



Department
for Education

Multi-academy trust performance measures: England 2016 to 2017

Methodology document

March 2018

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1. About these statistics

Academies are state schools directly funded by the government. Each one is part of an academy trust. Trusts can be single-academy trusts - responsible for one academy, or multi-academy trusts (MATs) - responsible for a group of academies.

This statistical first release, and MAT level data in performance tables, provides data and analysis on the performance of MATs in England at key stage 2 (KS2) and key stage 4 (KS4) respectively. The MAT level performance measures are created using data from the school level accountability measures published for the academies within the MAT.

Eligibility

Academies, like maintained schools, have their performance data published at school level and have inspection reports at this level too. Where a MAT is sufficiently large and established we also publish performance data at MAT level.

These statistics do not include all MATs. MATs included within these statistics are:

- those with at least three schools that had results at either KS2 or KS4 as published in the 2017 school performance tables; **and**
- those with schools that have been with the MAT for at least three academic years (defined as having joined that MAT on, or before, 12 September 2014).

A school is not included if:

- they joined as a new academy (i.e. a previously maintained school) on or after 12 September 2016; or if
- they joined as academies new to the MAT, but had previously been with another MAT. Then they are either included with the old MAT (subject to whether they had been with the old MAT for 3 years prior to 12th September 2016) or excluded (if they have not had 3 years in the previous MAT by 12th September 2016).

Where an academy sponsor oversees a number of multi-academy trusts, results are presented under the sponsor rather than the individual constituent MATs.

This is in line with the approach adopted in recent years in the statistical working papers on MAT performance.

These statistics cover state-funded mainstream schools only. Special schools and pupil referral units/alternative provision academies/alternative provision free schools are not included.

Who is this guide for?

This guide is for:

- **MATs:** MATs use this information to benchmark their performance against others and to support improvement activity
- **School leaders, school staff and governing bodies:** school leaders, staff and governing bodies will be interested in seeing how their MAT is performing, or may use this data to help them identify a prospective MAT to join
- **Regional Schools Commissioners (RSCs):** the data is used by Regional Schools Commissioners to support performance discussions with MATs, and to celebrate the success of MATs
- **Local authorities:** the data is used by local authorities that are interested in performance of MATs within their area

Performance measures

The MAT level performance measures are aligned with the school level performance measures to ensure consistent incentives at MAT and school level. The MAT level measures are averages of the data from their constituent academies.

Key Stage 2

As at school level, the KS2 MAT measures include key stage 1 (KS1) to KS2 progress measures in the three separate subjects:

- average reading progress average maths progress
- average writing progress

For the first time in 2017, these three measures are also presented for disadvantaged pupils.

All these measures are calculated from published school level performance data for the 2016-17 academic year. Wider background and a technical guide for the new primary school accountability framework can be found here:

www.gov.uk/government/publications/primary-school-accountability

Key Stage 4

As at school level, the KS4 MAT measures include the KS2 to KS4 progress measure (Progress 8) and EBacc measures. The measures are:

- Progress 8
- EBacc entry (percentage of pupils entering the full range of EBacc subjects)
- EBacc attainment (percentage of pupils achieving grade 5 or above in English and maths, and grade C or above in the unreformed subjects)

For the first time in 2017, these three measures are also presented for disadvantaged pupils.

All these measures are calculated from published school level performance data for the 2016-17 academic year. Wider background and a technical guide for the new secondary school accountability framework can be found here:

www.gov.uk/government/publications/progress-8-school-performance-measure

Interpreting this data

MAT performance measures are intended to give an indication of how well MATs are currently performing. It should be acknowledged that the overall performance of MATs has many dimensions including pupil outcomes, financial management, governance, value for money, workforce management and capacity to expand. MATs also vary from each other in terms of size, geographic area, types of schools they are running, how they are set up and run, and other factors.

No single measure is ever likely to capture every element of performance or impact of a MAT. This should be borne in mind when considering the outcomes reported in these statistics. It is also for this reason that we are providing contextual data alongside the results (including the percentage of disadvantaged pupils at schools within the MAT and their average prior attainment. This also includes the percentage of children with special educational needs and English as an additional language) and school level underlying data for the 2016-17 academic year.

