Contents – Value Added and Distance Travelled for 16-19 Learners

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1 Introduction to Value Added and Distance Travelled for 16–19 Learners

What are Value Added (VA) and Distance Travelled (DT) measures?

1.1 VA and DT for 16–19 learners aim to show the progress of individual learners relative to the average progress made by similar learners nationally for the same qualification and subject, taking prior attainment into account. Here, ‘prior attainment’ refers to the qualifications attained by a learner up to the end of Key Stage 4. Statistical analysis has shown that prior attainment is the best predictor of future performance in post-16 qualifications for learners in this age group. A calculation based on prior attainment that compares learner performance for a given subject and qualification helps us to:

- make judgements about whether a group of learners at a particular provider perform at, below or above a nationally average group of learners with the same prior attainment and taking the same subject and qualification
- predict learner attainment and, on the basis of the expected attainment, establish target grades (or pass rates) to which learners and providers may aspire.

1.2 VA and DT for 16–19 learners use slightly different methodologies to show the progress for learners on different types of qualifications. However, both are developed from a statistical methodology known as multi-level modelling (MLM). More information about MLM is available on the LSC’s Framework for Excellence website. The scope of each of the measures is described further in Section 2: Scope of the VA and DT Measures for 16–19 Learners.

1.3 The measures are intended for use by:

- providers, to help them assess and improve their performance based on information about learner progress at subject and qualification level, and subject area level
- Ofsted, to inform their initial ideas on the progress of learners and to support judgements about provider performance
- the DSCF and other stakeholders, to help policy-making and performance monitoring.
The Learner Achievement Tracker

1.4
The LSC has developed the Learner Achievement Tracker (LAT) to enable providers to view their VA and DT reports for the purposes of reflection and improvement. The LAT went online in 2005, and has been used by providers and key stakeholders from across the sector since this time.

1.5
The LAT is a piece of software specifically designed to allow users to access and make use of the outputs from the calculation of VA and DT for 16–19 learners. The data from the calculations is produced as a variety of graphs and bar charts that show a provider’s performance compared to the national average performance of all learners for a given subject and qualification, and subject sector area. In the case of VA, the LAT also allows users to access information about individual learners’ achievement. The main types of output reports are:

- Summary charts
- National comparison charts (including ad hoc reports for national comparison charts)
- National chances charts.

These reports are summarised in Table 1, below.

**Table 1: LAT reports.**

<table>
<thead>
<tr>
<th>Summary Charts</th>
<th>Value Added (VA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- For each provider, one chart showing the VA scores for each qualification type.</td>
</tr>
<tr>
<td></td>
<td>- For each qualification type, one chart showing the VA scores for each subject, as well as an overall qualification score.</td>
</tr>
<tr>
<td></td>
<td>- For all qualifications, one chart showing VA scores for each Sector Subject Area (SSA).</td>
</tr>
</tbody>
</table>

**Distance Travelled (DT)**

- For each provider, one chart showing the DT scores for each qualification type.
- For each qualification type, one chart showing the DT scores for each subject.
- For each qualification type, one chart showing the different SSA scores within the qualification type.

<table>
<thead>
<tr>
<th>National Comparison Charts</th>
<th>VA and DT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Charts showing the performance of a provider’s learners in a given qualification aim (for example, A-level History or NVQ Level 3 Hairdressing Services) compared to the national performance for that qualification aim, taking into account the</td>
</tr>
</tbody>
</table>
prior attainment of their learners.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VA Only</strong></td>
<td></td>
</tr>
<tr>
<td>- Ad Hoc National Comparison Charts allowing the user to select subsets of learners of each qualification aim and produce National Comparison Charts for just those learners.</td>
<td></td>
</tr>
<tr>
<td><strong>Chance Charts</strong></td>
<td><strong>VA and DT</strong></td>
</tr>
<tr>
<td>- Charts showing the chances of learners with certain prior attainments achieving a particular outcome in a given qualification at a nationally average institution. For example, the chances of a learner with a given prior attainment achieving grades A to E in A-level History or passing or failing a NVQ.</td>
<td></td>
</tr>
</tbody>
</table>

1.6 Please note: the LAT is primarily designed to provide VA/DT information for each qualification in scope. Although some aggregation is possible (for example, by qualification type), caution should be exercised when interpreting outputs at this level. In particular, the LAT is not suitable for the calculation of an institutional measure (i.e., overall VA score). In this respect, the VA and DT reports are intended to complement the contextual value added (CVA) measure being piloted by the DSCF.

