they deploy. We assess this issue for a range of school

performance metrics, including pupil attainment, for secondary and primary schools in England in 2004 and 2011.

Third, how much does school leadership matter for school performance? Evidence from the corporate sector and from sports teams suggests that leaders do matter for organisational performance. There are also indications that both school leadership and governance structures matter for school performance, with most of the evidence from studies in the United States. We contribute to the small but growing evidence-base for England by examining the role played by leadership staff in secondary schools since 2010, considering both Head Teachers and classroom teachers with leadership responsibilities.

Finally, we shift our focus to those who work in schools and consider what it is like to work in a school and whether worker attitudes affect school performance. There is a common perception that school working, particularly teaching, is a very stressful occupation, that teachers in particular are facing increasing stress, and that this may lead to early exit from the profession and deter others from ever entering it. Ours is the first study to explicitly compare school workers' wellbeing and job attitudes with those in other occupations. Using data linking workers and the workplaces employing them we assess the role of management, management practices and job quality on worker wellbeing in schools and other workplaces in 2004 and 2011. Since some studies find happier and more committed workers improve organisational performance, we examine this issue for schools, and compare our results in schools with those for other observationally equivalent workplaces.

2.2 Data, methods and inference

The study relies on large scale data sets on schools and their employees to examine the questions above. In some instances, schools are required to compile these data under statute for the Department for Education. While some sources are familiar to education researchers, the School Workforce Census (SWF) – which is a census of all school employees and the schools they work in - only came into existence in 2010 and remains relatively under-exploited. The other data we examine include the National Pupil Database (NPD), which provides us with information from the School Census including information on pupil numbers, pupil composition and pupil-teacher ratios as well as data on the attainment of pupils at different stages in their school lives and from which we can construct school level pupil attainment and value-added measures. The latter identify pupil progress during their time at the school, relative to their performance on entering the school. The Office for Standards in Education, Children's Services and Skills (Ofsted) inspection data provide additional metrics by which we can assess school performance. The Consistent Financial

Reporting (CFR) returns are annual school accounts providing detailed breakdowns of their incomes and expenditures under a variety of headings. We can track schools over time using unique school identifiers, and match data for a school across data sources using these same identifiers.

Our other chief data source comes from the 2004 and 2011 Workplace Employment Relations Surveys (WERS) which contain both management and employee data on schools and other workplaces across Britain for all but the smallest workplaces with fewer than five employees. Although these survey data contain fewer schools and school employees than some of the administrative data collected by the Department, it is valuable in providing information on the nature of workplaces, management practices, and employee attitudes and perceptions which are lacking in other data sources.

This report draws on nine publications from the study.² Each tackles one of the four issues mentioned above using a mixture of descriptive and multivariate analyses, either at the level of the workplace or individual employees. The multivariate analyses entail efforts to control for confounding factors when trying to isolate the association between a variable of interest – such as a management practice, for example – and an outcome of interest, such as school performance. These *ceteris paribus* associations are useful when making inferences about the nature of such associations because they account for potential confounding effects arising from observed differences between workplaces, or between workers. When making such comparisons we refer to making comparisons between observationally equivalent employees or workplaces, or “like” employees or workplaces for short. However, one must be cautious in drawing causal inferences based on the associations we present because, in most instances, we are not able to discount potential confounding due to unobserved differences across workplaces or workers which may drive both the independent variable of interest (good management practice in our example) and the outcome variable, such as pupil attainment or workplace labour productivity. In one or two cases we analyse change within workplaces over time using panel data where the workplace is observed on more than one occasion. This type of analysis allows us to net out fixed unobserved differences across workplaces, making causal inferences more credible, but even in these cases we cannot discount possible confounding through time-varying unobserved differences between workplaces or workers which might undermine causal inferences.

² They are the publications in bold in the references.

For a study to have credibility with policy makers and practitioners it also needs to pass the external validity test, which means that the findings presented extrapolate to a meaningful population, such as secondary schools in England, and might be replicated if analyses were run a second time. Our study is based on population-level data (for all English schools, or for all pupils in the English education system) or, in the case of WERS, can be re-weighted back to the national population from which the survey data were drawn, thus permitting inferences that can be extrapolated to the population at large.

These methodological points are important because, when advising Ministers, policy advisers need to be mindful of whether the evidence they have been presented with might justify a change in policy, or the retention of an existing policy. Similarly, Head Teachers will want to know if they adopt a practice whether it will be beneficial in their school. We are mindful of the limitations of our study in this regard, so when reporting our findings and their policy implications we will identify those limitations, drawing attention to potential biases associated with confounding factors, and compare our results against what we might expect to find in theory and the empirical findings from other studies.

3 How much does it matter which school you go to?

Most academics and policy analysts subscribe to the proposition that how teaching is delivered, the quality of teachers, school resources, and the ways schools are governed and managed should all affect pupil attainment, although the precise weight to be attached to each of these factors and their importance relative to other educational investments made by parents are often disputed (Nicoletti and Rabe, 2013). Subsequent chapters will confirm that this is often the case. However, there is a second, often implicit, assumption in policy debates that the quality of these inputs to children's education varies enormously across schools and will therefore result in substantial across-school variance in pupil attainment. The popular perception that there is substantial variation in how schools perform has been fuelled by press reporting of Ofsted inspection ratings which often focus on particularly poorly performing schools ("failing schools"), which are subsequently subject to "special measures", often involving specialist heads being parachuted in to "turn the school around".

Although there has been a great deal of discussion about the importance of schools for pupils' attainment, there has been little empirical analysis of just how much of the variance in pupil attainment is related to the school a pupil attends. Studies that have been undertaken date back to the 1960s but the most recent predate the radical reforms to school education in the 1990s and 2000s. We sought to rectify this omission with two papers focusing on secondary schools in England, the first which examined the role of schools in pupil attainment over the period 2010-2016 (Wilkinson et al., 2018), and the second which took a long-term perspective for a smaller set of pupil attainment measures available back to the early 2000s (Wilkinson et al., forthcoming). Together our analyses examine the attainment of around half a million pupils in roughly 3,000 English secondary schools each year over the period 2003 to 2016.

3.1 Methodology for explaining variance in pupil attainment across schools

At the outset it is important to be clear that there are important limitations to what we have been able to achieve in this part of our study. First and foremost, we are not seeking to identify the causal impact of going to one school rather than another on a pupil's attainment. To identify that impact one would need to exploit some sort of experiment, or quasi-experimental shift, in pupils' exposure to the school environment. We do not have that in our data. Instead, we decompose the variance in pupil attainment within and across schools, adjusting for pupil intake. We then estimate change in that variance over time and the proportion that is attributable to the school.

A prerequisite for undertaking this exercise is a pupil attainment metric that can be tracked over time at school level. This is not straightforward. Even school identifiers change a great deal over time, as schools merge or change status. And precise ways in which pupil attainment is recorded change a great deal over time as ideas about what priorities should be, and how best to measure performance, change with political priorities and advances in educational science. One way to overcome difficulties tracking school performance consistently over time is to compare schools in a given year, using the available attainment metrics in that year, and do the same in the following year, based on whatever metrics are available in that year, essentially ranking schools and their distance from one another on pupil attainment at each point in time. We do a bit of both – comparing schools within year, but also comparing schools across years using ostensibly similar or identical pupil attainment metrics over time.

Below we describe some of those metrics briefly, but we do not go into detail about the methodological issues we faced when constructing consistent metrics over time. These issues are dealt with in the two accompanying papers cited above. However, one of the chief findings from our study is that the extent to which pupil attainment varies across schools and over time depends very much on which of these metrics one uses. It is necessary, therefore, to consider how sensitive results are to the choice of pupil attainment metric. Focusing on a subset of measures can, in some cases, prove a little misleading. That said, the overall tenor of our results is robust to the performance metrics used, even if the quantification of the variance accounted for by schools moves around somewhat depending on the performance metric used.

3.1.1 Metrics for pupil performance

In this chapter school performance metrics relate solely to pupil academic attainment in school examinations. This does not mean that schools should only be judged according to pupil attainment, but they are a key focus for government policy and, as such, they are the basis for school performance tables which are published annually in England. (Elsewhere in this report we compare schools on other metrics, such as their labour productivity, and discuss the correlation between pupil attainment metrics and these other performance metrics). Examination scores at age 16 are important because they determine whether or not a pupil can go on to higher qualifications such as A-levels, which are themselves a gateway to higher education. They are also crucial to those leaving school since they indicate the pupils' achievements to employers as they seek employment in the labour market.

The metrics we considered are described in Box 3.1.

Box 3.1: Secondary school pupil attainment measures in England

5 or more A-C Grades*: the proportion of pupils achieving five or more A*-C grades in GCSE or equivalent qualifications, including English and Maths. The annual mean for all pupils varies between 0.42 and 0.63 but with a very large standard deviation of around 0.50. This was the headline indicator used in the school accounting framework up to 2015.

GCSE Points Score: mean points scored in GCSE examinations. This uses the standard scoring applied in value-added calculations up to 2015 whereby an A* grade was worth 58 points, A grade worth 52 points, with a reduction of six points for each grade down to 16 points for a G grade. This mean rises after 2013 when a large number of other qualifications were excluded from the eligible qualifications list for the headline indicators such that GCSEs represented a higher proportion of all eligible qualifications. The mean varies between 301 and 351 points with a standard deviation between 132 and 153.

GCSE Points Score Per Entry: mean points scored in GCSE examinations divided by the number of GCSEs entered. The maximum score of 58 has been constant throughout the period, representing achievement of an A* grade. The mean varies between 35.1 and 38.9, and a standard deviation between 9.7 and 12.

Value-added (Best 8/Progress 8): these compare KS4 attainment when aged 16 with KS2 at age 11 when pupils enter secondary schooling, so positive scores indicate improvements. The precise fashion in which the measure is calculated has changed a lot over the period. In some years (2005-2010) the measure was 'contextualised' in that it accounted for differences in pupil characteristics and in 2016 the points scored for examinations was radically changed, resulting in a reduction in the standard deviation in the score. Other than in 2016, the mean score was close to zero and had a standard deviation between 63.4 and 79.7. Progress 8 became the headline indicator used in the school accounting framework from 2016.

Pupil attainment metrics are nevertheless controversial. Educationalists point out that the success of pupils at KS4 is strongly determined by the quality of pupils entering the school when aged 11. This concern paved the way for schools to be assessed not solely by levels of achievement at KS4, but instead by the distance travelled by students compared with their levels of attainment on entering the school. These are known as 'value-added' measures since they take the difference between attainment at KS4 and attainment at the end of

primary school (Key Stage 2), using this difference as an indicator of the degree to which a school may have made a difference – positively or negatively – to a pupil's progression.

The controversy surrounding specific pupil attainment metrics, together with shifting government policy as to what to prioritise, has led to discontinuities in the time-series properties of the pupil attainment metrics. For example, governments have changed policies with regard to what count as relevant examinations, and according to whether they seek to “contextualise” value-added attainment measures. Contextualised value-added measures compare pupil attainment at KS4 with the attainment of pupils with similar characteristics who had similar KS2 attainment, whilst a non-contextualised value-added measure compares pupil attainment at KS4 with the attainment of pupils who had the same KS2 attainment only. In light of these shifts in the measurement of pupil attainment, it makes sense to track change over time using multiple metrics, as we have done in this chapter, to see whether they show similar or different patterns.

