

School Quality Index

Methodology – final

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## Credit

This work was produced using statistical data from ONS. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data.

This work uses research datasets which may not exactly reproduce National Statistics aggregates.

This publication includes analysis of the Department for Education National Pupil Database. Inferences or conclusions derived from the NPD in this publication are the responsibility of FFT Education Datalab and not the Department for Education.

The work was carried out on behalf of the [IntegratEd partnership](#) and funded by Porticus UK.

## 1. Project details

### 1.1 Project background

This report presents the methodology followed by FFT Education Datalab to produce a School Quality Index for secondary schools that considers a range of data beyond academic attainment. The first version of the Index was produced for the Office for the Children's Commissioner. We have revised some parts of it and reproduced it on behalf of the IntegratEd Partnership. This version has a focus on inclusion.

The School Quality Index is designed to highlight areas of inclusive behaviour by secondary schools in England, taking in measures such as how representative the school intake is, the attainment of disadvantaged pupils, the frequency of exclusions and movement on and off the school roll. It is balanced to also include measures of academic performance.

Data used in this project is a combination of public data and data from the Department for Education's National Pupil Database (NPD).

We do not make any claims that this is the final word in terms of measuring either the quality of schools or how inclusive they are. This will always be a subjective exercise. However, we demonstrate how different dimensions of the work of schools can be aggregated into an index similar to the [Indices of Multiple Deprivation](#).

### 1.2 Outputs

Alongside this methodology, final outputs consist of an Excel workbook School Quality Index results.

An explanation of the terminology used in the workbook can be found in this document.

## 2. Methodology

### 2.1 Overview

The methodology which we have used follows one applied in the production of the English Indices of Deprivation.<sup>1</sup>

Two pieces of terminology will be introduced at this stage:

- **Indicators** are the individual data items which feed into the Index – for example the disadvantage rate of a school;
- **Domains** are the overarching areas of focus of the Index, which themselves consist of **sub-domains**.

In the case of the Indices of Deprivation, **domains** were: income deprivation; employment deprivation; education, skills and training deprivation; health deprivation and disability; crime; barriers to housing and services; living environment deprivation. **Indicators** consisted of things such as the number of Universal Credit claimants and the rate of burglary per 1,000 at-risk properties.

In the case of our work on the School Quality Index, **indicators** include things such as a school's disadvantage rate and permanent exclusion rate. For our work for the Children's Commissioner's Office it was decided that two **domains** should be used – one covering aspects of enrolment at a school, and the second covering academic outcomes. To aid understanding of the outputs, we have identified 7 **sub-domains** which sit below these two domains. This is discussed in further detail later in this report. However, further domains and sub-domains may be identified in future.

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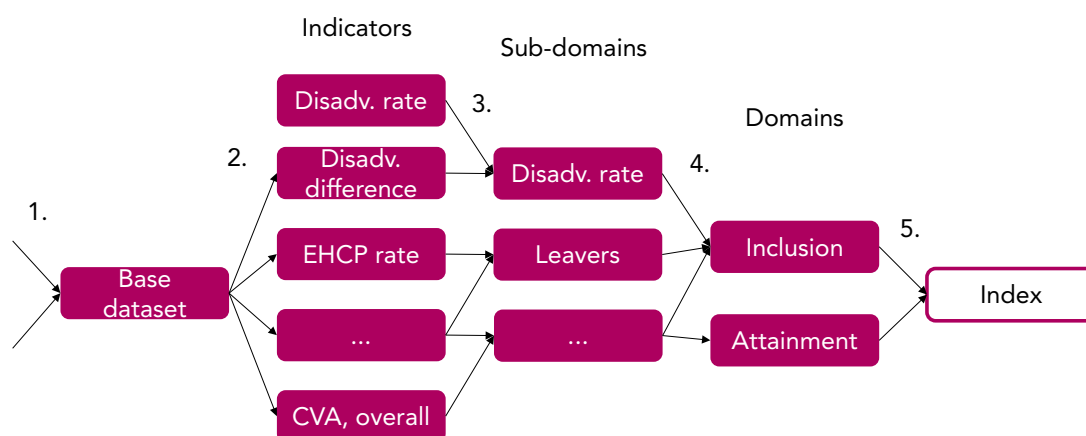
<sup>1</sup> See the technical report to the 2019 Indices:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/833951/loD2019\\_Technical\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/833951/loD2019_Technical_Report.pdf)

The methodology for this work consists of five steps. The first two steps output the **indicators** that will be used, with the remaining three steps going from indicators to **sub-domains** and then **final Index scores**. The steps are as follows.