1.7 The LAT provides a powerful tool to assist providers, local LSCs and other stakeholders in making judgements that help answer the following questions:

- which providers are particularly effective in maximising the performance of their learners and trainees?
- is a given provider performing better (or worse) than the national average in the qualifications they offer, with respect to the prior attainment of their learners?
- are there courses / subject areas within a provider’s provision which are particularly strong or which are underperforming?
- are there areas of provision in which learners with particularly low or high prior attainment do especially well or badly?
- given their prior attainment, are learners being matched appropriately to programmes of learning?
- what levels of achievement can be expected from the current cohort of learners?
For graded qualifications, an additional question is answered:

- what are the appropriate target grades to set learners in a particular subject, given learners’ level of prior attainment?

Throughout the pilot phase of VA and DT, the development of the LAT has been influenced by numerous consultations with providers from across the sector to ensure that the application and presentation of the VA and DT reports are appropriate for all intended audiences.

Using the LAT reports for quality improvement

Answering the questions posed in paragraphs 1.7 and 1.8 helps stakeholders view a detailed picture of the strengths and weaknesses of provider performance, and which can be used to focus support on quality improvement. For instance, if the LAT shows that performance in a particular subject is lower than the national average, stakeholders may wish to target provider resources and quality improvement planning at that subject. For a subject in which performance is particularly good, there may be opportunities to disseminate effective practice more widely across the provider. Similarly, there may be areas of provision where learners with particularly high or low prior attainment are not achieving as well as other learners within the provider, and some targeted support for individual learners may be appropriate to help them improve their achievements.

It is anticipated that outputs from the LAT reports will be also useful in:

- contributing to self-assessment reports
- setting out quality improvement strategies in development plans
- collating information about a provider’s performance to inform inspection or other quality assurance processes.

Users of the LAT will undoubtedly find other ways to use the LAT reports and data, and we have refined and extended the functionality of the LAT throughout the pilot phase. Links to case studies of current effective practice in using similar methodologies to VA and DT can be found in the Further Information and Glossary section.
1.13

Within the following sections there is information about:

- the scope of the VA and DT for 16–19 learners
- the data used in VA and DT for 16–19 learners
- the interpretation and application of the LAT reports
- further questions and issues.
2 Scope of the VA and DT Measures for 16–19 Learners

What do we mean by ‘16–19’ learners’?

2.1 For the purposes of the VA and DT measures, a cohort of learners is defined as those who completed their course between 1 September and 31 August in the previous academic year. For VA and DT-FE (Distance Travelled - Further Education), ‘16–19 learners’ are those learners who were aged 16, 17 or 18 on 31 August at the beginning of the year in which they completed a post-16 qualification. For DT-WBL (Distance Travelled - Work-based learning) ‘16–19 learners’ are those who were aged 16, 17, or 18 on 31 August at the beginning of the year in which they started a post-16 qualification.

Which post-16 qualifications are included in the scope of the VA and DT?

2.2 VA and DT cover the majority of larger qualifications approved under Section 96 of the Learning and Skills Act 2000, taken by 16–19 learners. These include vocational and non-graded qualifications. VA for 16–19 learners measures attainment in Level 3 graded qualifications. DT for 16–19 learners measures achievement and attainment in other approved qualifications at Levels 1, 2 and 3, including those that are non-graded.

2.3 The DT measure is calculated separately for FE-funded provision and WBL-funded provision. Further information about the outcome measures for DT-FE and DT-WBL can be found in paragraph 2.21. At present, it is not possible to provide DT data in non-graded qualifications for schools, as schools do not make individual learner record (ILR) returns to the LSC. The additional information in the ILR is needed to identify learners who complete but do not achieve a qualification. Currently, no equivalent data source is available from schools to obtain this information, although this issue is being taken forward in line with the development of qualification success rate for schools.