3.1.2 Factors likely to contribute to variance in pupil attainment within and across schools

Many factors will affect pupil attainment in a school, as noted in the introduction to the chapter, including some we are unable to observe in the data. As we show below, this means a substantial amount of the variance in pupil attainment remains unexplained in our analyses. However, we do have information on the characteristics of pupils (gender, ethnicity, whether eligible for Free School Meals, and their Special Educational Needs). Similarly, for school level analysis, we have information on the composition of pupils in schools along these same dimensions; and information on the size of the school and the pupil-teacher ratio as an indicator of resources within a school, as well as an indicator of the number of schools located close to each school, a measure of the competition schools face from one another.

Box 3.2: Our three methods for establishing the role of schools in pupil attainment

Our first approach compares the variance in attainment at the pupil level and the variance in attainment at the school level. We calculate the school level variance as a percentage of pupil level variance for each of our indicators in each year to get an initial assessment of how much variance in attainment is accounted for by schools and how much this changes over time. These figures do not account for any other factors related to pupil attainment.

Our second approach examines the interaction between school level attainment and the effects of pupil characteristics on attainment. Here we estimate an Ordinary Least Squares model of pupil attainment for each year that includes details of pupil characteristics (gender, ethnicity, eligibility for Free School Meals, has Special Educational Needs) as well as an indicator of the school where each pupil studies. The variance in pupil attainment scores is then decomposed into four components:

1. The variance in pupils' predicted scores based on their observed pupil characteristics
2. The variance in pupils' scores due to school attended, net of pupil characteristics
3. The covariance between 1 and 2
4. The variance in the equation's error term.

This approach allows us to distinguish between a school effect that relates to the similarity of pupils within schools and a 'pure' variation of scores among schools.

Our third approach is at school level and focuses on the between-school element of variance. It decomposes the between-school variance into elements relating to pupil composition, school size, school resources and school competition. We estimate an Ordinary Least Squares model of school level attainment (the school mean for each of our pupil attainment measures) as a function of the composition of pupils in the school (the share of girls, the share of pupils from different ethnic groups, the share of pupils eligible for Free School Meals, and the share of pupils with different Special Educational needs), the size of the school, the pupil-teacher ratio and the number of schools located within 5.5 kilometres of the school.

3.1.3 An overview of the methodology used to establish the role of schools in pupil attainment

Our analysis comprises three approaches: two at pupil level where we seek to identify how much of the variance in pupil attainment is accounted for by schools; the third is at school

level where we seek to identify what accounts for the school level variance in attainment (see Box 3.2).

3.2 What do we find?

3.2.1 Pupil level analysis

Our findings for the pupil level analysis are summarized in Figures 3.1 and 3.2. Figure 3.1 shows the variance in attainment at school level as a percentage of the variance in attainment at pupil level for each of our indicators between 2004 and 2016. Figure 3.2 shows the variance in pupil level attainment accounted for by the school attended having stripped out a component of the school effect that results from the sorting of pupils with similar characteristics into schools. This reduces the amount of variance accounted for by the school attended, leaving what can be thought of as a 'pure' school effect.

These charts show that:

- **There are large differences in the variance accounted for by schools for the different indicators.** This is related to the nature of the indicators with some measuring attainment at the end of KS4 (GCSE points score, GCSE points per entry and achievement of five or more A*-C grades); whilst the value-added indicator measures pupil progress, that is, it takes into account attainment at the end of KS2. In addition, the achievement of five or more A*-C grades is a threshold measure which is achieved or not, whilst the other indicators are based on points scores. Threshold indicators exhibit less variation.
- **Schools accounted for less of the variance in the value-added indicator and the five or more A*-C grades indicator than the other points score indicators.** In terms of the 'pure' school effect (Figure 3.2), for our value-added indicators schools accounted for between six and nine percent of the variance in pupil-level attainment. For the five or more A*-C grades indicator the range was between seven and 12 per cent, GCSE points – 17 to 25 per cent, and GCSE points per entry – 13 to 15 per cent.
- **In 2004 schools accounted for more of the variance in the five or more A*-C grades indicator than the value-added indicator, but in 2016 the opposite was true.** This reflects the increasing importance of measuring pupil progress (value-added) rather than pupil attainment at the end of KS4 over this period. Notably from 2016 Progress 8 (our measure of value-added in 2016) is the headline measure used

in the school accounting framework, replacing the achievement of five or more A*-C grades, so schools may have been giving a greater priority to demonstrating progress rather than attainment.

Figure 3.1 – School level variance as a percentage of pupil-level variance: 2004 - 2016

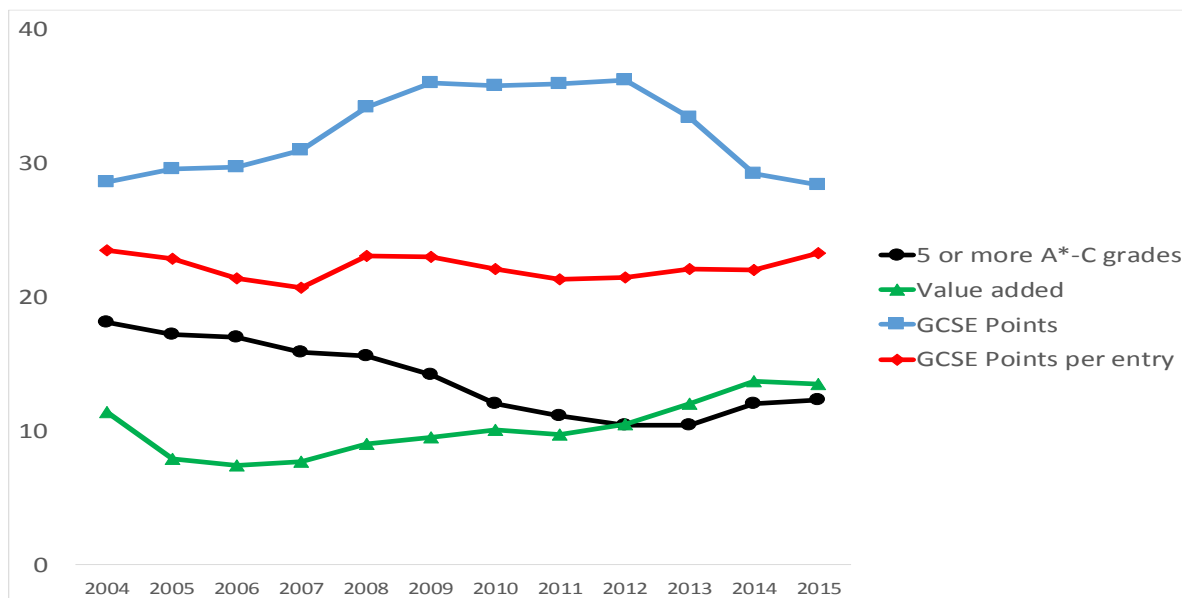


Figure 3.2 – Percentage of variance in pupil attainment that was accounted for by the school attended: 2004 – 2016

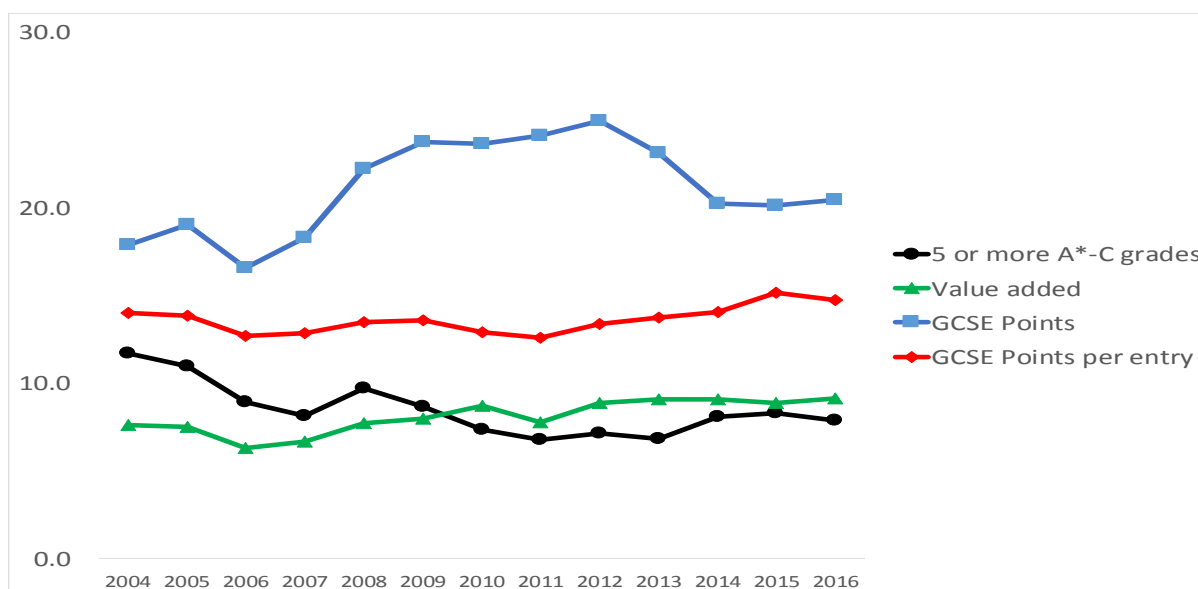


Table 3.1 reports changes in the raw and ‘pure’ school effect. Over the whole period the raw and adjusted school effect has risen slightly on two of the four pupil attainment metrics (GCSE points and GCSE points per entry); risen more markedly on the value-added metric but fallen by a similar percentage on the 5+ A*-C attainment measure.

Table 3.1: Change in % of pupil attainment accounted for by the school						
Percentage point change:						
	Raw measures			Adjusted measures		
	2004-11	2011-16	2004-16	2004-11	2011-16	2004-16
5 or more A*-C grades	-7.0	1.1	-5.9 (-33%)	-5.0	1.1	-3.8 (-33%)
GCSE Points score	7.3	-5.8	1.5 (+5%)	6.2	-3.7	2.6 (+14%)
GCSE Points score per entry	-2.2	2.9	0.7 (+3%)	-1.4	2.1	0.7 (+5%)
Best 8 value-added / Progress 8	-1.7	5.3	3.6 (+32%)	0.1	1.4	1.5 (+20%)

Note: the percentages in parenthesis show the change in the percentage of pupil attainment accounted for by the school attended as a percentage of the 2004 measure. So, for example, the -33% in the first row expresses the 5.9 percentage point reduction as a percentage of 18.1% which was the percentage of variance in pupil attainment explained by the school attended back in 2003 using the 5 or more A*-C measure.

For all four pupil attainment metrics the degree to which schools matter for attainment pivots in 2010/11, the moment at which the Coalition Government comes to power and the Academies programme expands rapidly. Between 2011 and 2016, for both raw and adjusted metrics, on three of the metrics schools explain an increasing percentage of the variance in pupil attainment, but on the fourth metric (GCSE points score) the trend is reversed. It is not clear why there are differential trends for some of these indicators beyond the notion that measuring progress rather than attainment has become an increasing priority.