1. **Data published by the Department for Education and National Pupil Database data are combined and turned into a base dataset for analysis.** As well as aggregating this data, techniques known as *contextualisation* and *shrinkage* are used to prepare some data items
2. **Indicators are produced by putting the data onto a common scale,** a process known as *standardisation*
3. **Sub-domains are determined** using a process known as *factor analysis*, which assesses how indicators should be grouped together
4. **Sub-domain scores are weighted and combined into two domains scores,** covering aspects of enrolment and academic outcomes
5. **Final Index scores are calculated** by weighting and combining the enrolment and academic outcomes domain scores

Details of how these steps have been carried out are given later in this report. A log of all data used in the production of the School Quality Index can be found in Appendix A.



1. Contextualisation, shrinkage
2. Standardisation
3. Factor analysis
4. Weighting and combining of sub-domain scores
5. Weighting and combining of domain scores

## 2.2 Coverage

### Schools

The starting population for the creation of the School Quality Index has been the list of mainstream<sup>2</sup> state schools that feature in the Department for Education’s revised 2018/19 Key Stage 4 performance tables.

Schools are linked on LAEstab identifier, meaning that attainment data for the period before a school academies and changes LAEstab is linked to attainment data following this change in identifier. Where school mergers introduce duplicates in a given dataset (e.g. the exclusions dataset) the record is marked as being duplicated. The value for neither predecessor school is used, as it is not thought to be representative of the merged school.

A reconciliation of the number of schools in this source population and the number included in the School Quality Index is given below.

<sup>2</sup> Mainstream is defined here as including university technical colleges and studio schools but excluding further education colleges.

Mainstream state schools in the revised 2018/19 KS4 performance tables	3,375
Schools with 11 or more pupils with KS4 progress scores <sup>3</sup>	3,180
<b>Schools included in the School Quality Index</b>	<b>3,174</b>

### *Domains and sub-domains*

As for the version of the School Quality Index produced for the Children’s Commissioner’s Office there are two domains: one covering enrolment (or inclusion) and another covering academic outcomes.

However, as this version has a focus on inclusion, the domain related to academic outcomes is restricted to a measure of attainment for vulnerable pupils. These are defined as pupils who either a) are disadvantaged b) have an education, care and health plan (EHCP) or c) have ever been classified as in need.

The sub-domains are as follows:

<b>Enrolment</b>	<b>Academic outcomes</b>
1. Disadvantaged pupils	1. Contextualised Attainment 8
2. Special educational needs	
3. Pupils with EAL (recent arrivals)	
4. Joiners and leavers	
5. Absence	
6. Exclusions	

Indicators were chosen to provide coverage of the sub-domains.

For some sub-domains, the score is based on a single indicator. Scores for other sub-domains are calculated by aggregating two or more indicators using factor analysis. The choice of individual indicators took into account the correlation between a given indicator and other indicators that are being used within a sub-domain. If the correlation is very low, this suggests that the indicators are measuring different things. Conversely, if it is very high it suggests they are measuring the same thing.

Coverage has also been determined by two other factors. The availability of data is one factor. There are other things which might be considered important parts of school inclusivity – for example pupil wellbeing and mental health – but for which no school-level data is readily available.

All data for the index related to the 2018/19 academic year. Three-year averages have been used for the Attainment 8 indicators that have been included. This has been applied to smooth out the impact of figures in some cases being based on small pupil groups.

## **2.3 Selection of indicators**

The work for the Office of the Children’s Commissioner involved testing the statistical properties of several indicators and the resulting sub-domains. We present here the final choice of indicators used in the updated index for the IntegratEd Partnership.

### **1. Disadvantage**

Current indicator(s):

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<sup>3</sup> This excludes 196 schools, of which for 194 schools no Key Stage 4 progress scores are available on account of them having small numbers of pupils at the end of Key Stage 4, or small numbers of pupils at the end of Key Stage 4 with prior (KS2) attainment scores.