2.4 Currently (2005/06 exam results), VA and DT reports include the qualifications listed in Table 1, below.

Table 1: Qualifications included in the LAT.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Added</td>
<td>A-level / A2</td>
</tr>
<tr>
<td></td>
<td>AS-level</td>
</tr>
<tr>
<td></td>
<td>BTEC National Award</td>
</tr>
<tr>
<td></td>
<td>BTEC National Certificate</td>
</tr>
</tbody>
</table>
BTEC National Diploma  
CACHE Diploma in Child Care  
Free Standing Maths  
GCE AS Level Double Award  
International Baccalaureate  
OCR National Certificate  
OCR National Diploma at Level 3  
Vocational GCE AS Single Award (VCE AS)  
Vocational GCE Double Award (VCE DA)  
Vocational GCE Single Award (VCE A)

Distance Travelled (FE-funded provision)
- CACHE Foundation Award in Caring for Children
- EDEXCEL BTEC Introductory Certificates and Diplomas
- FE NVQ Level 1
- FE NVQ Level 2
- FE NVQ Level 3
- GCSE
- GNVQ Foundation
- GNVO Intermediate
- ICIAA Certificate
- ITEC Diploma for Beauty Specialists
- OCR National Certificate in Health and Social Care
- Short GCSE
- Vocational GCSE Double Award

Distance Travelled (WBL-funded provision)
- Apprenticeship
- Advanced Apprenticeship
- WBL NVQ Level 2
- WBL NVQ Level 3

2.5 Coverage of these qualifications currently results in approximately 90 per cent of 16–19 learners in the post-16 sector being included in the measures. Learners aged 16–19 on entry level qualifications, Entry to Employment (E2E) programmes or non-accredited provision are included in the scope of the Recognising and Recording Progression and Achievement (RARPA) extension project (REX). For more information on the REX project, please see the RARPA section of the Performance Indicators Handbook.

2.6 The LSC has been exploring the feasibility of expanding the scope of qualifications included in the VA and DT measures, and will continue to do this on a yearly basis.

QCA points

2.7 The Qualifications and Curriculum Authority (QCA) has developed a system for assigning a point score to all Section 96 qualifications approved for 14–19 learners. This point score is used to measure achievement in all qualifications included within the VA for 16–19 measure. The QCA point score is also used in the VA and DT for 16–19 learners’ measures to calculate prior attainment.
The inclusion of fails data in the VA measure: rebased QCA points

2.8.
A non-rebased QCA points score system would mean unequal gaps between the lowest achievement possible in a qualification and a fail (always 0 points). For this reason, the LAT uses a rebased QCA points system, approved by QCA, that allows fails to be included, but which retains the scale and validity of the graded scores. The rebasing procedure makes use of a scale equivalency in Level 3 qualifications (for example, an AS-level is equivalent to 0.5 of an A-level), and is identical to the rebasing methodology employed in the DCSF contextual value added (CVA) measure pilot. See Figure 1 on page 14 for a visual illustration of rebasing. The original and rebased QCA point scores for some of the Level 3 qualifications included in the scope of VA are listed in Table 2, below.

Table 2: QCA points and rebased QCA points of outcomes in post-16 qualifications included in the VA measure (sample)

<table>
<thead>
<tr>
<th>A-level / Vocational GCE Single Award</th>
<th>AS-level / Vocational GCE AS Single Award</th>
<th>Vocational GCE Double Award (VCE DA)</th>
<th>BTEC National Diploma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome</td>
<td>QCA Points</td>
<td>Rebased QCA Points</td>
<td>Outcome</td>
</tr>
<tr>
<td>A</td>
<td>270</td>
<td>150</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>240</td>
<td>120</td>
<td>B</td>
</tr>
<tr>
<td>C</td>
<td>210</td>
<td>90</td>
<td>C</td>
</tr>
<tr>
<td>D</td>
<td>180</td>
<td>60</td>
<td>D</td>
</tr>
<tr>
<td>E</td>
<td>150</td>
<td>30</td>
<td>E</td>
</tr>
<tr>
<td>Fail</td>
<td>0</td>
<td>0</td>
<td>Fail</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE</td>
</tr>
<tr>
<td>Fail</td>
<td>0</td>
<td>0</td>
<td>Fail</td>
</tr>
</tbody>
</table>