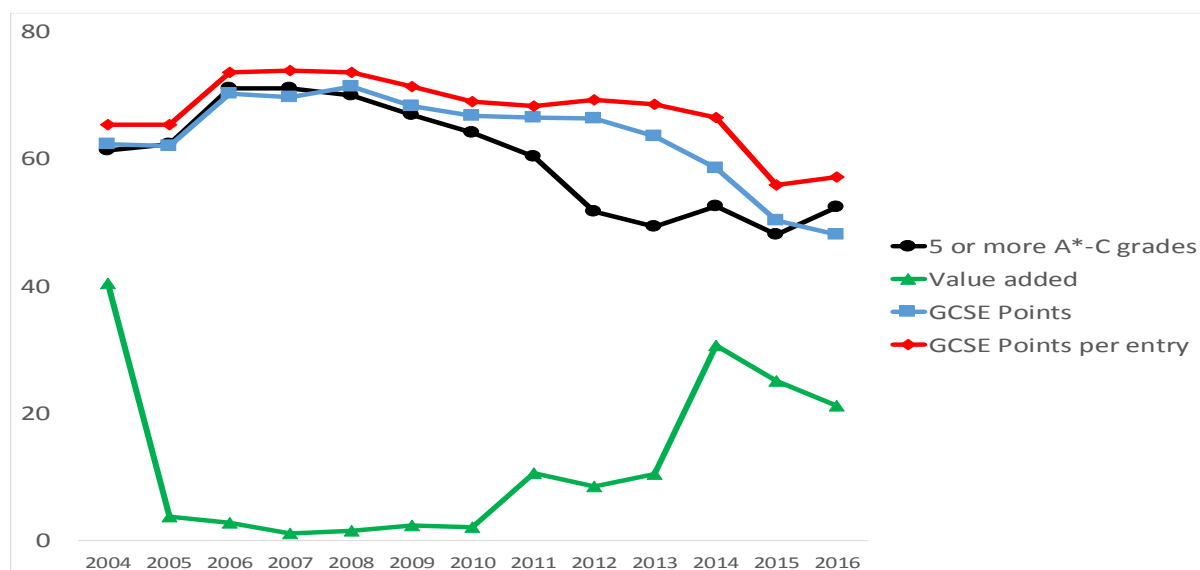
Schools account for a modest percentage of the overall variance in pupil attainment, particularly for the headline indicators, with roughly 10 per cent of the variance accounted for by the school attended. What does this mean for the scope to improve overall attainment by improving the performance of the poorest performing schools? We examine this by looking at what would happen to attainment and progress if the bottom 25 per cent of schools in terms of their estimated school effect were brought up to the level of the school at the 25th percentile (the school where a quarter of schools are performing more poorly than that school). The results indicate that in 2016, the percentage of pupils achieving five or more A*-C grades would increase from 62.1 to 63.8 per cent, the average total GCSE points score would increase from 351 to 358 (roughly the equivalent to one grade improvement in a single subject for each pupil in the school), and there would be small increases in the GCSE points per entry (38.7 to 39.1) and the overall value-added score (0.0 to 0.5). Given that school performance only accounts for a small percentage of the variation in pupil attainment,

then these effects are as expected, modest, representing an improvement of around five per cent of a standard deviation in overall pupil attainment for all indicators. This provides a benchmark to a broader evaluation literature on effect sizes from randomised control trials, which rates such an improvement in attainment as “low impact” (EEF, 2018).

3.2.2 School level analysis

Our school level analysis highlights the importance of school composition in explaining the school level variance in attainment (see Figure 3.3). For all three KS4 measures school composition accounted for around half of the school level variance in attainment, with this share falling from 2011 onwards. The value-added indicator shows a different pattern, with a much lower share of the variance accounted for by the pupil composition in schools. This is to be expected between 2005 and 2010 when the value-added measure was contextualised and hence took into account pupil characteristics in its construction, but in other years the share of variance accounted for by pupil composition is much lower than for the other metrics, highlighting that pupil characteristics will also strongly influence pupil attainment in KS2.

Figure 3.3 – Percentage of school level variance accounted for by school composition



Our school level models also included the pupil-teacher ratio, and a measure of school competition (the number of schools within 5.5 kilometres of the school). Although generally statistically significant in models, the pupil teacher ratio accounts for less than one per cent of the school level variation. This is largely explained by the limited variation in the pupil teacher ratio observed in schools. For example, in 2016, the mean number of pupils per teacher in the secondary schools in our sample was 14, whilst more than three-quarters of

schools had a pupil-teacher ratio between 12 and 16. Our competition indicator shows more variation. In 2016 a quarter of schools had four or fewer schools within 5.5 kilometres and a quarter had 22 or more schools within 5.5 kilometres. We find that competition accounts for between one and three per cent of the variance in school level attainment for the value-added, GCSE points and points per entry indicators, but up to seven per cent for the five A*-C indicator.

3.3 Policy implications

The headline pupil attainment indicator, Progress 8, which is used in the current school league tables, compares attainment at the end of primary schooling with attainment at the end of KS4, typically at age 16, so tracks the progress of pupils. In 2015/16 schools explain 15 per cent of the pupil-level variation in Progress 8. Part of this 'school effect' is related to the similarity of pupils within schools because pupils with characteristics associated with better or worse attainment cluster in schools. Controlling for the similarity of pupils in schools, schools account for around nine per cent of variance in pupils' attainment.

This finding is in keeping with the historical series presented in this chapter. It indicates that the school attended contributes modestly to the variance in pupil attainment. This does not mean that schools are unimportant. Rather it indicates that attending a 'good' school only adds a little to attainment compared to a 'bad' school. It seems the school attended matters less than the policy debate sometimes suggests. The results are also broadly in line with previous analyses, including early analysis of similar data by the Department for Education and Skills (DfES, 2004). A systematic meta-analysis (Scheerens and Bosker, 1997) reports that schools accounted for 19 per cent of attainment differences between pupils when initial differences between students are not accounted for, and only eight per cent of the variance when these initial differences are accounted for. Similarly, analysis of PISA (Jerrim and Shure, 2016) for a sample of schools in England in 2015 estimated variance in science performance between schools at around 23 percent of total variance in pupil science performance.

We highlight the importance of pupil characteristics in accounting for school effects and the role of school composition in explaining school level variance. These findings are consistent with other studies (for example Nicoletti and Rabe, 2013) showing the importance of other factors in explaining educational attainment. Their results indicate that family explains at least 43 per cent of the variance in educational attainment at the end of KS4, whilst neighbourhood explains 10 to 15 per cent of the variance. Thus, whilst there is clearly scope to influence pupil attainment through school level initiatives, there appears to be more scope

to influence pupil attainment through interventions targeted away from schools. For example, other studies have highlighted the importance of parental investments in their child's education, as well as the value of investment in early years education.

4 Does human resource management improve schools' performance?

For decades private sector firms have been aware of the benefits they can derive by investing in the management of their employees. Incentivising employees through individual and group performance pay allows firms to attract the best talent and increases worker effort (Lazear, 2000). Fostering employee 'ownership' of the production process through team-working, initially pushed by Japanese manufacturing firms like Toyota, is now widely diffused across industries across the globe. But it is only relatively recently that providers of public services have thought to apply the same techniques in sectors such as education. These techniques, which collectively have come to be known as "Human Resource Management" (HRM), have yet to be fully tried and tested in the public sector. Initial findings are mixed. For instance, one study on the use of performance pay found it was negatively associated with the performance of public sector workplaces (Bryson et al., 2017). However, some studies suggest HRM is generally associated with improved school performance.

Perhaps the best-known study finds that, across the globe, the more *intensively* HRM practices are deployed, the better schools perform (Bloom et al., 2015). What has been lacking until now is some understanding of what works in schools, compared to what works elsewhere in the economy. Is it really the case that HRM practices have the same returns in schools as they do elsewhere in the economy? Or could it be that "what works" in schools might be *different* from what works elsewhere? This taps into an old argument among management scholars, some of whom subscribe to the universalist argument – these HRM practices deliver benefits for all, regardless of circumstance – versus those who emphasise the importance of selecting practices that 'fit' with the internal and external factors affecting the workplace's performance, such as the market it operates in (Becker and Huselid, 1998). Evidence on incentive pay suggests what works in the private sector may not work in the public sector (Bryson et al., 2017). Could it be that "what works" for schools really differs from what works in the commercial for-profit sector?

This is a pressing issue since policy changes, notably the advent of Academy schools and increased school autonomy with regards to teacher pay setting, mean schools have increased opportunities to change their HRM practices in ways that may affect school performance and pupil attainment. Ours is the first study to investigate whether "what works" in schools is the same or different to what usually works elsewhere in other workplaces – the rest of the literature is confined to the schools' sector. In doing so, it draws

Box 4.1: The Workplace Employment Relations Surveys (WERS) 2004-2011

The population: representative surveys of workplaces in Britain with five or more employees.

Design: two cross-sections plus a random subsample of the 2004 workplaces followed up in 2011 to investigate change within workplaces. Face-to-face interviews with HR managers.

Sample sizes: 406 schools (226 primary, 129 secondary and 51 technical/vocational). 79 private sector schools, remainder state sector. Other workplaces comprise 3,485 private sector and 1,084 public sector workplaces. Panel analyses conducted on the subset of workplaces followed up between 2004 and 2011 including 87 schools.

Methodology: a variety of estimation techniques were used to investigate the incidence of HRM in schools and elsewhere, and the links between HRM and workplace performance including Ordinary Least Squares (OLS) regression; matching estimators (propensity score matching and entropy balancing) to increase the precision of comparisons between schools and other workplaces; and panel analyses to establish links between within-workplace *changes* in HRM and *changes* in performance. Estimates are survey-weighted so that results can be generalised from the sample to the population as a whole.

School performance metrics: based on managerial responses to three questions: 'Compared to other workplaces in the same industry how would you assess your workplace's... financial performance, labour productivity, quality of product or service?' Each is scored on a scale running from 'a lot below average' to 'a lot above average'. The scales are collapsed into (0,3) scales where 3 identifies the best performers. An additive (0,9) scale combines the three where 9 identifies the best performers. We also examine employer perceptions of the climate of employment relations (from "very good" to "very poor"); absence rates (percentage of work days lost through sickness or absence at the workplace over the previous 12 months); quit rates (percentage of employees who left or resigned voluntarily in last year); illness rates (number of employees per 100 absent in the last 12 months due to an illness caused or made worse by their work); and injury rates (number of employees per 100 who sustained a work injury last 12 months).

Linkage to pupil attainment data: it was possible to match a small sub-set of the English schools in WERS to pupil academic attainment at school level from the Department for Education's Performance Tables. These attainment data included pupil attainment at Key Stage 2 for primary schools, pupil attainment at Key Stage 4 for secondary schools, and value-added measures between Key Stages 4 and 2 for secondary schools. This allowed us to investigate the link between schools' HRM and pupil academic attainment and to compare these results with results those for the WERS performance metrics.

on nationally representative surveys of workplaces in Britain in 2004 and 2011 called the Workplace Employment Relations Surveys (WERS) (Box 4.1).