- |  |              |              |
|--|--------------|--------------|
| a. Percentage of pupils who are disadvantaged <sup>4</sup>   | NPD analysis | January 2019 |
| b. Percentage of pupils who are disadvantaged relative to the percentage of pupils who are disadvantaged in the local area from which the school draws its pupils <sup>5</sup> | NPD analysis | January 2019 |

## 2. Special educational needs and disability

Current indicator(s):

- |  |              |              |
|--|--------------|--------------|
| a. Percentage of pupils with an education, health and care plan/SEN Statement  | NPD analysis | January 2019 |
| b. Percentage of pupils with an education, health and care plan/SEN Statement relative to the percentage of pupils with an education, health and care plan/SEN Statement in the local area from which the school draws its pupils <sup>6</sup> | NPD analysis | January 2019 |

## 3. EAL recent arrivals

Current indicator(s):

- |  |              |              |
|--|--------------|--------------|
| a. Percentage of pupils with a first language other than English who first enrolled at a state school in England in 2014/15 or later   | NPD analysis | January 2019 |
| b. Percentage of pupils with a first language other than English who first enrolled at a state school in England in 2014/15 or later in the local area from which the school draws its pupils <sup>7</sup> | NPD analysis | January 2019 |

## 4. Joiners and Leavers

Current indicator(s):

- |  |              |                 |
|--|--------------|-----------------|
| a. Contextualised percentage of pupils leaving the school's roll between Year 9 and Year 10, or Year 10 and Year 11 <sup>8</sup> | NPD analysis | 2017/18-2018/19 |
| b. Contextualised percentage of pupils joining the school's roll between Year 9 and Year 10, or Year 10 and Year 11 <sup>9</sup> | NPD analysis | 2017/18-2018/19 |

## 5. Exclusions

Current indicator(s):

- |   |              |         |
|---|--------------|---------|
| a. Contextualised repeat fixed-term exclusion rate        | NPD analysis | 2018/19 |
| b. Repeat fixed-term exclusion rate for vulnerable pupils | NPD analysis | 2018/19 |
| c. Fixed term exclusion rate (all pupils)                 | Public data  | 2018/19 |
| d. Fixed term exclusion rate (vulnerable pupils)          | NPD analysis | 2018/19 |

<sup>4</sup> Disadvantage defined as in DfE statistical releases: eligible for free school meals in the last six years (FSM6), looked after for at least one day, or service child. Pupils who are boarders are excluded, as they are in indicators 2. and 3.

<sup>5</sup> This is done by identifying a group of pupils who live closest to the school, equal in size to the number of pupils on the school's roll excluding pupils who are boarders. The characteristics of this group and pupils on the school's roll are then compared.

As an example, if a school has 1,050 pupils on roll and 40% of them are disadvantaged, the disadvantage status of the 1,050 pupils who live closest to the school would be considered. If 45% of that group were disadvantage, that would result in a figure of -5% for this school.

<sup>6</sup> Following the approach described in the above footnote

<sup>7</sup> Following the approach described in the above footnote

<sup>8</sup> Excluding service children

<sup>9</sup> Excluding service children

## 6. Absence

Current indicator(s):

a. Contextualised percentage of persistent absentees	NPD analysis	2018/19
b. Percentage of vulnerable pupils who are persistent absentees	NPD analysis	2018/19
c. Contextualised overall absence rate	NPD analysis	2018/19
d. Overall absence rate for vulnerable pupils	NPD analysis	2018/19

## 7. Overall attainment

Current indicator(s):

a. Contextualised Attainment 8 score, vulnerable pupils	NPD analysis	2016/17-2018/19, three-year average
b. Contextualised Attainment 8 score, vulnerable pupils <sup>10</sup>	NPD analysis	2016/17-2018/19, three-year average

The contextual value added indicators extend the Department for Education Progress 8 measure by controlling for additional factors beyond Key Stage 2 attainment that influence Key Stage 4 attainment and are outside the direct control of schools. These factors are listed in Appendix C.

There are two ways in which these indicators, and the other Attainment 8 indicators described below, might be improved.

The first such improvement would be to take into account differences in grading which exist between different Key Stage 4 qualifications.<sup>11</sup> Secondly, it might be beneficial to calculate proportional Attainment 8 scores – that is, allocating pupils' results to schools based on the amount of time they spent on roll at a particular establishment, as opposed to the status quo, which to a large extent only takes into account pupils who remain on the roll of an establishment in January of their Year 11 year.<sup>12</sup>

### 2.4 Approach to suppressed and missing data

In some cases, data is not available for all indicators for a given school.