2.9
As for VA, all DT qualifications are assigned QCA points. Rebased QCA points are only used in the LAT calculation for DT qualifications that have a
graded outcome (that is, those qualifications having other than pass/fail outcomes). The QCA points assigned to some of the most common post-16 qualifications in scope for the DT for 16–19 learners measure are shown in Table 3. In the case of GCSE and GNVQ qualifications, a scale equivalency between these qualifications is used in the calculation of prior attainment, see paragraph 2.19. In the case of NVQ, different point scores are assigned to different widths, so a range of typical scores is indicated.

Table 3: QCA points of outcomes in post-16 qualifications included in the DT measure (sample).

<table>
<thead>
<tr>
<th>Grade</th>
<th>GCSE QCA Points</th>
<th>GCSE Rebased QCA Points</th>
<th>GNVQ Foundation QCA Points</th>
<th>GNVQ Foundation Rebased QCA Points</th>
<th>GNVQ Intermediate QCA Points</th>
<th>GNVQ Intermediate Rebased QCA Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A*</td>
<td>58</td>
<td>52</td>
<td>Distinction</td>
<td>136</td>
<td>96</td>
<td>Distinction</td>
</tr>
<tr>
<td>A</td>
<td>52</td>
<td>46</td>
<td>Merit</td>
<td>112</td>
<td>72</td>
<td>Merit</td>
</tr>
<tr>
<td>B</td>
<td>46</td>
<td>40</td>
<td>Pass</td>
<td>76</td>
<td>36</td>
<td>Pass</td>
</tr>
<tr>
<td>C</td>
<td>40</td>
<td>34</td>
<td>Fails</td>
<td>0</td>
<td>0</td>
<td>Fails</td>
</tr>
<tr>
<td>D</td>
<td>34</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>28</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>22</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>16</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fails</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Banding of QCA points

2.10
For some of the LAT outputs, QCA points have been split into bands in order to present the VA and DT information. National chances charts use banded prior attainment to indicate the expected performance of a learner in the VA measure or a group of learners in the DT measure. The DT national comparison charts report the performance of groups of learners within particular bands of prior attainment. The reason for this is that the DT measure reports the performance of groups of learners with a particular range of prior attainment as opposed to an individual learner.

What is included in the calculation of a learner’s prior attainment?

2.11
The starting point for both the VA and DT calculations is the average attainment of the learner at the start of the programme of study:

- for VA, the prior attainment is calculated as the average of the learner’s attainment at Level 2 and below (that is, Key Stage 4) up to two years before the learner’s outcome for 17 and 18 year olds, and up to one year before the learner’s outcome for 16 year olds. This is converted into QCA points, as described in paragraph 2.14.

- for DT, the prior attainment for all ages is calculated as the learner’s average attainment at Level 2 and below, up to and including 15 year olds (that is, Key Stage 4). This is converted into QCA points, as described in paragraph 2.14.

For an explanation of how prior attainment is calculated, see paragraph 2.14.

2.12
For purposes of the LAT, prior attainment includes all Section 96 approved qualifications at Level 2 and below taken up to Key Stage 4. Table 4, below, shows the scope of qualifications included for learners at different ages.