WERS contains 48 HRM measures (Box 4.2), increasing confidence in our ability to “map” the whole HRM terrain, rather than relying on a small set of practices which happen to be collected in the survey, a problem that besets many studies. The HR managers are the survey respondents: they are the ones who know most about the practices deployed at the workplace, limiting measurement error in describing the HRM practices present at the workplace. In schools the person responsible for HR might be the Head Teacher in smaller schools or, in large schools, a dedicated HR practitioner.

Box 4.2: HRM Measures from the Workplace Employment Relations Surveys	
HRM Domain:	HRM measures for each domain:
Incentives (0,4)	Any performance pay; managers appraised; 100% non-managers appraised; non-manager appraisal linked to pay
Records (0,9)	Sales, costs, profits, labour costs, productivity, quality, turnover, absence, training
Targets (0,11)	Volume, costs, profits, ULCs, productivity, quality, turnover absence, training, job sat, client sat
Teams (0,4)	100% largest non-managerial occupation in teams; teams depend on each other to perform work; team responsible for products and services; team jointly decides how to do the work
Training (0, 5)	80% largest non-managerial occupation had on-job training lasts 12 months; workplace has strategic plan with employee focus; Investors in People Award; standard induction programme for new staff in largest non-managerial occupation; number of different types of training provided is above population median
TQM (0, 3)	Quality circles; benchmarking; formal strategic plan for improving quality
Participation (0,5)	Formal survey of employee views in last 2 years; management-employee consultation committee; workforce meetings with time for questions; team briefings with time for questions; employee involvement initiative introduced in last 2 years
Selection (0,7)	References used in recruitment; recruitment criteria include skills; recruitment criteria include motivation; recruitment criteria include qualifications; recruitment criteria include experience; recruitment includes personality or aptitude test; recruitment includes competence or performance test

Note: figures in parentheses are the minimum and maximum count of practices within the HRM domain

4.1 Research questions and outline of findings

In three related papers³ we addressed the following questions:

- How intensively is HRM implemented in schools compared with other “like” workplaces?
- Is the intensity with which HRM is implemented linked to schools’ performance?
- Are there any sets of HRM practices that are particularly beneficial, or ineffectual, in schools and, if so, which ones?
- How do these associations between HRM and workplace performance in schools relate to the associations found in other workplaces?
- Are state schools using fewer HRM practices than private schools, or is any HRM “effect” less evident in state schools, as might be the case if it was implemented less well, or management are less adept in the state sector?

What did we find?

- Schools are similar to other workplaces in terms of the intensity with which they deploy HRM.
- However, they tend to use a different mix of HRM (fewer incentives, targets and records, more employee participation practices).
- The intensity with which HRM is implemented in schools is positively associated with schools’ productivity, quality of output and financial performance, as it is elsewhere in the economy.
- But the types of HRM that are linked to higher performance in schools differ from the types of HRM linked to higher performance elsewhere in the economy. Schools benefit from increased use of rigorous hiring practices when selecting new recruits, employee participation mechanisms (such as team briefings), total quality management (TQM) and careful record-keeping, none of which seem to improve workplace performance elsewhere in the economy. By contrast, increased use of performance-related pay and performance monitoring, which do improve workplace performance elsewhere in the economy, are ineffective in schools. The only HRM practice that benefits both schools and other workplaces is more intensive provision of training.
- Although HRM practices are positively associated with higher productivity and financial performance, we are unable to find an association between HRM and school level pupil attainment.

³ Bryson, A., Stokes, L. and Wilkinson, D. (2018) “Can HRM Improve Schools’ Performance?”, *IZA Discussion Paper No. 11348*; Bryson, A. and Green, F. (2018) “Do Private Schools Manage Better?”, *National Institute Economic Review, No. 243, R17-R26*; Bryson, A., Stokes, L. and Wilkinson, D. (2018) “Is Pupil Attainment Higher in Well-managed Schools?”, *IZA Discussion Paper 11969*

- Private schools make less use of most types of HRM than their state sector counterparts and the link between HRM and improved performance is only apparent in the state sector, suggesting they make better use of HRM investments than private schools.

In the remainder of this chapter we go into more detail as to how we came to these findings.

4.2 What does HRM look like in schools compared to other workplaces?

It is common in the HRM literature to focus on a single linear index of HRM to characterise the intensity with which HRM is implemented in a workplace. The bottom row of Table 4.1 indicates that, on average, schools had 26.7 practices out of a possible 48, significantly more than non-schools in the private sector (at 24.0). This difference was driven by having more selection, participation, TQM, training, and teams, whereas private sector non-schools

Table 4.1: Mean HRM Scores in Schools and Other Workplaces

	Not a School		Schools			
	Private	Public	All	Primary	Secondary	Voc/Tech
Incentives (0,4)	1.9	1.8	1.9	1.9	1.9	2.2
Records (0,9)	6.7	<u>5.6</u>	<u>6.2</u>	<u>6.2</u>	<u>5.7</u>	<u>7.9</u>
Targets (0,11)	4.0	<u>3.5</u>	<u>2.6</u>	<u>2.5</u>	<u>2.7</u>	3.5
Teams (0,4)	1.8	<u>2.5</u>	<u>2.6</u>	<u>2.6</u>	<u>2.8</u>	<u>2.3</u>
Training (0,5)	2.2	<u>3.3</u>	<u>3.3</u>	<u>3.2</u>	<u>3.5</u>	<u>4.0</u>
TQM (0,3)	1.1	<u>1.5</u>	<u>1.8</u>	<u>1.8</u>	<u>1.9</u>	1.3
Participation (0,5)	2.0	<u>2.8</u>	<u>3.1</u>	<u>3.0</u>	<u>3.3</u>	<u>2.9</u>
Selection (0,7)	4.2	<u>5.0</u>	<u>5.2</u>	<u>5.3</u>	<u>5.4</u>	4.6
HRM (0,48)	24.0	<u>26.1</u>	<u>26.7</u>	<u>26.4</u>	<u>27.2</u>	<u>29.8</u>

Note: underlined figures denote differences that are statistically significantly (at a 95% confidence interval) from practice incidence among private sector workplaces that were not schools (column 1)

Unlike Table 4.1, Table 4.2 compares the incidence of HRM in schools and non-schools having accounted for differences in workplace size, location, workforce composition and management style (see footnote to Table 4.2). These comparisons indicate no significant differences between overall HRM intensity between schools and private sector non-schools (bottom row of Table 4.2). By contrast, public sector workplaces other than schools had lower HRM intensity than private sector non-schools (a difference of about one-fifth of a standard deviation (first column, bottom row)). However, there are significant and large differences between schools and private sector non-schools in terms of the *types* of HRM

they use. In keeping with the public sector, schools make significantly less use of incentives, records and targets relative to private sector non-schools (rows 1-3). (Record keeping in Vocational/Technical schools is an exception). Conversely, schools make significantly more use of participation (namely employee involvement initiatives and methods of communication with staff) than both private non-schools and the rest of the public sector. There are few significant differences in other HRM domains.

Table 4.2: Regression-adjusted Incidence of HRM Relative to Non-School Private Sector

	Not a School	Schools		
	Public	Primary	Secondary	Voc/Tech
Incentives	<u>-.37</u>	<u>-.40</u>	<u>-.57</u>	<u>-.46</u>
Records	<u>-.60</u>	<u>-.28</u>	<u>-.60</u>	<u>.46</u>
Targets	<u>-.45</u>	<u>-.60</u>	<u>-.66</u>	-.40
Teams	.21	.25	.10	-.31
Training	.10	-.05	.17	<u>.63</u>
TQM	-.03	<u>.26</u>	.21	-.22
Participation	.09	<u>.27</u>	<u>.39</u>	<u>.84</u>
Selection	.13	.17	.13	-.36
HRM score	<u>-.19</u>	-.08	-.17	.04

Notes: (1) Each row denotes a separate survey-weighted OLS regression. (2) Reference category: private, not a school. (3) Dependent variables are standardised scores for HRM domains using z-scores so that scores have a mean of zero and standard deviation of one; (4) Models control for: single-establishment organisation; workplace size; region; age of establishment; workforce composition (age, gender, ethnicity, occupation, part-time, union); management style (female HR manager; prefers to discuss change; prefers direct communication to union; work-life balance not up to individual). (5) underlined figures denote differences that are statistically significant (at a 95% confidence interval) from practice incidence among private sector workplaces that were not schools

4.3 Is HRM linked to schools' performance?

We establish “what works” for workplace performance outcomes that are meaningful in schools and elsewhere, such as labour productivity, sickness absence, and quits (see Box 4.1 for details). Although we do not claim to identify causal linkages between HRM and workplace performance, we use a variety of statistical techniques to test the robustness of our results.

We find more intensive HRM use is positively associated with better workplace financial performance and labour productivity in schools. The size of the “effect” is similar to what we find for private sector non-schools.⁴ This finding is apparent when we “match” schools to non-schools based on workplace size, age, and workforce composition. When we look

⁴ For example, a one standard deviation increase in HRM intensity is associated with an increase of 0.2 points on our additive workplace performance scale which runs from 0 (poorest performers) to 9 (best performers).

within workplaces over time we also find workplace financial performance and labour productivity rise as workplaces deploy HRM more intensively. This is the case in schools and elsewhere. But the types of HRM that “work” in schools differ from the types that work elsewhere. Schools benefit from increased use of rigorous hiring practices when selecting new recruits, employee participation mechanisms (such as team briefings), total quality management (TQM) and careful record-keeping, none of which seem to improve workplace performance elsewhere in the economy. By contrast, increased use of performance-related pay and performance monitoring, which do improve workplace performance elsewhere in the economy, are ineffective in schools. The only HRM practice that benefits both schools and other workplaces is more intensive provision of training.

The positive association between increased use of HRM and improved quality of service or output was confined to workplaces other than schools. Furthermore, increased use of HRM in schools was associated with increased illness rates among staff in schools and with increased quit rates, although the association with quit rates was only on the margins of statistical significance. These findings caution against seeing HRM investments as a panacea in schools, since some of the performance gains may come at the expense of employees’ welfare, an issue we return to in Chapter Six.

4.4 Is pupil attainment higher in well-managed schools?

To establish whether there is a link between HRM and pupil attainment it was necessary to link the HRM data on schools available in WERS to pupil attainment data available for schools from the Department for Education Performance Tables. The resultant linked data are confined to English schools and, because we rely on postcode matching on historical records, many schools are unmatched so drop out of the analysis. Small sample sizes mean we confine these analyses to links between the HRM overall index and pupil attainment, without examining the role of HRM domains. The small sample sizes also mean we rely on a parsimonious set of controls to tackle potential confounding factors when isolating the independent association between HRM and school performance. Nevertheless, the models contain features of schools one would wish to control for in seeking to isolate the association between HRM and school performance including the nature of the pupils at the school, school size and location, and union density at the school.

Analyses are run separately for primary and secondary schools because their pupil attainment metrics differ. Analyses are also run separately for 2004 and 2011 because, with one exception, performance metrics change over time.

Even though the sample differs markedly from the analyses based solely on WERS, we replicate the results reported in Section 4.3: HRM intensity is positively and significantly associated with higher financial performance and labour productivity. However, HRM intensity is not associated with higher pupil attainment in any of the estimates for primary or secondary schools in 2004, 2011 or in pooled 2004-11 analyses.