Data sources

The underlying data sources for this statistical first release (SFR) are the published school level data for KS2 and KS4 respectively for the eligible schools for those MATs included in the main MAT measures which can be found here:

www.compare-school-performance.service.gov.uk/

<https://www.gov.uk/government/statistics/multi-academy-trust-performance-measures-2016-to-2017>

Get information about schools, the department's database of school records can be found here:

get-information-schools.service.gov.uk

Calculating the measures

Key Stage 2

Progress Measures

This output contains three separate measures of MAT performance at KS2: average progress in reading, in writing, and in maths.

These measures capture the progress that pupils make in each subject from the end of KS1 to the end of KS2. They are a type of value added measure, which means that pupils' results are compared to those of other pupils nationally with similar prior attainment.

The respective progress score for each MAT is based on the weighted average of its individual schools' respective progress scores.

To ensure a school's contribution to the overall score is proportional to its size we employ weighting when calculating the average. A schools' progress score is weighted for:

- the school's Year 6 cohort size
- the length of time the school has been with that MAT (those that have been with a MAT for three years are given a weight of 3, those with the MAT for four or more years are given a weight of 4; the usual duration of KS2 is 4 years).

The example below illustrates the calculation for reading progress measures. To calculate the writing and maths progress scores the same process is used.

	(i) Reading progress score	(ii) Number of pupils in end of key stage cohort	(iii) Number of years with MAT	(iv) Total weight (ii) x (iii)	(v) weighted score (i) x (iv)
Academy 1	-4.3	25	4	100	-430
Academy 2	-2.5	59	3	177	-442.5
Academy 3	3.3	50	4	200	660
Academy 4	-1.5	22	3	66	-99
Academy 5	5	90	3	270	1350
	Total	246		813	1038.5
				MAT score (sum of weighted scores / sum of weights)	1.3

We have not produced a combined measure at KS2. The production of separate reading, writing and maths progress measures for MATs reflects the approach for school performance in the annual school performance tables.

Disadvantaged Progress Measure

Exactly as with the all pupil progress measure above, new for 2017, we have also calculated the same measures but for disadvantaged pupils only. There are three separate measures; *Disadvantaged reading progress*, *Disadvantaged writing progress* and *Disadvantaged maths progress* respectively.

To do this, we repeat the same calculation but using the 'disadvantaged pupils' progress score from the published school level data rather than the figure for 'all pupils in year 6'. An example is shown below to illustrate the calculation of the *disadvantaged pupil maths progress* measure at KS2 for a MAT:

	(i) Disadvantaged Maths progress score	(ii) Number of disadvantaged pupils in end of key stage cohort	(iii) Number of years with MAT	(iv) Total weight (ii) x (iii)	(v) weighted score (i) x (iv)
Academy 1	-1.8	19	4	76	-136.8
Academy 2	-0.5	21	3	63	-31.5
Academy 3	0	26	4	104	0
Academy 4	1.2	17	4	68	81.6
	Total	83		311	-86.7
				MAT score (sum of	-0.28

	(i) Disadvantaged Maths progress score	(ii) Number of disadvantaged pupils in end of key stage cohort	(iii) Number of years with MAT	(iv) Total weight (ii) x (iii)	(v) weighted score (i) x (iv)
				weighted scores / sum of weights)	

To calculate the writing progress score and maths progress score for a MAT the same calculation is used but (i) maths progress score is replaced with (i) writing progress score or (i) reading progress score respectively.

Key Stage 4

Progress 8

This measure captures the progress that pupils make from the end of KS2 to the end of KS4. It is a type of value added measure, which means that pupils' results are compared to the actual achievements of other pupils nationally with similar prior attainment.

The progress 8 score for each MAT is based on the weighted average of its individual schools' respective progress scores as detailed below.

This is to ensure that a school's contribution to the overall score is proportional to its size when calculating the average. A school's progress score is weighted for:

- the school's Year 11 cohort size
- the length of time the school has been with that MAT (those that have been with the MAT for three years are given a weight of 3, those with the MAT for four years are given a weight of 4 and those with the MAT for five or more years are given a weight of 5; the usual duration of key stages 3 and 4 is 5 years).