**Table 4: Scope of qualifications included in prior attainment for 16–19 learners.**

<table>
<thead>
<tr>
<th>Age of learner*</th>
<th>Measure</th>
<th>Prior Attainment will include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>VA</td>
<td>Level 2 qualifications and below up age 15 (that is up to one year before)</td>
</tr>
<tr>
<td>17</td>
<td>VA</td>
<td>Level 2 qualifications and below up to age 15 (that is up to two years before)</td>
</tr>
<tr>
<td>18</td>
<td>VA</td>
<td>Level 2 qualifications and below up to age 16 (that is up to two years before)</td>
</tr>
<tr>
<td>16</td>
<td>DT</td>
<td>Level 2 qualifications and below up to age 15</td>
</tr>
<tr>
<td>17</td>
<td>DT</td>
<td>Level 2 qualifications and below up to age 15</td>
</tr>
<tr>
<td>18</td>
<td>DT</td>
<td>Level 2 qualifications and below up to age 15</td>
</tr>
</tbody>
</table>

*Age at the beginning of academic year in which qualification completed.

2.13
By measuring prior attainment up to two years before a learner’s outcome attainment, 18 year old learners with any attainment at Level 2 and below at age 16 (for example, GCSE re-sits) have this taken into account. Examples of this calculation can be found in paragraphs 2.15 and 2.16 (Examples 1 and 2).

**How is prior attainment calculated?**
2.14
Prior attainment is calculated by adding together the total QCA points attained for applicable qualifications and dividing the total by the size of the qualifications completed by the learner. Please note that the prior attainment points are not rebased. A worked example of this calculation can be found in paragraph 2.17 (Example 3).

Table 5: Prior attainment examples

Example 1

2.15
Learner A takes 10 GCSEs at 15 and progresses to complete a Level 3 at 17. The prior attainment will be the average of the total QCA point score, divided by a volume of 10 (that is, 10 GCSEs with a size of one).

Example 2

2.16
Learner B takes four GCSEs in the academic year in which the learner turns 16 and an intermediate GNVQ. As one GNVQ is equivalent to four GCSEs, the prior attainment is the total QCA points score divided by a volume of eight (that is, four GCSEs with a size of one and one GNVQ with a size of four).

Example 3

2.17
Learner C attains two Bs, three Cs and a U at GCSE, and an intermediate GNVQ.

- First, we add together the corresponding QCA points (Table 3, on page 10. The learner’s total point score is \((2 \times 46) + (3 \times 40) + (1 \times 0) + (1 \times 160) = 372\) QCA points).

- The total is then divided by the size of the qualifications attempted: \(372 \div 10\) (GCSE =1 and intermediate GNVQ=4) = average prior attainment value of 37.2 QCA points.

Example 4

2.18
Learner D attains six GCSEs at grade C at age 15 and a merit in an intermediate GNVQ at age 16, and then progresses to take an A-level at age 18. The prior attainment for this learner is calculated for all attainment up to and including 16 (that is, GCSE and GNVQ attainment).

- All six GCSEs are assigned 40 points

- An Intermediate GNVQ merit is assigned 184 points, and is the equivalent of four GCSEs
• Total prior attainment is divided by the total size of all qualifications attempted: 
  \[
  \frac{(\text{six GCSEs} \times 40 \text{ QCA points}) + (184 \text{ for the GNVQ})}{(\text{six GCSEs} + \text{the equivalent of four GCSEs})} = 42.4 \text{ QCA points.}
  \]

2.19
GCSEs are given a size of 1 in the QCA points system. GNVQ Levels 1 and 2 (Foundation and Intermediate) are assigned a size of four. GNVQ scores are therefore treated as if they are the equivalent of four GCSEs. A worked example of this calculation can be seen in paragraph 2.18 (Example 4).

2.20
For convenience, there is a prior attainment calculator on the LAT site for quick and easy conversion of qualifications and grades into average QCA points. This can be used in conjunction with the chances charts to predict the possible grades that learners are likely to attain based on previous attainment at the same provider. For more information on the chances charts, see Section 6: Value Added and Distance Travelled National Chances Charts.

What is the outcome measure for DT?

2.21
Two outcome measures are used for DT:

• outcomes based on success rates

• outcomes based on achievement rates.

Table 5, below, outlines how these outcome measures are applied to WBL and FE funded provision.