There are various reasons why we are unable to detect a link between HRM intensity and school level pupil attainment. First, sample sizes are small, making it difficult to estimate any association precisely. Second, there may be lags between investments in HRM and schools' ability to convert them into improvements in pupil attainment. Third, it may be that HR managers' perceptions of school performance and pupil attainment are picking up related, but not identical, aspects of school performance, so one might not expect to find HRM 'effects' in the same way. This seems to be the case: managerial perceptions of school performance and pupil attainment at a school are often though not always positively and significantly correlated, and the correlations are not very high.⁵ The implication is that these alternative performance metrics are capturing similar but not wholly overlapping dimensions of school performance, and that HRM is linked to the broader performance metrics, rather than pupil attainment.

4.5 Are private schools using HRM differently compared with state schools and does this affect their performance?

In recent years governments of all hues have urged private schools to sponsor state schools to help raise education standards in state schools. In 2012 Lord Andrew Adonis, who had earlier been Labour's Minister for Schools, argued that successful private schools, whose "DNA" incorporated "independence, excellence, innovation, social mission", should sponsor state Academy schools. Subsequent Coalition and Conservative governments have adopted the same policy with the 2017 Conservative Party manifesto aiming for at least 100 independent schools to sponsor an Academy or start a free school.

Even allowing for the normally affluent social background of private school pupils, these children on average perform well in examinations, compared to their state-educated peers. Private schools also deliver a broad curriculum and provide a full sporting and cultural education beyond the classroom. They may achieve these outcomes because they are

⁵ Earlier studies for the private sector found managerial perceptions of performance in WERS were positively correlated with accounting metrics, but that the correlations were not very strong, suggesting that the subjective and accounting metrics are picking up overlapping but distinct aspects of workplace performance (Forth and McNabb, 2008).

better resourced and because the schools are able, through their pupil selection, to concentrate on a generally aspirational peer group. But neither of these advantages are supposed to be part of the sponsorship policy. Rather, governments have presumed that private schools might convey the desired ethos of aspiration and excellence through improvements in management practices. However, the assertion is not evidence-based. Ours is the first large-scale study to test the proposition that modern HRM practices are more prevalent in private sector schools compared to state sector schools.

It is often presumed that the competition organisations face in the private sector drives up the quality of management, compared to that found in the public sector. Yet whether competition for pupils is that much fiercer among private schools, as compared with the competition among state schools, is a moot point. What is known is that autonomy from government is found sometimes to be beneficial (Hanushek et al. 2013). Private schools do have more autonomy than state schools – over pupil selection and the size of their budget – but otherwise British state schools have, by international standards, plenty of freedom to manage their budgets and their staff. Like state schools, private schools vary a lot. The private schools certainly have their quota of management problems – witness the many smaller schools that have been recently found wanting by Ofsted, criticised for “fundamental weaknesses in expertise”, their Heads having no educational training (Staufenberg. 2017).

Prior to our study there was one study finding no evidence that management practices in private schools in Britain are more advanced than in state schools (Bloom et al., 2015). Their index of management practices, which was correlated with student performance, covered operations, monitoring, target-setting and people management practices. They applied this index in several countries. In the UK, where they had a small sample of 100 schools, they found no overall difference between the index score of the private schools and the score of the state schools they looked at.

Our study is based on the WERS data for 2004 and 2011 which contains 406 schools, including 79 private schools. Using the same HRM measures as those presented in Box 4.2 we find private schools engage in more record-keeping than state schools but overall private schools make less use of most types of HRM than their state sector counterparts and the link between HRM and improved performance is only apparent in the state sector, suggesting they make better use of HRM investments than private schools.

The variation in management practice between schools is considerable, so it is quite possible to imagine that well-managed schools might have something to pass on to less-

well-managed schools. But this might just as easily be a state school helping a poorly managed private school, as the other way round. At any rate, there seems to be no evidence in support of a general policy of private schools sponsoring state schools, if that sponsorship is focused on the sharing of management expertise.

4.6 Policy implications

The findings are important for government policy. Head Teachers have increasing autonomy over managerial decisions, not only in Academies where they are no longer local government-controlled, but across the whole schools' sector, so it is important that they understand how to use that autonomy when adopting HRM. We find HRM is linked to improvements in schools' financial performance, something that is vital given the parlous state of many schools' finances. HRM is also beneficial in terms of schools' labour productivity. But it does little to tackle teacher turnover, is linked to higher illness rates, and is not associated with higher pupil attainment. Our findings also raise concerns about the government's hopes that greater use of performance pay for teachers will bring about improvements in school performance. The government policy promoting private school sponsorship of state schools seems ill-conceived: if anything, state schools make more and better use of HRM practices than their private sector counterparts, so we are not optimistic that anything of substance on a large scale is likely to be gained by bringing in private school managers. Instead, the challenge for schools and government is to experiment with HRM to work out what works in a school context, then disseminate that across the sector to raise schools' performance everywhere.

5 How much does leadership matter for school performance?

Studies in economics and management suggest that the quality of leadership is a key determinant of organisational performance, whether the organisation is a football team (Bryson et al. 2018), a public listed company (Kaplan, 2012), or a nation state (Besley et al., 2011). It is often assumed that the same must be true for schools. If so, then recent reforms providing greater autonomy to Head Teachers and their leadership teams in running schools should have increased their importance in determining educational outcomes for children. At the start of our study there was already some evidence to support these contentions. Evidence from the United States had shown that investments in leadership quality, including training courses, were linked to improvements in school value-added (Fryer, 2017). In England, Eyles and Machin (2015) found secondary schools that had switched to Academy status were performing better than those that were about to become Academies, and that a

large part of the difference might be attributable to the fact that around two-thirds of schools that switched to Academy status had changed their Head Teacher within the first year of operation.

The implication from this research is that who is performing the leadership function matters for organisational performance. This might simply be because some are more productive than others and that productivity is scaled-up through the increase in efficiency among workers led by 'better' leaders, as originally described by Sherwin Rosen (1990). This difference in ability might result in some leaders being more adept than others at implementing the managerial practices described in Chapter Four.

In this study we make use of data from the School Workforce Census, linked to information on school performance and other school characteristics, to explore the role of leadership staff within secondary schools (see Box 5.1 for further detail on data sources). Throughout this chapter, our focus is on leadership staff. We do not consider leadership in terms of broader governance arrangements of schools. We describe the questions addressed, our approach, and our key findings below.

Box 5.1: Data sources

Our analysis of leadership in schools focuses on secondary schools and draws on the following data sources:

School Workforce Census (SWF): This is a census of all publicly funded schools in England, including academy schools. The SWF collects detailed information on the workforce within schools, including contractual details, pay, subjects taught, qualifications and absence. These data have been collected on an annual basis since 2010.

School Census: covers all local authority maintained schools, as well as some specific types of non-maintained schools such as academies. Schools are required to complete the School Census three times a year. The School Census is our starting point for identifying secondary schools in England; it also provides information on a range of school and pupil characteristics.

KS4 Attainment: Our measures of school performance are drawn from data on school level attainment at Key Stage 4 (KS4). Our principal performance measure is average total points score at end KS4, which provides a consistent measure over the time period of our analysis.

Ofsted inspection data: The Office for Standards in Education, Children's Services and Skills (Ofsted) is responsible for the inspection of all maintained schools and academies in England. Ofsted rate schools on their overall effectiveness as well as in a range of specific areas, including the quality of leadership and management.

5.1 Research questions and outline of findings

In two related papers⁶ we explore the following questions:

- What does leadership look like in secondary schools, and does it matter for performance? Here we focus particularly on identifying “middle leaders” – classroom teachers who also have leadership responsibilities, and whether their prevalence in schools is associated with school performance.
- Are Head Teacher characteristics associated with secondary school performance, and what happens to school performance when there is a change in Head Teacher?

⁶ Stokes, L., Bryson, A. and Wilkinson, D. (2018a) “What does leadership look like in schools and does it affect school performance?”, UCL mimeo; Stokes, L., Bryson, A. and Wilkinson, D. (2018b) “England’s Head Teachers: Who Are They and How Much Do They Matter for School Performance?”

What did we find?

- There is considerable variation across secondary schools in the number of classroom teachers who also hold leadership roles.
- On average Academy schools had a higher number of teachers engaged in middle leadership. There was some indication that schools increased the size of their middle leadership group on obtaining Academy status.
- Schools with a higher number of teachers in middle leadership roles tended to be rated more highly by Ofsted in terms of leadership and management quality.
- Having a larger middle leadership group was associated with higher school level attainment at the end of KS4. However, once accounting for fixed unobserved traits of schools, while this relationship remains evident in Single Academy Trusts and non-academy schools, there was no significant association in schools that formed part of Multi-Academy Trusts.
- The characteristics of Head Teachers which we are able to observe in our data generally explained a relatively small part of the variation in school performance.
- While a change in Head Teacher was, on average, associated with lower school performance in the year in which the change took place, once we account for differences in school characteristics (matching schools where there has been a change in Head Teacher to schools where there has been no such change), we find no impact on attainment of a change in Head Teacher. However, it may be the case that impacts are only observable in the longer-term.

We discuss these findings in more detail in the remainder of this chapter.

5.2 What does leadership look like in schools?

Many studies of leadership in schools focus on the role of the Head Teacher, and understandably so – indeed, this is also a key part of the research we have undertaken within this study, as discussed below. Yet many other individuals also contribute to the leadership of schools, and much less attention has typically been paid to the role of Deputy and Assistant Head Teachers, and to that of “middle leaders” (Hallinger and Heck, 1996), where leadership responsibilities are devolved to classroom teachers or other staff within a school. How schools choose to structure their leadership teams may have important consequences for school performance. Harris (2004) states that while there is a considerable amount of literature advocating the benefits of distributed forms of leadership in schools, there is a lack of evidence as to whether there is a clear relationship with school improvement.

Our first study on leadership in schools aims to shed light on these issues by focusing on the extension of leadership responsibilities in schools beyond those of the Head Teacher. Our analysis focuses on secondary schools and is conducted for a 6-year period from 2010/11 to 2015/16. Box 5.2 sets out the leadership roles that we explore in our study and how we identify these in our data.

A notable development in school leadership in recent years has been the introduction and growth of the Executive Head Teacher role, defined by Lord et al. (2016) as “a lead professional of more than one school; or a lead professional who manages a school with multiple phases; or who has management responsibility significantly beyond that of a single school site”. Lord et al. (2016) report that the number of Executive Heads had increased from less than 200 in 2010 to more than 600 in 2014, across all phases of the education system. We find that while fewer than 70 secondary schools had an Executive Head, based on the 2010 SWF, this had increased to more than 200 by 2015. As discussed in Lord et al. however, the SWF may not fully capture the presence of Executive Head Teachers in schools. Nor does it necessarily capture other high-level leadership roles, such as Chief Executive Officers, where present, if they are not identified as part of the workforce at the school.