An example is shown below to illustrate the calculation of the Progress 8 measure at KS4 for a MAT:

	(i) Progress 8 score	(ii) Number of pupils in end of key stage cohort	(iii) Number of years with MAT	(iv) Total weight (ii) x (iii)	(v) weighted score (i) x (iv)
Academy 1	+2.5	30	5	150	375
Academy 2	-2.5	59	3	177	-442.5
Academy 3	3.3	50	4	200	660

	(i) Progress 8 score	(ii) Number of pupils in end of key stage cohort	(iii) Number of years with MAT	(iv) Total weight (ii) x (iii)	(v) weighted score (i) x (iv)
Academy 4	-1.5	22	3	66	-99
Academy 5	-1.5	90	3	270	-405
	Total	251		863	+88.5
				MAT score (sum of weighted scores/ sum of weights)	+0.1

English Baccalaureate (EBacc)

New for 2017, we are also publishing at MAT level:

- EBacc entry (percentage of pupils entering the EBacc)
- EBacc attainment (percentage of pupils achieving a grade 5 or above in English and maths, and a grade C or above in the unreformed subjects)

Like with the Progress 8 MAT measures, the EBacc measures are calculated by working out the average of the published EBacc measures for eligible schools within the MAT.

Again, schools are weighted based on the length of time they have been in the MAT.

An example is shown below to illustrate the calculation of the EBacc entry measure at KS4 for a MAT:

	(i) Pupils at end KS4	(ii) Pupils entered for the Ebacc	% of pupils entered for the Ebacc	(iii) Number of years with MAT	(i) x (iii) Total weighted end KS4 pupils	(ii) x (iii) Total weighted pupils entered for EBacc
Academy 1	172	13	8%	5	860	65
Academy 2	264	121	46%	4	1056	484
Academy 3	194	83	43%	5	970	415
Academy 4	102	25	25%	4	408	100
Academy 5	89	71	80%	3	267	213
<i>Unweighted total</i>	821	313		Total sum of weighted pupils	3561	1277

	<i>Average with no weighting</i>	38%			Weighted MAT EBacc entry rate	36%
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In the example above, the straight EBacc entry rate in the MAT across the five listed schools is 38% (313 pupils entered out of 821). However, the weighted MAT entry rate is slightly lower at 36%.

The calculation for the MAT level EBacc attainment follows the same process, but with the percentage of pupils achieving the EBacc used in column (i) in the table above.

As at school level, we have published EBacc attainment using both a grade 5 and a grade 4 for English and maths. From 2018, the headline EBacc attainment measure at school and MAT level will become an average point score.

More information on what counts in EBacc can be found in the [‘English Baccalaureate: eligible qualifications’](#) guidance

KS4 Disadvantaged Measures

The KS4 progress and EBacc entry and attainment measures are also presented for disadvantaged pupils within each MAT. As with the KS2 disadvantaged progress measure calculation above, the number of eligible pupils is simply replaced with the number of disadvantaged eligible pupils and the weights remain the same and are dependent on the number of years with the MAT to a maximum weight of 5.

Interpretation

For each of the above four progress measures (the three at KS2 and one for Progress 8):

For all mainstream pupils nationally, the average progress score is zero. The MAT level progress scores will be presented as positive and negative numbers either side of zero:

- if a MAT has a score of zero this means that, on average, pupils within the MAT do about as well as those with similar prior attainment nationally
- a positive score means that, on average, pupils within the MAT do better than those with similar prior attainment nationally
- a negative score means that, on average, pupils within the MAT do worse than those with similar prior attainment nationally. A negative score does not necessarily mean that any/all of the schools within the MAT are failing

For each of the above four Disadvantaged pupil progress measures:

Each MATs mean disadvantaged pupil progress measure is compared against the national average for disadvantaged pupils. Evidence shows that, overall, performance of