Most of the time this occurs where the number of pupils concerned means suppression is required under Office for National Statistics suppression rules, which generally require figures to be based on a count of ten or more pupils.<sup>13</sup> This issue can arise, for example, where a school has a very small number of disadvantaged pupils, or of pupils with low prior attainment.<sup>14</sup>

In a smaller number of cases, data does not exist, for example in the case of where two schools have merged, the value of neither predecessor school is attributed to the successor school, as described in section 2.2.

In both the case of suppression and of missingness, dummy values have been used to fill the gaps that result. A description of how dummifying on an indicator-by-indicator basis can be found in Appendix B.

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<sup>10</sup> Disadvantage defined as in DfE statistical releases: eligible for free school meals in the last six years (FSM6), looked after for at least one day, or service child.

<sup>11</sup> As described here: <https://ffteducationdatalab.org.uk/2019/10/solutions-to-problems-with-progress-8-part-one-qualification-scoring/>

<sup>12</sup> As described here: <https://ffteducationdatalab.org.uk/2018/06/whos-left-2018-part-four-our-methodology/>

<sup>13</sup> Zeroes are permitted under these rules.

<sup>14</sup> In the case of the indicators which compare the school population to pupils from school's locality, this can also arise where the number of pupils in the local area requires suppression, even where the number of pupils at the school does not require suppression.

Suppression is most common for the following indicators.

Indicator	Count of schools
Percentage of pupils with an education, health and care plan/SEN Statement	1046
Percentage of pupils with an education, health and care plan/SEN Statement relative to the percentage of pupils with an education, health and care plan/SEN Statement in the local area from which the school draws its pupils	1083
Percentage of pupils with English as a first language	1163
Percentage of pupils with English as a first language relative to the percentage of pupils with English as a first language in the local area from which the school draws its pupils	1486
Contextualised movements off the school roll	1622
Contextualised movements onto the school roll	1568
Repeat fixed-term exclusion rate	921
Repeat fixed-term exclusion rate, vulnerable pupils	1216

## 2.5 Presentation of results

Results are presented in the accompanying Excel workbook. In addition to final School Quality Index scores this workbook contains: input data used in the creation of the Index, the base dataset following contextualisation and shrinkage, indicators and sub-domain scores. Final School Quality Index scores are presented unordered.

As described in greater detail below, the inclusion and academic outcomes are weighted equally in these results. For each of these two domains, the sub-domains which make them up (five in the case of inclusion; one in the case of academic outcomes) have been given equal weighting.

The facility for users to set their own weightings has however been included in the Excel workbook.

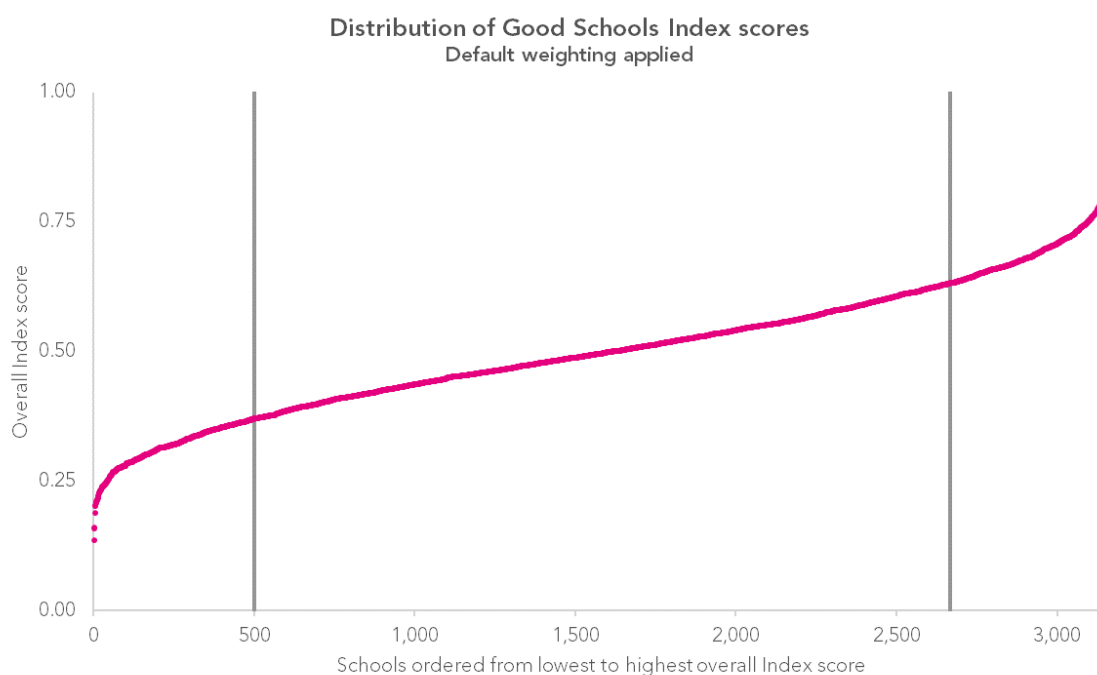
Scores for each sub-domain and domain, as well as overall Index scores, have been put into one of three bands:

- **high scores:** the 500 schools (16%) with the highest scores are put into this band;
- **medium scores:** all schools not among the 500 schools with the highest or lowest scores (68%) are put into this band;
- **low scores:** the 500 schools (16%) with the lowest scores are put into this band

While such banding may want to be improved in any future iteration of the School Quality Index, at around the 500th score from the bottom of the distribution and the 500th score from the top of the



distribution the spread of overall Index scores does begin to change.



An alternative approach that could be considered would be to create:

- a band covering the top 10%;
- a band covering the next 15%;
- a middle band containing 50% of schools;
- a band containing the next 15%; and
- a band covering the bottom 10%

This would introduce additional segmentation of the list were it deemed useful to do more than just identify the schools with the very highest and lowest scores.

## 2.6 Detailed methodology

### 2.6.1 Contextualisation

A number of indicators have been contextualised to make for fairer comparison between schools in different circumstances.

Two - the percentage of pupils leaving the school's roll between Year 9 and Year 10, or Year 10 and Year 11 and the percentage of pupils who are persistent absentees - have been contextualised based on school-level factors.<sup>15</sup>

Persistent absence was well-correlated with the predictors ( $r^2=0.36$ ). The percentage of pupils leaving the school roll was moderately correlated ( $r^2=0.25$ ). A decision was made to include the contextualised version of this indicator because the resulting sub-domain score for leavers was too highly correlated with disadvantage if the uncontextualised version was used. Other variables (such as leaving the school roll, exclusions) were much less well-correlated.

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<sup>15</sup> Namely: school gender (boys/girls/mixed); phase of education (secondary/all-through); whether the school has a sixth form; urban/rural classification; percentage of FSMever pupils; percentage of pupils with an education, health and care plan/SEN Statement; percentage of pupils with SEN Support; percentage of EAL pupils; percentage of white British pupils. Use of these factors follows from the availability of this data, and the desire to contextualise on a broad range of factors.

Attainment indicators have been contextualised based on a mixture of school- and pupil-level factors using an adaptation of a model we previously developed.<sup>16</sup> This includes a number of pupil-level background factors known to influence attainment (ethnicity, disadvantage, gender etc.) and interactions between them. We have also included school-level factors (Key Stage 2 average point score, percentage of disadvantaged pupils, percentage of EAL pupils). Including the Key Stage 2 average point score of the cohort corrects for ability bias resulting from measurement error.<sup>17</sup> The additional factors make adjustments for schools operating in different contexts.

The consequence of including school-level factors in addition to pupil-level factors is that the resulting scores compare attainment at a school to that of similar pupils in similar schools. This would mean, for example, that schools with cohorts that have high prior attainment will be compared with other schools with cohorts that have high prior attainment, rather than all schools.

### 2.6.2 Shrinkage

Shrinkage is a statistical technique used when two or more things being compared are based on materially different numbers of observations. To quote from the [technical guidance to the English Indices of Deprivation](#):

3.41 Where a rate or other measure of deprivation for a small area is based on small numbers, the resulting estimate may be unreliable, with an unacceptably high standard error. The technique of shrinkage estimation is used to 'borrow strength' from larger areas to avoid creating unreliable small area data [...]

In the case of the School Quality Index, this arises, for example, when subgroups of the school cohort (e.g. disadvantaged; low prior attainment) are considered. Shrinkage is a means by which the propensity for small cohorts to exhibit more extreme values is adjusted for.

In practice, this has been applied to seven indicators: the six indicators based on Attainment 8 that relate to distinct pupil groups (disadvantaged, and low prior attainment) and indicator 6c., which relates to the percentage of pupils who have ever been eligible for free schools meals who have received a fixed term exclusion. In both cases, school scores are shrunken towards the national average based on between- and within-school variance.