The number of Head Teachers and Deputy Heads has remained broadly stable over this period, but there has been some growth in the number of Assistant Heads, rising from around 12,000 in 2010 to approaching 14,000 in 2015. The School Teachers Pay and Conditions document (Department for Education, 2018) describes Deputy and Assistant Heads as having, “a major role under the overall direction of the Head Teacher in... formulating the aims and objectives of the school; establishing the policies through which they are to be achieved; managing staff and resources to that end; monitoring progress towards their achievement; and undertake any professional duties of the Head Teacher reasonably delegated by the Head Teacher”. While Deputy and Assistant Heads perform similar duties, it is Deputy Heads who have the duty to deputise in the Head Teacher’s absence.

Box 5.2: Identifying leadership staff roles

The School Workforce Census (SWF) provides information on staff post as well as roles, which we use in our analysis.

We identify **Executive Head Teachers, Head Teachers, Deputy Heads and Assistant Heads** according to the post in which they are employed.

We define **middle leaders** as those who are employed in a post of classroom teacher , but who are also recorded as having a role as a Head of Department, Head of Year, or Head of House .

We begin by exploring the prevalence of middle leaders in schools, and whether this is related to observable school characteristics. On average, around 11 per cent of classroom teachers in schools held leadership roles. The number of middle leaders has remained fairly stable over the period 2010/11 to 2015/16, however, there is considerable variation across schools. This variation is partly driven by school size, but other factors are also correlated with the number of teachers in middle leadership roles. In particular, we find that on average the number of middle leaders was higher in Academy schools, compared with community schools, even after controlling for school size and pupil characteristics (per cent eligible for free school meals, per cent male, per cent for whom English is an additional language, per cent who are White British and per cent with special educational needs). This was the case for both Converter Academies and for Sponsored Academies, and also applied regardless of whether the school formed a Single Academy Trust (SAT) or was part of a Multi-Academy Trust (MAT). Furthermore, the number of middle leaders was typically higher in schools that were SATs compared with schools that were part of MATs. On average the number of Deputy and Assistant Heads was also higher in Academy schools than in community schools. In contrast to the findings for middle leaders however, the number of Deputy and Assistant Heads was typically higher in schools that were part of MATs than in schools which were SATs.

As Academy schools tend to have a greater number of teachers engaged in middle leadership roles, it is of interest to consider if such schools have increased the number of leaders on conversion to Academy status, or whether such schools had always been more likely to structure their leadership roles in this way. We find some evidence that increases in autonomy within schools (effectively schools which convert to Academies) are associated with an increase in the number of middle leaders.

The findings point to some differences in how schools choose to structure their leadership teams. However, does this matter for school performance?

We find that schools in which a higher number of teachers are engaged in middle leadership are typically judged more highly by Ofsted when rated on leadership and management quality. If there is an association between having more middle leaders and leadership quality, we might therefore expect this to feed into better school performance as measured by pupil attainment.

We find notable differences in the relationship between the number of middle leaders and pupil attainment by school type. We analyse our data in a panel framework, accounting for school “fixed effects”, enabling us to look at whether changes in the size of the leadership group within schools are associated with change in school performance. In schools which are SATs, the number of middle leaders shows a positive and statistically significant association with attainment. This is also the case for non-Academy schools, although the magnitude of the relationship is smaller. However, there is no significant association between the size of the leadership group and school performance for schools that are part of MATs. It is often argued that schools that form part of MATs may actually have fewer decision-making freedoms. Given this, our findings suggest that benefits from extending leadership responsibilities to classroom teachers may only be apparent when schools and their staff have sufficient autonomy to bring about change.

5.3 The role of Head Teachers

In our second paper on leadership as part of this study we focus in more specifically on the role of the Head Teacher.⁷ Our research here aims to address two main questions:

- Are observed characteristics of Head Teachers associated with school performance?

Much of the literature on teacher effects has shown little impact of observable teacher characteristics on pupil performance. We wanted to explore whether the same was apparent for Head Teachers, who may have more influence over the culture and management practices within a school.

- What happens to school performance when there is a change in Head Teacher?

⁷ Our focus is on Head Teachers, rather than Executive Head Teachers, given the potential difficulties in accurately identifying Executive Head Teachers in the SWF.

Research on the effects of academisation have indicated that one of the key potential mechanisms through which improvements in school performance may occur following academisation is a change in Head Teacher. Yet *a priori* the impact of a change in Head Teacher on school performance is ambiguous; it may well depend for example, on whether the former Head Teacher left the school out of choice, and it is also likely to depend on the skills and experience of the incoming Head Teacher. Furthermore, ideally we would want to consider both short-term and longer-run effects on performance, as it is likely to take time before a Head Teacher can implement changes and see the impact of those reflected in pupil attainment (although we are constrained in our ability to do so within this study due to a limited number of years for which we have the necessary data).

Again our analysis here focuses on secondary schools, and uses data from the SWF to identify change in Head Teachers within schools and Head Teacher characteristics. The characteristics we are able to explore include age, gender, length of time worked at the school, contract type, and pay.

We find that observable characteristics of Head Teachers explain a relatively small share of the variation in school performance. However, school performance, whether measured as the percentage of pupils achieving five or more GCSEs at A*-C including English and Maths, or in terms of value-added, was higher where the Head Teacher had been in post at the school for a longer period of time (clearly there are issues of endogeneity here). School performance was lower where the Head Teacher was on a temporary contract – unsurprisingly, given this suggests that a school had either had to replace a Head Teacher at relatively short notice, or was finding it difficult to recruit to a permanent post. For value-added, we also find some indication of an association between school performance and Head Teacher gender, with higher value-added in schools with a female Head Teacher. It is important to bear in mind that these relationships are all associations and cannot be used to infer causality.

To explore the effects of a change in Head Teacher, we match schools that have seen a change in Head Teacher with similar schools that have not experienced a change in Head Teacher. This aims to address concerns that there may be something systematically different about those schools experiencing a change in Head Teacher. We match schools on the basis of prior school level attainment as well as other school characteristics (number of pupils, per cent pupils eligible for free school meals, per cent male, per cent with English as an additional language, per cent White British and per cent pupils with special educational needs). In the absence of matching, we find that on average performance is lower in

schools in the year in which they experience a change in Head Teacher. However, once schools are matched with schools that are similar in terms of prior attainment and the other characteristics specified above, there is no difference in performance associated with a change in Head Teacher at the school.

5.4 Implications and limitations

Identifying the characteristics of effective school leadership has long been recognised as an important route to understanding how school performance may be improved. The introduction of the Academy system has served to further increase the importance of better understanding school leadership; where school leaders have greater autonomy over running their schools, we may expect leaders' roles to be of even more importance in bringing about improvements in school performance.

We find some indication that Academies are structuring their leadership teams differently, with some evidence of a greater tendency to distribute leadership roles to classroom teachers. Academy schools are also more likely than other schools to have an Executive Head Teacher. Although we see higher school performance in schools with a higher percentage of teachers in leadership roles, change in the size of the middle leadership group is only associated with change in school performance in SATs and in non-Academy schools, and not in schools which form part of MATs. It is often argued that schools that form part of MATs may actually have less autonomy in decision-making. Given this, our findings point to the importance of having sufficient autonomy in order for schools to benefit from increasing the number of middle leaders. Choices over how to structure leadership responsibilities within schools will also have cost implications; it is not costless for schools to extend leadership responsibilities to teachers, not only because of any higher salary costs associated with additional responsibilities but also because of potential consequences for time available for teaching.

There are a number of limitations to our analysis which are important to bear in mind. Firstly, we are only able to observe a relatively short period of time. This means we are only able to explore relatively short-term effects, and it would be extremely valuable to be able to observe how school performance evolves over a longer period of time, for example in response to a change in Head Teacher or a change in leadership structures. Secondly, we are also constrained by the information available within the data; for example, while we know whether teachers also hold additional roles, we do not know how much time they spend on these roles compared with time spent teaching. We are also only able to observe a fairly limited set of Head Teacher characteristics.

There are also other aspects of leadership that we do not cover within our study, such as the broader governance arrangements for schools. There have also been substantial changes in the context in which schools operate in recent years; by 2017, more than two-thirds of Academy schools belonged to a MAT (Department for Education, 2018), and the number of executive heads has increased substantially. We have only been able to touch on these aspects within our study but they are likely to have an important bearing on school leadership and are worthy of further attention.

6 How do school workers feel about their jobs and does it matter for school performance?

There are two things that people think they know about teachers. One is that they are dedicated to their profession, motivated by a sense of “mission” rather than money. The other is that they are overworked and suffer work-related stress. But just how dedicated are school employees to their jobs and do they suffer more in terms of stress and potential ‘burnout’ than workers in other walks of life?

There appear to be grounds for concern. Teachers are leaving the profession at alarming rates (Foster, 2018) and those who remain report seemingly high levels of job-related stress. But are these stress levels any higher than those experienced by workers in other professions? And just how much do employees’ wellbeing and commitment matter for schools’ performance?

Studies of school staff nearly always focus *solely* on school workers so it is not possible to compare them with employees elsewhere in the economy.⁸ Our study is, to our knowledge, the first to examine the wellbeing and commitment of school staff relative to “like” employees in other workplaces. And it is the first to establish whether school employees’ wellbeing and commitment matter for school performance. We do so with the Workplace Employment Relations Survey (WERS), a nationally representative survey of all but the smallest workplaces, linked to a survey of their employees (Box 6.1).

In addition to being able to compare school and non-school employees this survey has a number of advantages compared to data used in previous studies. First, we know a lot about how employees feel about their jobs and their employer. This includes job satisfaction, job contentment and organisational commitment. Second, the nature of the job is captured in detail. As well as knowing which occupation they perform, their working hours and contract type, we know how much they are paid; how much control they have over five aspects of their jobs; the degree to which demands are placed on them (how hard their job requires them to work and how much time they have to perform their tasks); the degree to which they receive managerial support in performing their tasks along six dimensions; and employees’ perceptions of their own job security. Together these five job facets make up what we call job quality (Box 6.2).⁹

⁸ A recent exception is Worth et al. (2018) who make some comparisons between the teacher workforce, police officers and nurses.

⁹ The aspects of job quality are the ones that feature in the theoretical and empirical literatures (Karasek, 1979; Payne, 1979; van Wanrooy et al., 2013).

Box 6.1: Data, Measures and Methods

The population: representative surveys of employees in workplaces with five or more employees

Design: two cross-sections of employees sampled via their workplaces, plus a random subsample of the 2004 workplaces followed up in 2011 to investigate change within workplaces. Face-to-face interviews with HR managers provide workplace performance and HRM measures (see Boxes 4.1 and 4.2 in Chapter Four).

Estimation samples: 30,470 employees from 2,517 workplaces, including 3,489 employees (including 2,245 teachers and 899 teaching assistants) from 237 schools. Panel analyses conducted on the subset of workplaces followed up between 2004 and 2011 including 87 schools with 1,690 employee respondents.

Methodology: Ordinary Least Squares (OLS) regression to compare employees' wellbeing and commitment between school and non-school employees who are observationally similar; and panel analyses to establish links between within-workplace *changes* in employee wellbeing and commitment and *changes* in workplace performance. Estimates are survey-weighted so that results can be generalised from the sample to the population as a whole.