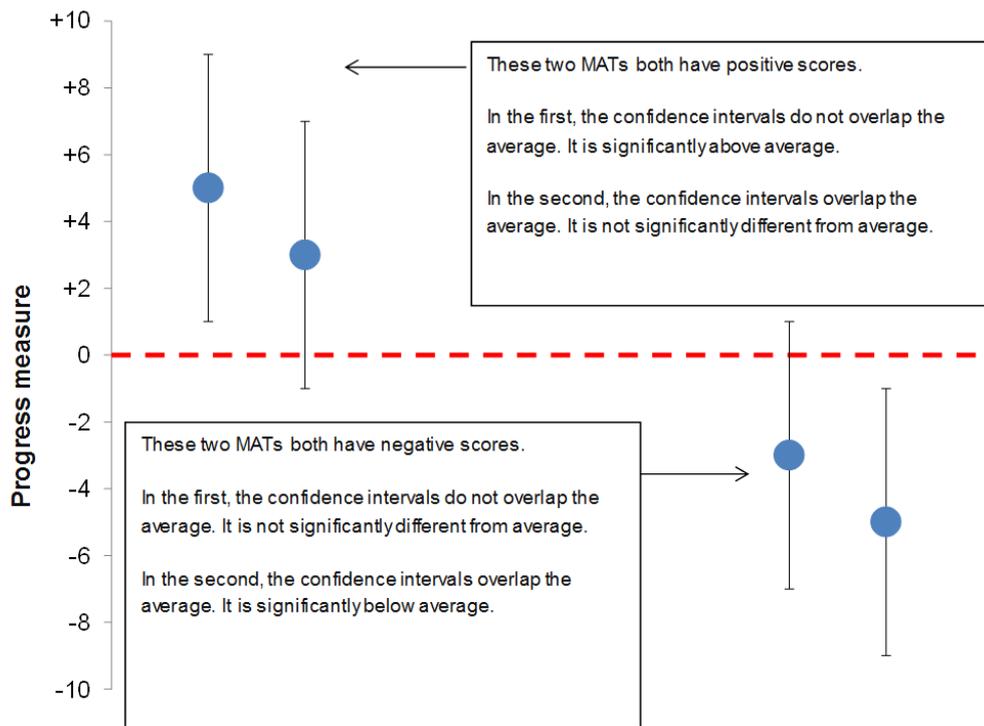
disadvantaged pupils is lower than that of other pupils. This data indicates how well a MAT does at tackling performance of disadvantaged pupils. Disadvantaged pupils are those who were eligible for free school meals at any time during the last 6 years and children looked after (in the care of the local authority for a day or more or who have been adopted from care).

Confidence intervals and ranking

There is a level of uncertainty within our measures as they are based on a given set of pupils' results. MATs could have been equally effective and yet the same set of pupils might have achieved slightly different results and would almost certainly have shown different results with a different set of pupils. In recognition of this, the measures are presented with 95% confidence intervals. These provide a range in which users can be confident that the true progress score lies. Smaller groups have wider confidence intervals because their progress scores are based on smaller numbers of pupils. We can use the confidence intervals to identify MATs performing better than average or worse than average by a statistically significant amount, and close to average.

Many MATs will have scores that are not significantly different from the average. As a rule of thumb:

- if the confidence intervals of one MAT do not overlap the confidence intervals of another, then they are significantly different from each other. (Note that this is not a necessary condition. Situations where there is overlap of confidence intervals but the results are significantly different from each other are possible.)
- if the confidence intervals for one MAT overlap with the score of another MAT, then they are not significantly different from each other
- if the confidence intervals of one MAT overlap the confidence intervals of another (but does not overlap the score itself), then the two scores are *unlikely* to be significantly different from each other



Users should bear in mind that it is possible to be statistically above or below average anywhere within the distribution – not just at the extreme ends. In addition, the confidence intervals (that result from uncertainty) mean it is inappropriate to specify a precise performance-based ordering of all MATs.

Given a MAT progress measure, its confidence interval is given by:

$$\text{MAT progress score} \pm 1.96 \times \frac{\sigma^2}{\sqrt{n}}$$

Where σ^2 represents the variance of pupil progress scores across all mainstream pupils nationally and n represents the number of pupils in the MAT that are included in the progress measure. Each measure at KS2 and KS4 uses the same approach to confidence intervals.

For a MAT disadvantaged pupil progress measure, σ^2 represents the variance of disadvantaged pupil progress scores across all disadvantaged pupils nationally and n represents the number of pupils in the MAT that are included in the disadvantaged progress measure. This is different to the methodology used in the school performance tables, where σ^2 represents the variance of pupil progress scores across all pupils nationally.

Improvement measure

Due to the lack of comparable data, resulting from both the new school accountability framework at KS2 and KS4, the new primary assessments introduced in 2016 and the new GCSEs being phased in from 2017 to 2019, we cannot produce a new improvement measure for this statistical release. We will review whether we can publish an improvement overtime measure in future when we have multiple years of comparable data'.

Timeliness

Timeliness refers to the lapse of time between the period to which the data refer and the publication of our measures.

MAT measures were published alongside the secondary school performance tables on 25 January 2018. Primary school performance data was published on 14 December 2017.

Schools are assigned to the MAT they were with before 12 September 2016 as listed on get-information-schools.service.gov.uk

Punctuality

Punctuality refers to the time lag between the actual and planned dates of publication.