To calculate shrunken contextualised Attainment 8 scores, each school's contextualised Attainment 8 score was multiplied by a shrinkage factor:

$$\frac{\sigma_b}{\sigma_b + \sigma_w/n_s}$$

where  $\sigma_b$  is the national variance in contextualised Attainment 8 scores between schools,  $\sigma_w$  is the national variance in contextualised Attainment 8 within schools and  $n_s$  is the number of pupils at the school.

The rate of fixed term exclusions for disadvantaged pupils was shrunken using the method presented in Appendix D of the 2019 Indices of Deprivation technical report<sup>18</sup>, with the distinction that school rates were shrunken to the national average rather than the local authority average.

We have not applied shrinkage to any measures related to "whole school" indicators. While this would make a difference to some small schools (e.g. UTCs, studio schools), for the vast majority of schools there are sufficient pupils to make shrinkage unnecessary.

<sup>16</sup> <https://ffteducationdatalab.org.uk/2019/10/solutions-to-problems-with-progress-8-part-two-taking-account-of-context/>

<sup>17</sup> <https://www.tandfonline.com/doi/abs/10.1080/02671522.2018.1424926?journalCode=rred20>

<sup>18</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/833951/loD2019\\_Technical\\_Report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/833951/loD2019_Technical_Report.pdf)

### 2.6.3 Standardisation

Standardisation was completed by calculating percentile ranks for each indicator then transforming the ranks into a standard normal distribution. This step allowed us to combine indicators that used different scales when carrying out factor analysis and calculating scores.

### 2.6.4 Factor analysis and grouping of indicators into sub-domains

Factor analysis is a technique for combining a large number of indicators into a smaller number of factors. It can also be used to determine how indicators can be grouped together in a meaningful way. In this case, we used factor analysis in two stages.

Firstly, the standardised indicators were grouped into the two suggested domains: enrolment and academic outcome. We then carried out a maximum likelihood factor analysis to test whether the indicators in these suggested domains could be grouped further into sub-domains, using various techniques. Our analysis did suggest that further grouping would be a viable approach, and we created 7 sub-domains:

#### Enrolment

1. Disadvantage
2. Special educational needs and disability
3. EAL recent arrivals
4. Joiners and leavers
5. Absence
6. Exclusions

#### Academic outcomes

7. Contextualised Attainment 8

Secondly, where there was more than one indicator in a sub-domain, we used factor analysis to combine them into a single sub-domain score.

In order to allow comparison of the score for each sub-domain, each sub-domain score was then transformed into a percentile rank from 0-1, with 0 being the least inclusive and 1 the most. Sub-domain scores were then summed to form domain scores and overall Index scores.

Correlation between the sub-domains is shown in the table below. This shows that the correlation between enrolment sub-domains is not particularly high, which suggests that different dimensions of enrolment are being measured. The correlation between exclusions and disadvantage (-0.4) might suggest that the exclusions indicators should be contextualised.

There is relatively high correlation between the three contextualised attainment measures. (This could be an argument to report a single sub-domain score.)

	Disadvantage	SEND	EAL	Joiners and leavers	Absence	Exclusions
SEND	0.10					
EAL	0.55	-0.02				
Joiners and leavers	0.05	0.01	-0.11			
Absence	-0.05	0.00	-0.10	0.25		
Exclusions	-0.40	-0.09	-0.23	0.05	0.32	
Attainment	-0.12	-0.02	-0.11	0.11	0.34	0.24

The correlation between the enrolment and academic outcomes domain scores is 0.17. This confirms that the two domains are mostly measuring different things.

### 2.6.5 Exponential transformation

When creating the Index we did not use exponential transformation. This is a technique that was employed in the Indices of Deprivation in order to reduce *cancellation effects*. Cancellation effects occur when a very low score in one sub-domain cancels out high scores elsewhere, or vice versa.

Exponential transformation will also have the effect of spreading out one end of the distribution. So if, for example, exponential transformation was used in this Index to spread out the most inclusive end of the distribution, then the least inclusive schools would tend to have very similar scores, while the most inclusive would have a wider range of scores.

This is useful where there is an interest in one end of the distribution, or where cancellation is not desirable. The approach we have used, without exponential transformation, gives equal spread to both ends of the distribution and allows cancellation to occur. In other words, a high score in one sub-domain would be cancelled out by a low score in another.

In other situations, it might be more appropriate to avoid cancellation. With the Indices of Deprivation, for example, the goal is to identify areas that experience one or more aspect of deprivation rather than create an index that provides a holistic assessment of disadvantage *and* advantage. Therefore, the approach used in the production of the Indices of Deprivation avoids the lack of deprivation in one domain cancelling out deprivation in another.