Employee wellbeing and commitment: a **job satisfaction** additive scale based on eight job facets (pay, sense of achievement, scope for using initiative, influence over the job, training, job security, involvement in decisions and the work itself). Each facet is rated on a five-point scale from 'Very satisfied' (+2) to 'Very dissatisfied' (-2) and combined to create an additive measure of job satisfaction for each employee with a scale running from -16 to +16. **Job contentment** scale based on responses to the question: "Thinking of the past few weeks how much of the time has your job made you feel...tense, uneasy, worried?" Responses are coded along a five-point scale from 'all of the time' (-2) through to 'never' (+2) and combined to produce a (-6, +6) additive scale. The items are a subset of the anxiety-contentment scale that forms part of Warr *et al.*'s (2013) Multi-Affect indicator. **Organisational commitment** from three items which have counterparts in the Lincoln-Kalleberg measure of affective organisational commitment. Employees are asked "To what extent do you agree or disagree with the following statements about working here? I share many of the values of my organisation; I feel loyal to my organisation; I am proud to tell people who I work for". Items are coded from -2 (strongly disagree) to +2 (strongly agree) and summed to create an additive scale running from -6 to 6 with higher values indicating higher organisational commitment.

School performance metrics: changes in financial performance, labour productivity, quality of product or service, an additive performance scale, absence rates, quit rates, illness rates and injury rates and the climate of employment relations as described in Box 4.1.

Box 6.2: Job quality measures

Pay: hourly pay

Job Control: an additive scale based on responses to the question: “In general, how much influence do you have over the following...the tasks you do in your job; the pace at which you work; how you do your work; the order in which you carry out tasks; the time you start or finish your working day”. Responses to each item are coded from 0 (“None”) to 3 (“A lot”). Our additive scale sums these scores from 0 to 15 (where 15 is the greatest amount of job control).

Job Demands: consists of two items based on how strongly employees agreed with the following statements: “My job requires that I work very hard” and “I never seem to have enough time to get my work done”. The items are summed with the scale running from zero (“strongly disagree” on both items) to eight (“strongly agree” to both items).

Managerial Support: Employees are asked how much they agree with the following statements: “Managers here...understand about employees having to meet responsibilities outside work; encourage people to develop their skills; can be relied upon to keep their promises; are sincere in attempting to understand employees’ views; deal with employees honestly; treat employees fairly”. The additive scale combining these six items runs from 0 (“strongly disagree” on all items) to 24 (“strongly agree” on all items).

Job Security: a single item running from (0,4) based on agreement with the statement “I feel my job is secure in this workplace” where 4 indicates strong agreement

Third, we know about the environment they are exposed to at work, including the use of 48 human resource management (HRM) practices (see Box 4.2), the composition of the workforce (gender, age, ethnicity, occupations, unionisation), and structural features of the workplace such as its ownership, age and size. Finally, the study contains a workplace panel allowing us to track change in employees’ wellbeing and commitment to see how it relates to changes in workplace performance.

These data advantages, together with the analytical techniques we deploy, mean we can be fairly confident that the associations between employee wellbeing and commitment and working in schools are robust, as are the links between employee wellbeing and commitment and the performance of workplaces.

6.1 Research questions and outline of findings

In our paper¹⁰ we address the following questions:

- How do school employees' job-related wellbeing and commitment compare with "like" employees in other workplaces?
- What factors matter most for the job-related wellbeing and commitment of school employees and are they the same factors that matter for other employees?
- Do school employees' job-related wellbeing and commitment affect school performance, and are the associations the same as those found elsewhere in the economy?

What did we find?

- School employees express greater job satisfaction and job contentment than employees in other workplaces.
- However, when comparing "like" employees who are observationally equivalent there are no differences in the satisfaction and contentment expressed between school and non-school employees.
- The key factor explaining greater job satisfaction among school employees is having higher job quality than "like" employees elsewhere.
- Organisational commitment is higher in schools than in other workplaces. This organisational commitment "premium" in schools remains large and significant among "like" employees.
- The aspects of the job and working environment that engender higher satisfaction and contentment are common across school and non-school employees: higher pay, greater job control, reduced job demands, managerial support and greater job security. All these factors also mattered for employees' organisational commitment, with one exception: pay was linked to organisational commitment in non-school environments, but not schools, confirming the limited value of pecuniary rewards for commitment in an environment where employees are mission-oriented.
- Changes in job satisfaction and job contentment are not linked to changes in school performance.
- Increased organisational commitment is associated with improvements in schools' financial performance, labour productivity, and quality of service. It is also linked to lower staff quit rates.

¹⁰ Bryson, A., Stokes, L. and Wilkinson, D. (forthcoming) "Who is Better Off? Wellbeing and Commitment among Staff in Schools and Elsewhere", *Education Economics*

- Improvements in organisational commitment do not bring about the same performance enhancements in non-schools, although non-schools do benefit from higher job satisfaction (which leads to improved financial performance) and higher job contentment (associated with improved perceptions of the climate of employment relations).

In the remainder of this chapter we go into more detail as to how we came to these findings.

6.2 How do school employees' job-related wellbeing and commitment compare with those of other employees?

The findings reported in this section are based on regression analyses at the employee level, pooling the 2004 and 2011 surveys, but accounting for the year of the survey through the introduction of a control variable identifying 2011 respondents.

6.2.1 Job satisfaction

School employees' mean job satisfaction is 5.51 points on our (-16,16) scale compared to 4.20 points among non-school employees: controlling for being in a school and the year of observation the differential is 1.28 points, a difference that is significant at a 99 percent confidence interval. The differential remains large (0.88 points) and statistically significant when one compares school and non-school employees who are observationally equivalent, other than on their job quality.¹¹

However, the differential falls to 0.21 and is not statistically significant once we account for differences in job quality captured in the measures described in Box 6.2 between employees in schools and elsewhere. The implication is that school employees enjoy what they perceive to be higher job quality than employees elsewhere and it is this that lies behind their higher job satisfaction.

6.2.2 Job contentment

School employees' mean job contentment is 1.82 points on our (-6, 6) scale compared to 2.01 points among non-school employees: controlling for being in a school and the year of observation the differential is -0.216, a deficit which is statistically significant at a 99 percent confidence level. This is consistent with school employees experiencing greater job-related

¹¹ These models control for: demographic traits (gender, age, race, marital status, qualifications, union status); job (occupation, contract type, hours, tenure); workplace (size, single-establishment, age, region, workforce composition along age, ethnicity, gender, union, occupational and part-time status dimensions); HRM practices; and managerial style (female HR manager, work-life balance oriented, prefers to discuss change with employees before making changes, prefers direct communication with employees to union engagement).

anxiety than employees elsewhere in the economy. However, the difference falls to 0.01 and is no longer significant when comparing observationally equivalent employees in schools and elsewhere. In contrast to job satisfaction, the school coefficient becomes non-significant even in models excluding job quality.

6.2.3 Organisational commitment

School employees exhibit greater organisational commitment than their non-school counterparts. Their mean organisational commitment score on our (-6, 6) scale is 3.28, compared with 2.22 for non-school employees. Controlling for being in a school and the year of observation the differential is 1.11, a difference that is statistically significant at a 99 percent confidence level. Although the introduction of controls reduces the size of the differential to 0.317 it remains highly statistically significant.

6.3 What factors matter most for the job-related wellbeing and commitment of school employees and are they the same factors that matter for other employees?

Our statistical models do a good job of accounting for variance in employees' wellbeing and commitment. The models account for nearly two-thirds of the variance in job satisfaction, one-third of the variance in job contentment and two-fifths of the variance in organisational commitment. Job quality is the biggest influence on these worker attitudes.¹² The wider working environment, as captured by HRM practices and managerial style, play a far less important role.

The job quality variables are related to job satisfaction in the same way in schools and elsewhere, with pay, job control, support from management and perceived job security all positive and statistically significant, whereas job demands are negative and significant, in much the same way as one would expect under Karasek and Theorell's (1990) theoretical model.

The job quality measures are linked to job contentment in a similar fashion to the way they relate to job satisfaction, with one notable exception: pay is *negatively* associated with job contentment, both among school employees and those employed elsewhere. This is consistent with earlier research using WERS which found higher wages were associated with higher job satisfaction *and* higher job-related anxiety (Bryson et al., 2012). One

¹² For example, in the case of job contentment a model containing only a school dummy, a year dummy and the job quality measures has an r-squared of 0.29 compared to the full model. In the case of organisational commitment the respective figures are 0.43 compared to 0.45.

potential reason for this association between higher wages and lower job contentment is that the responsibilities that come with higher earnings may generate job-related anxiety. (Recall that the job contentment scale is a dimension of job-related affect with job contentment at one end and job anxiety at the other). Another possibility is that a certain amount of job-related anxiety can increase labour productivity, for instance, by inducing additional effort. A third is that employers choose to pay workers a compensating wage differential when faced with greater work-related stress.

Job control, the management score capturing perceptions of job support by management, and perceived job security are all positively and significantly related to organisational commitment among employees in schools and elsewhere. However, whereas job demands are associated with lower job satisfaction and job contentment, they are *positively* linked to organisational commitment: it is possible that those who are committed to an organisation are prepared to take on more onerous tasks. Whereas pay is positively and significantly associated with organisational commitment among employees outside the school sector, it is not significant among school employees. One possible interpretation is that “mission-oriented” individuals who are committed to educating children are not motivated by pecuniary rewards.

6.4 Do school employees’ job-related wellbeing and commitment affect school performance, and are the associations the same as those found elsewhere in the economy?

To answer these questions, we ran analyses at the workplace-level to estimate the association between *changes* in employees’ mean job satisfaction, job contentment and organisational commitment, and changes in workplace performance between 2004 and 2011 using the nine measures of workplace performance described in Box 6.1. The models, which also condition on changes in the employment size of workplaces and changes in log hourly wages, are run separately for schools and non-schools.

Changes in job satisfaction are statistically significant in only two out of eighteen models – increases in employee job satisfaction are linked to improved workplace performance in non-schools and a better climate of employment relations in schools. Increased job contentment is associated with improved climate in non-schools but is non-significant in the remaining seventeen models. The strongest results relate to improvements in organisational commitment in schools: increased organisational commitment is associated with improved workplace performance, as measured by financial performance, labour productivity, quality

of service, and the additive measure based on all three, and is also associated with reductions in quit rates. None of these associations are apparent in non-schools, indicating that the returns to higher organisational commitment are confined to the school sector.

6.5 Policy implications

By comparing school employees with “like” employees elsewhere we challenge some preconceptions about what it is like to work in a school environment. School employees express greater job satisfaction and job contentment than employees in other workplaces. However, when comparing “like” employees who are observationally equivalent there are no differences in the satisfaction and contentment expressed between school and non-school employees. The key factor explaining greater job satisfaction among school employees is having higher job quality than “like” employees elsewhere. Organisational commitment is higher in schools than in other workplaces. This organisational commitment “premium” in schools remains large and significant among “like” employees. This commitment, when harnessed by schools, leads to improved performance and lower staff quit rates.

Investing in employee wellbeing via job quality may be a legitimate policy objective in its own right, since workers’ subjective wellbeing is linked to their health and wellbeing more generally. From a citizenship perspective, one might also argue that individuals have a right to good and satisfying employment. And recent research shows falling job satisfaction triggers teachers’ departure from the profession (Worth et al., 2018).