The proposed month of publication is announced in advance on gov.uk and precise dates are announced in the same place at least four weeks prior to publication. In the event of a change to the pre-announced release schedule, the change and reasons for it would be announced.

2. Accuracy and reliability

Accuracy describes the closeness between an estimated result and the (unknown) true value.

Measurement error

Measurement error is the difference between the actual value of a quantity and the value obtained by a measurement. Repeating the measurement will reduce the random error caused by accuracy of the measuring instrument but not any systematic error caused by incorrect calibration of the measuring instrument.

For the steps taken to minimise measurement error in the school performance data please refer to the further information and guidance on the [performance tables website](#).

Validation and quality assurance of the data

The production team minimise measurement error and perform validation and quality assurance by independently dual running each output. Any discrepancies in the data produced are discussed and more experienced staff involved as required. Additional checks are also carried out on the data produced.

Examples of additional checks include

- Comparisons with previous figures
- Check totals are consistent across tables
- Check patterns in the data are as expected
- Check figures against those produced for the performance tables

Disclosure control

The Code of Practice for Official Statistics requires us to take reasonable steps to ensure that our published or disseminated statistics protect confidentiality.

The data published in this release does not reveal the identity of individuals. We have suppressed school level results where the relevant measure was not published for a school.

3. Accessibility and clarity

Accessibility is the ease with which users are able to access the data. It also relates to format(s) in which data are available and the availability of supporting information.

Clarity is the extent to which easily comprehensible metadata are available, where these metadata are necessary to give a full understanding of the statistical data.

The text in the Statistical First Release for MAT measures and accompanying supporting text documents are published in pdf format so that they are accessible to all users irrespective of their choice of software. Care is also taken to ensure that the Statistical First Release and accompanying supporting text documents meet accessibility guidelines. Key figures are highlighted in the Statistical First Release text which draw out the key messages such as changes over time. Small tables or charts illustrating key figures are also included in the text.

The text in the Statistical First Release for MAT measures is accompanied by formatted excel tables with clear titles which allow users to find more detail than can be provided in the text. Any important limitations or inconsistencies in the data are mentioned in footnotes so that users do not have to refer to the text or this document.

4. Comparability

Over time

New performance measures for all schools were introduced for the 2015-2016 school performance tables. In our publications of March 2015 and July 2016 we used the previous value added based performance measures, which are not directly comparable to 2016 or 2017 releases. See Annex A for details.

The MAT level **progress measures** produced for the 2016-17 data (published January 2018) are consistent with those for 2015/16 data (published January 2017). The 2016-17 data also include measures that have been published for the first time this year at MAT level (EBacc entry, EBacc attainment and disadvantaged), and so no over-time comparison is possible at MAT level this year.

The coverage of data in this publication remains the same as the 2015-16 release (published January 2017). As in the 2015-16 release, we only include data for schools from their third academic year under a particular MAT. This ensures these measures are in line with inspection policy for new and rebrokered schools, recognising the amount of time needed for a MAT to have full effect on a school's results. Prior to the 2015-16 release, we included data for schools with one academic year of results under a particular MAT.

Our measures cover MATs with at least three schools in the relevant phase (this means that a MAT that has 3 schools with it for three years, but with two primary schools and one secondary school will not be included in either the KS2 or KS4 MAT performance tables). This threshold is the same as the 2015-16 release (published Jan 2017) and 2014-15 release (published July 2016). However, in the output of the 2013-14 release (published March 2015), the threshold was at least five schools and only covered KS4.

These measures presented at MAT level will continue to reflect the school accountability measures.

Differences between school, local authority and national figures

Our MAT measures use the same school level data as published within the school performance tables on 14 December 2017 (primary) and 25 January 2018 (secondary).

We have not included measures for local authorities and have not produced a national figure.

Across different types of schools

We have included state funded mainstream academies within our MAT measures in other words; sponsored academies, converter academies, free schools, studio schools and University Technology Colleges.

We have not included special schools in our analysis. Even when comparing to other pupils with similar prior attainment, pupils in special schools generally make slower progress, and therefore types of value added measures can be a poor assessment of effectiveness.

Users should bear in mind that each MAT is different and they each operate under a variety of challenging circumstances. The measure does not fully account for the historic performance of schools, including the poor prior performance of schools that became sponsored academies

With other parts of the UK and internationally

Currently multi-academy trusts operate solely in England.



Department
for Education

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