**Table 5: Outcome measures for FE and WBL funded provision within the scope of DT for 16–19 learners.**

<table>
<thead>
<tr>
<th>Funding stream</th>
<th>Qualifications</th>
<th>Outcome Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBL-funded provision</td>
<td>All</td>
<td>Success rate</td>
</tr>
<tr>
<td>FE-funded provision</td>
<td>All NVQs</td>
<td>Success rate</td>
</tr>
<tr>
<td>FE-funded provision</td>
<td>All qualifications except NVQs</td>
<td>Achievement rate</td>
</tr>
</tbody>
</table>
Figure 1: Rebasing visualised

- True QCA points scale
- "cliff effect"
- Equal distance between all outcomes
What data comprises the measures?

3.1
The data used to calculate the LAT scores contains all outcomes for learners achieving post-16 qualifications that were in-scope for VA or DT during the prior academic year. For information on scope, see Section 2: Scope of the VA and DT Measures for 16-19 Learners.

Will the timing of the availability of the data always be the same?

3.2
Yes, the data will be made available at the same time every year. Unamended VA data will be released during November, to be followed by amended scores in January. DT data will be released in late January of each year.

What is the source of the VA data?

3.3
The data used to calculate the VA measure is obtained directly from awarding bodies. Attainment data for post-16 qualifications is subsequently matched to attainment information on pre-16 qualifications, using forename, surname, date of birth and gender. There is an opportunity for providers to amend this data as part of the DCSF Achievement and Attainment Tables (AAT) checking exercise.

What is the source of the DT data?

3.4
The process for sourcing the data for the DT measure is the same as for the VA measure, with the addition of ILR (individualised learner record) data. Data from the ILR is needed to:

- identify those learners who completed but did not achieve a qualification included in the scope of the DT measure
obtain attainment data for the DT measure that is not included in the main dataset received from the awarding bodies (due to the timing of the data collection). For example, data on full Frameworks and NVQs awarded up to 1 August is collected from the ILR.

What happens after the pre-16 attainment data has been matched to the attainment data for post-16 qualifications?

3.5
Once the data has been matched, it is credibility checked. For some qualifications, graded attainment is provided by the awarding body, and these grades are converted to QCA points. For non-graded qualifications falling within the scope of the DT measure the outcome is recorded as either a pass or fail. Further information on QCA points can be found in Section 2: Scope of the VA and DT Measures for 16-19 Learners. Discounting rules are applied to the dataset, which identify whether an individual has already taken a qualification in the same subject, see paragraph 3.9.

3.6
The data is then sent to the multi-level modelling (MLM) unit to calculate the national lines that give a picture of the average national performance. These national lines are fed into the LAT which then calculates the VA and DT scores for all subjects based on the national data set. The national data set is loaded into the LAT along with the national line information and this forms the basis of the VA and DT data produced in the LAT outputs. Figure 2 shows the data flow for the calculation of VA and DT for 16-19 learners.

Figure 2: Data source and flow for the calculation of VA and DT for 16-19 learners.
Will providers be able to check the accuracy of the data used to calculate VA and DT for 16-19 learners?

3.7 Schools and colleges will be able to check the accuracy of the VA data as part of the DCSF Achievement and Attainment Tables (AAT) process. Unamended VA data will be made available through the LAT for initial reflection and VA will be recalculated using the amended data once it becomes available.

3.8 DT data is based largely on what is available through the ILR, and is thus available for providers to amend as part of the usual ILR data collections process.

What is discounting and how is it applied?

3.9 Some qualifications are not counted in the calculation of the VA measure, and these qualifications are said to be discounted. If a qualification (for example, AS-level) can form part of a larger and/or higher level qualification (for example, an A-level) and the learner takes both qualifications during the period of study, then the lower level qualification (the AS-level) is discounted. Discounting across the programme of study of a learner ensures an individual learner and thus an institution is not penalised, or credited, for the same performance twice.

3.10 Discounting is also applied to National Awards and National Certificates, as these qualifications can then be counted towards a National Diploma, and to Applied A/AS-levels, if they are used as part of an Applied A/AS-level double award. Discounting cannot be applied across qualification types, even if they are taken in the same subject. For example, a National Diploma in Engineering would not discount an Applied A-level in Engineering.