### 2.6.6 Weighting of sub-domains and domains

A default weighting has been applied as follows. The enrolment and academic outcomes domains are calculated as simple averages of the sub-domains which make them up – that is, the five sub-domains that make up the enrolment domain are given equal weighting, and likewise for the three sub-domains which make up the academic outcomes.

In this default weighting, the final School Quality Index scores are then created as a simple average of the two domains – enrolment and academic outcomes.

The facility for users to set their own weightings could however be included in the Excel workbook containing the School Quality Index data. This means that users can give greater weight to sub-domains that they consider more important than others.

## Appendix A: Public data sources

### Data used directly in indicators

Data item	Name in source dataset	Source
Fixed term exclusion rate	fixed_excl_rate	Permanent and fixed period exclusions statistics, 2018/19

### Data used in contextualisation

Data item	Name in source dataset	Source
School gender	Gender (name)	Get Information About Schools dataset, as at September 2018
School phase	PhaseOfEducation (name)	Get Information About Schools dataset, as at September 2018
School sixth form status	OfficialSixthForm (name)	Get Information About Schools dataset, as at September 2018
School urban/rural classification	UrbanRural (name)	Get Information About Schools dataset, as at September 2018
Percentage of pupils who are disadvantaged	pnumfsmever <sup>19</sup>	Revised 2018/19 performance tables, census file
Percentage of pupils with an education, health and care plan/SEN Statement	psenelse	Revised 2018/19 performance tables, census file
Percentage of pupils with SEN Support	psenelk	Revised 2018/19 performance tables, census file
Percentage of pupils with English as an additional language	pnumeal	Revised 2018/19 performance tables, census file
Percentage of white British pupils	Number of pupils classified as white British ethnic origin; headcount of pupils	Schools, pupils and their characteristics, January 2019
School Key Stage 2 average point score	ks2aps	Revised 2018/19 performance tables, KS4 results file

## Data provided in output workbook but not used directly in indicators or in contextualisation

Data item	Name in source dataset	Source
LAEstab	laestab	Revised 2018/19 performance tables, KS4 results file combined with Get Information About Schools establishment links dataset, as at September 2019
URN	urn	Revised 2018/19 performance tables, KS4 results file
School name	schname	Revised 2018/19 performance tables, KS4 results file
LA name	LA (name)	Get Information About Schools dataset, as at September 2018
Region	GOR (name)	Get Information About Schools dataset, as at September 2018
Closed	EstablishmentStatus (name)	Revised 2018/19 performance tables, KS4 results file
Establishment type	TypeOfEstablishment (name)	Get Information About Schools dataset, as at September 2018
Admissions policy	admpol_pt	Revised 2018/19 performance tables, KS4 results file
Ofsted rating	Overall effectiveness	Ofsted management information dataset, inspections as at 30 September 2019

## Appendix B: Approach to suppressed or missing data

1a. Percentage of pupils who are disadvantaged

Number of pupils at the school who are disadvantaged dummied in as 5

1b. Percentage of pupils who are disadvantaged relative to the percentage of

Number of pupils at the school who are disadvantaged dummied in as 5 where not available