In the case of schools, we show there are additional returns to investing in employees’ organisational commitment because improvements in commitment are associated with higher schools’ financial performance, labour productivity and quality of output. The question arises: how can employers and government foster organisational commitment among school employees? The answer is quite straightforward: investments in job quality. This is the key factor that is associated with higher satisfaction, contentment and commitment among school employees (and, indeed, elsewhere).

Job quality has five components: perceived job security; higher job control; fewer job demands; higher pay; and perceptions of support from good managers. Government and employers can foster satisfaction, contentment and commitment among school employees by underpinning their job security, by increasing the control they have over how they do their jobs, and by reducing job demands made upon them. Higher pay can enhance job satisfaction and contentment, but it does not elicit higher organisational commitment among school employees. The fact that commitment is not linked to pay among school employees

is not surprising given the ‘mission-oriented’ nature of the teaching profession, though it is important to remember that pay is nevertheless important for school employees’ job satisfaction and job-related contentment.

It might come as something of a surprise to discover that job-related anxiety (low scoring on the job-related contentment scale) is no more prevalent among school employees than among employees elsewhere. This is perhaps because by using linked employer-employee data, our study is better able to account for potential confounding factors than previous studies. However, it is important not to be complacent. A recent study found the proportion of teachers leaving the profession has been rising since 2010/11 – roughly the time of our second survey - and that job dissatisfaction is a contributory factor (Worth et al., 2018). Ideally, one would wish to revisit these issues with the sorts of linked employer-employee data used in this chapter to establish how best to ensure that the school environment remains conducive to worker wellbeing and commitment.

7 Implications, limitations and future research

This study has exploited recently available large-scale data to shed light on how we might make schools better for students and staff.

Researchers and academics often complain about the state of data in the UK, usually arguing that we cannot address policy-related questions in the same way as European neighbours because our data infrastructure is lacking. This is not the case in terms of school education in England. Today we have access to data which often covers the whole population of state-funded schools and those who work in them which provides very detailed information on school finances, pupil composition in schools, staffing arrangements, and individual teacher career paths. These data can be linked to academic attainment among all students in state-funded schools in England so that, in principle, we can further understanding of how schools function and identify ways in which they might be improved. Researchers do not take access to these data for granted, and recognise there are important issues regarding confidentiality, and the resources respondents and the state must devote to data production and release which are not trivial. In this study we have been able to access these data, often linking data sources together via school identifiers in a secure environment, to address four related issues. We discuss these in turn below before concluding with thoughts about potential directions for future research.

7.1 How much does it matter which school a pupil attends for their academic attainment?

It is no surprise to discover that secondary schools matter. It would be very disconcerting if they did not. However, we find they do not account for as much of the variance in pupil attainment as some parents and policy makers seem to think. We are not the first to point this out – earlier studies, including some by the government department responsible for education – have similar findings. But we are the first to track this issue over time. Data permit us to go back to the early 2000s. Despite the huge efforts to transform the secondary school system over that period, schools have become no more important in accounting for variance in pupils' academic attainment than they were at the turn of the Millennium.

One inference that can be drawn from this finding is that there is only so much one can do to improve pupils' performance through the secondary school system. This policy inference is very much in keeping with other studies which have pointed to the important contributions to pupil attainment that can be made through early-years interventions in nursery school and parental investments in their child's education.

There are limitations to the analysis we conduct and they have implications for the way one should interpret our findings. First and foremost, we say nothing about the causal impact of secondary schools on pupil attainment. Our analyses simply decompose variance in pupil attainment into various components, including a school-specific component. It is a descriptive exercise and could potentially be improved upon in the future (see Section 7.5 below). Second, the pupil attainment metrics we rely on change every few years making it extremely difficult for researchers and schools themselves to track their progress over time. In this study we tried to address this issue by looking at progression using a range of available pupil attainment metrics, but this is only a partial solution to the problem. There is some merit in government retaining some pupil attainment metrics that are constant over time, so that schools and others have a more robust way to track individual schools' progress over time.

7.2 Do human resource management (HRM) practices affect school performance?

There is a vast literature examining links between HRM and organisational performance, but it is only recently that the role of HRM has been studied in schools. We have shown that HRM practices are associated with improved performance in schools, but that the types of practice that appear beneficial in a school setting differ in some ways to those that benefit for-profit organisations. We also show that HRM is deployed more effectively in state schools than it is in private schools, suggesting that the policy of private 'sponsorship' of state schools to encourage the transfer of best practice is misplaced.

There are three limitations to our examination of HRM practices in schools. First, the analyses are such that we are unable to make causal inferences about the role of HRM practices in schools' performance. Future research may be able to do so (see Section 7.5) but there are important data requirements that need to be met to identify causal effects. Second, our data rely on the Workplace Employment Relations Surveys in 2004 and 2011. There is no more recent information available, so it is not possible to know whether results which held six to seven years ago still apply today. Third, although we find fairly strong partial correlations between HRM intensity and a range of performance outcomes for schools, we do not find these associations with respect to pupil attainment. There are many potential reasons for this finding which are discussed in more detail in Chapter Four. But one that we can not discount is the possibility that the small sample sizes on which we had to rely were simply too small to establish precise estimates.

7.3 How much do leadership staff matter for school performance?

Our study describes who performs leadership functions in schools, including what we call 'middle leaders' below Headship level, and the characteristics of Head Teachers. We find the size and composition of the leadership team varies quite a bit across schools. Although there is some evidence of a partial correlation between the size of the leadership group and pupil attainment, once we account for fixed differences across schools, the positive association between the number of middle leaders and school performance is only evident in SATs and in non-Academy schools, with no statistically significant relationship for schools which are part of MATs. We find no compelling evidence that school performance changes when a new Head Teacher enters a school, although it may be that effects only become apparent over a longer time-frame.

Our results raise questions as to whether all schools are reaping the full benefits from devolving managerial responsibilities to senior staff in schools, particularly for schools which are part of MATs. Evidence from other parts of the economy indicates that the benefits in devolving leadership responsibilities to workplace-level and to lower levels within the organisational hierarchy depend upon those with the new responsibilities having sufficient autonomy to make decisions and having the appropriate knowledge to make informed decisions.

7.4 How do school workers feel about their jobs and does it matter for school performance?

Although it is commonly thought that teachers and other school staff suffer particularly acute levels of job-related stress and anxiety, our study suggests they are not exceptional in this regard. Where they are exceptional is in their organisational commitment: it is higher among school staff than elsewhere in the economy. Increased organisational commitment is associated with improvements in school performance and reductions in staff quit rates. So there seems to be a compelling case for schools to invest in employee commitment. Our study indicates that this means investing in aspects of the school environment and jobs which also engender higher employee satisfaction and lower job-related anxiety, namely managerial support, greater job security and job redesign leading to greater job control and lower job demands. Higher pay, although linked to improved job satisfaction and lower job-related anxiety, is not linked to organisational commitment among school staff, suggesting pecuniary rewards may be of limited value in engendering commitment in an environment where employees are 'mission-oriented'.

Our study has the advantage over many others in that it links school staff to the school where they work, so we can account for the school environment they work in when assessing their attitudes to the job and to management. However, the survey was conducted in 2011, and a great deal has happened since then to schools and their staff. Indeed, other studies conducted recently indicate low job satisfaction among teachers lies behind teachers leaving the profession (Worth et al., 2018).

7.5 Future research

The premise for this study is that research focusing on teacher added value should be supplemented by studies focusing on the whole school. Teacher inputs are only part of the school production function and should be treated as such. How teachers are organised, incentivised and supported is determined by others and, increasingly, by Head Teachers and other executive leaders. A better understanding of this context, and the ability to capture this in data, are vital in trying to improve understanding of what makes for better schools. Data infrastructure has improved recently in a way which allows us to track schools and school staff longitudinally, which is a prerequisite for understanding change. But some important aspects of the school environment, such as the management practices deployed and the perceptions of teachers and other school staff, are not easily captured with administrative data. They require surveys, such as the Workplace Employment Relations Survey, to supplement administrative sources. What is feasible in future will depend, in large part, on the availability of data that allow us to 'drill down' into workplaces and link this to the experiences of staff.

Part of this 'drilling down' involves capturing what teachers and Head Teachers are doing in their jobs. Now that schools and their Heads have greater autonomy in the running of their schools (with the possible exception of schools belonging to some MATs), arguably they have choices available to them which, previously, were denied because decisions were made above school level. If Head Teachers and other executive leaders wish to be effective in making schools better school staff need information about 'what works' and, specifically, what might work in their particular setting. Our study raises many questions in this regard, questions that should be pursued in future. For instance, why is it that the HRM that appears beneficial in a school setting differs from that which appears beneficial in a for-profit organisation? Is it something about being in a (largely) public sector setting, or is there something very specific about schools and teaching?

More research is required to track what happens to schools, teachers and pupils over the longer-run. Policy changes come thick and fast, each with their own potential effect.

Sometimes those effects – good or bad – will only emerge over the medium or longer-term. Research focused on short-term responses gives a partial, and potentially misleading indication as to what the impact of policy changes might be.

Research looking at longer-term outcomes is increasingly feasible because data collection efforts initiated some time ago are now bearing fruit. For instance, the School Workforce Census (SWF) now tracks school staff over an eight-year period, which is long enough to see teacher progression, for instance, within and across schools. It also means more schools will be subject to changes in leadership, thus providing researchers interested in the impact of leadership on schools with opportunities to design studies which contain a larger number of ‘treated’ cases. It will also be valuable for future research on school performance to consider the broader governance arrangements of schools.

Together these data sources provide opportunities to describe, in some detail, what is happening in schools. Pure descriptive analysis is often undervalued, especially by academics who are usually unable to publish such research in academic journals. But descriptive data collected consistently over time provides policy analysts and others with the basis for making comparisons over time, identifying trends and benchmarking across schools.

But policy inferences and recommendations require moving beyond descriptive analysis. As in other fields of research, identifying ‘what works’ in a school setting relies upon analysts’ ability to make causal inferences based on credible research designs. Central to these endeavours is the analyst’s ability to identify what economists refer to as ‘exogenous’ change in the policy or practice that is being evaluated, that is to say, the deployment of a policy or practice in a way that is not associated with pre-existing differences in schools’ or pupils’ performance. One also needs a credible method to identify a counterfactual scenario where the change did not take place. These conditions are usually engineered through some sort of experiment. In some cases, these experiments entail randomised control trials (RCTs), most commonly deployed in social and economic policy for the evaluation of welfare-to-work programmes but now used increasingly by those evaluating education interventions conducted under the auspice of the Education Endowment Foundation and others. Although extremely useful, these experiments sometimes have their own drawbacks, such as small sample sizes that make it difficult to establish with precision whether a policy is working or not. They are nevertheless an important tool in establishing the potential importance of policy change.

In other cases, researchers exploit naturally occurring experiments, such as the gradual rolling out of a programme across the country, in a way that permits the construction of counterfactual scenarios against which to judge the performance of the programme. If randomisation is not possible, there are ways in which policy makers and analysts can work together to identify opportunities for evaluation in the deployment of a policy. More systematic consideration of these opportunities would be beneficial, and requires a more strategic engagement between policy makers, research analysts and funders of research to plan for future evaluations.

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¹³ Those in bold are outputs from this study.

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