3.11 The DCSF and the QCA develop and validate the rules as to which qualifications discount which other qualifications and in which subjects.

Treatment of AS-level qualifications in the calculation of the VA scores

3.12 VA scores for AS-levels will be generated for all 16 to 19 learners cashing in an AS-level result in the relevant academic year. Awarding bodies do not currently supply the results for non-cashed AS-level results.
Subject groupings in the calculation of the national average performance

3.13
The calculation of the national average performance in VA and DT will be undertaken for all subjects within a qualification taken by 80 or more learners, spread across 5 or more different providers.

The treatment of small subjects

3.14
A small subject is any subject within a qualification that is taken by less than 80 learners or is delivered at less than 5 providers nationally in a given year (for example, A-level Dutch). Whilst the number of learners who take small subjects is low, small subjects account for a substantial proportion of the subjects taken in most qualifications and are offered by a relatively large number of providers.

3.15
It is not possible to generate a reliable national average performance for small subjects. Therefore, VA and DT scores for small subjects will be calculated on the national average performance for all of the aims in the Sector Subject Area (SSA) for that subject. Table 1, below, shows the 15 sector subject areas.

Table 2: Level 1 Sector Subject Area Categories.

<table>
<thead>
<tr>
<th>SSA</th>
<th>SSA Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Health, Public Services and Care</td>
</tr>
<tr>
<td>2</td>
<td>Science and Mathematics</td>
</tr>
<tr>
<td>3</td>
<td>Agriculture, Horticulture and Animal Care</td>
</tr>
<tr>
<td>4</td>
<td>Engineering and Manufacturing Technologies</td>
</tr>
<tr>
<td>5</td>
<td>Construction, Planning and the Built Environment</td>
</tr>
<tr>
<td>6</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>7</td>
<td>Retail and Commercial Enterprise</td>
</tr>
<tr>
<td>8</td>
<td>Leisure, Travel and Tourism</td>
</tr>
<tr>
<td>9</td>
<td>Arts, Media and Publishing</td>
</tr>
<tr>
<td>10</td>
<td>History, Philosophy and Theology</td>
</tr>
<tr>
<td>11</td>
<td>Social Sciences</td>
</tr>
<tr>
<td>12</td>
<td>Languages, Literature and Culture</td>
</tr>
<tr>
<td>13</td>
<td>Education and Training</td>
</tr>
<tr>
<td>14</td>
<td>Preparing for Life and Work</td>
</tr>
<tr>
<td>15</td>
<td>Business, Administration and Law</td>
</tr>
</tbody>
</table>

3.16
For small subjects, a DT score will be calculated for each subject using a national line based on all of the aims taken by 16–19 learners in all subjects that are in the same SSA and qualification as the given small subject. For example, if the national sample of 16–19 learners completing Level 2 NVQ in Community Development in a given year was 20, a provider’s performance in that subject and qualification will be compared to
the national performance in all subjects and qualifications in the subject sector area Health, Public Services and Care.

3.17
SSA has been chosen as it is being developed as the common subject classification for the entire sector. Further information about SSAs, including identification of which SSA a given subject belongs to, can be found at: http://www.ndaq.org.uk

3.18
There will be cases where the number of aims in a given qualification within an SSA will be less than 80 or where they will be spread across less than 5 providers. In these circumstances, the national average performance will be based on all of the aims taken in that qualification.

3.19
The VA or DT scores for small subjects will be included in the aggregate VA or DT scores provided to an institution. However, such scores will be weighted by the number of aims taken.
4 Value Added Summary Charts

What does the VA summary chart show?

4.1 The VA summary chart gives an overview of a provider’s performance across the range of provision compared to national average performance. It is available at two levels:

- for each organisation, one chart showing the VA scores for each qualification type, for example, all A-levels, AVCEs and AS-levels; this type of summary chart will also show a provider’s average VA score weighted by learner number

- for each qualification type, one chart showing the VA scores for each subject, for example, all A-level subjects taken by learners in the provider; this type of summary will also show the VA score for the given qualification type, for example, A-level.