pupils who are disadvantaged in the local area from which the school draws its pupils	Number of pupils in the local area who are disadvantaged dummied in as 5 where not available
2a. Percentage of pupils with an education, health and care plan/SEN Statement	Number of SEN pupils at the school dummied in as 5
2b. Percentage of pupils with an education, health and care plan/SEN Statement relative to the percentage of pupils with an education, health and care plan/SEN Statement in the local area from which the school draws its pupils	Number of SEN pupils at the school dummied in as 5 where not available  Number of SEN pupils in the local area dummied in as 5 where not available
3a. Percentage of pupils with English as an additional language	Number of pupils at the school who have English as an additional language dummied in as 5
3b. Percentage of pupils with English as an additional language relative to the percentage of pupils English as an additional language in the local area from which the school draws its pupils	Number of pupils at the school who have English as an additional language dummied in as 5 where not available  Number of pupils in the local area who have English as an additional language dummied in as 5 where not available
4a. Percentage of pupils leaving the school's roll between Year 9 and Year 10, or Year 10 and Year 11	Number of pupils leaving the school's roll between Year 9 and Year 10, or Year 10 and Year 11 dummied in as 5
4b. Percentage of pupils joining the school's roll between Year 9 and Year 10, or Year 10 and Year 11	Number of pupils joining the school's roll between Year 9 and Year 10, or Year 10 and Year 11 dummied in as 5
5a. Fixed term exclusion rate	No suppressed/missing data
5b. Fixed term exclusion rate, vulnerable pupils	Number of pupils receiving a fixed term exclusion dummied in as 5; For schools with <10 vulnerable pupils, the local authority average is used
5c. Repeat fixed term exclusion rate	Number of pupils receiving a fixed term exclusion dummied in as 5;
5d. Repeat fixed term exclusion rate, vulnerable pupils	Number of pupils receiving a fixed term exclusion dummied in as 5;
6a. Overall absence	Contextualisation carried out on local authority average
6b. Overall absence, vulnerable pupils	Local authority average is used
6c. Persistent absence	Contextualisation carried out on local authority average
6d. Persistent absence, vulnerable pupils	Local authority average is used
7a. Contextualised overall Attainment 8 score, all pupils	Zero
7b. Contextualised overall Attainment 8 score, vulnerable pupils <sup>20</sup>	Zero

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<sup>20</sup> Grammar schools and a number of schools with small cohorts make up the list of schools for which attainment data for disadvantaged pupils is not available due to small number suppression requirements





## Appendix C: Contextualised Value Added

The following factors were used as controls in Contextual Value Added (CVA) models of attainment at Key Stage 4

- Key Stage 2 prior attainment in reading and maths
- Gender
- Month of birth
- History of free school meal eligibility in the state-funded school system from Reception onwards
  - Never eligible
  - Eligible for <25% of terms
  - Eligible for 25% to 50% of terms
  - Eligible for 50% to 80% of terms
  - Eligible for more than 80% of terms
- Ethnic background
- SEN status in Year 6 (end of primary school)
- English as an additional language (EAL)
  - Never EAL
  - EAL at primary school but not secondary school
  - EAL at secondary school
- Mobility- whether pupil joined in Year 10 or Year 11
- Income deprivation affecting children index (IDACI) score of area of residence
- School mean Key Stage 2 score
- Ever in need (CIN)
- Ever looked after (CLA)

The models were fitted in STATA of the following form:

```
regress a8 c.ks2emfg_grp c.ks2emfg_grp#c.ks2emfg_grp c.ks2emfg_grp#c.ks2emfg_grp#c.ks2emfg_grp ///
i.pup_aym pup_gen i.fsmhist i.pup_eth i.y6_sen i.ealgrp i.idaci_decile newmobile sch_ks2 cla cin ///
i.pup_eth#i.ealgrp i.ealgrp#i.fsmhist i.fsmhist#c.pup_gen ///
i.pup_eth#i.fsmhist c.pup_gen#i.pup_eth i.ealgrp#c.pup_gen ///
c.cin#c.pup_gen c.cla#c.pup_gen c.cla#i.fsmhist c.cin#i.fsmhist ///
c.cin#i.ealgrp c.cla#i.ealgrp c.cin#i.pup_eth c.cla#c.pup_eth ///
i.y6_sen#c.ks2emfg_grp i.y6_sen#c.ks2emfg_grp#c.ks2emfg_grp ///
i.pup_eth#c.ks2emfg_grp i.pup_eth#c.ks2emfg_grp#c.ks2emfg_grp ///
c.pup_gen#c.ks2emfg_grp c.pup_gen#c.ks2emfg_grp#c.ks2emfg_grp ///
i.fsmhist#c.ks2emfg_grp i.fsmhist#c.ks2emfg_grp#c.ks2emfg_grp ///
i.ealgrp#c.ks2emfg_grp i.ealgrp#c.ks2emfg_grp#c.ks2emfg_grp ///
c.newmobile#c.ks2emfg_grp c.newmobile#c.ks2emfg_grp#c.ks2emfg_grp ///
i.pup_aym#c.ks2emfg_grp i.pup_aym#c.ks2emfg_grp#c.ks2emfg_grp ///
i.idaci_decile#c.ks2emfg_grp i.idaci_decile#c.ks2emfg_grp#c.ks2emfg_grp ///
c.cla#c.ks2emfg_grp c.cla#c.ks2emfg_grp#c.ks2emfg_grp ///
c.cin#c.ks2emfg_grp c.cin#c.ks2emfg_grp#c.ks2emfg_grp
```