4.3 Figure 3 shows a VA Summary Chart of a provider’s performance in the given A-level subjects. The vertical axis shows the **VA score**. The VA score is the difference, in rebased QCA points, in the average attainment of learners with this provider, compared to the national average QCA points across the full range of prior attainment. The national average attainment in each subject or qualification has been normalised and is represented by zero on the vertical axis. For more information about the VA score and QCA points, please see Section 5: Value Added National Comparison Charts and Ad Hoc Reports and Section 2: Scope of the VA and DT Measures for 16-19 Learners.
Figure 3: An example of a Value Added Summary Chart, showing an overview of a provider’s performance across all A-level subjects

<table>
<thead>
<tr>
<th>Output type</th>
<th>Value Added Summary Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chart type</td>
<td>Summary of Qualification Type by subject group</td>
</tr>
<tr>
<td>Organisation</td>
<td>A real provider</td>
</tr>
<tr>
<td>Qualification type</td>
<td>A Level</td>
</tr>
<tr>
<td>Data source</td>
<td>16 - 19 learners achieving in 2005/06 (amended)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject</th>
<th>VA Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art &amp; Design</td>
<td>-13.95</td>
</tr>
<tr>
<td>English</td>
<td>-4.21</td>
</tr>
<tr>
<td>Business Studies</td>
<td>-3.62</td>
</tr>
<tr>
<td>Chemistry</td>
<td>6.86</td>
</tr>
<tr>
<td>Biology</td>
<td>-23.00</td>
</tr>
<tr>
<td>Drama</td>
<td>9.39</td>
</tr>
<tr>
<td>Economics</td>
<td>9.88</td>
</tr>
<tr>
<td>French</td>
<td>-0.96</td>
</tr>
<tr>
<td>Geography</td>
<td>-4.36</td>
</tr>
<tr>
<td>History</td>
<td>16.74</td>
</tr>
<tr>
<td>IT</td>
<td>13.13</td>
</tr>
<tr>
<td>Music</td>
<td>26.59</td>
</tr>
<tr>
<td>Physical Education</td>
<td>9.88</td>
</tr>
<tr>
<td>Religious Studies</td>
<td>3.34</td>
</tr>
<tr>
<td>Science</td>
<td>17.72</td>
</tr>
<tr>
<td>Psychology</td>
<td>-2.92</td>
</tr>
<tr>
<td>Physical Studies</td>
<td>-7.40</td>
</tr>
<tr>
<td>Psychology</td>
<td>3.37</td>
</tr>
<tr>
<td>Sports</td>
<td>2.25</td>
</tr>
</tbody>
</table>

Key:
- A typical provider’s score will fall within this range (not shown for qualifications taken by a single provider).
- 95% of the time, this provider score will fall in this range, given the same conditions.

(*) Calculated against Sector Subject Area national performance, due to small national sample size for the given subject.

Data are suppressed where there are fewer than 5 achievers in a category. Columns may therefore appear to be missing in the above chart.
4.4
The columns labelled along the horizontal axis represent the provider’s VA in each of the indicated subjects in the given qualification. Please note: if the sample size of the learners taking the indicated subject is lower than five, no VA score will be produced. This is because reliable judgements about a provider’s performance in a given subject group and qualification cannot be made if the group size is lower than five.

4.5
The vertical line enclosed by two small horizontal lines, on each column, (known as the confidence interval line) represents the confidence interval generated from the data used to calculate the VA score. These intervals show us the range within which the provider’s VA score actually lies. If the confidence interval does not cross the line at zero, we can be 95 per cent confident that the provider’s performance is above (Figures 4A and 4B) or below (Figures 4E and 4F) the national average. If the confidence interval crosses the line at zero (Figures 4C, 4D, 4G and 4H), irrespective of whether the column is above or below this line, the provider’s performance may not be significantly different from the national average. For more information about confidence intervals see Section 9: Value Added and Distance Travelled for 16–19 Learners: Further Questions, and below, on How to interpret the VA Summary Chart.
Figure 4: Examples of Value Added Summary Charts illustrating a variety of different interpretations.
4.6
It is important to note that the use of the term 'significant' in the key to the VA summary chart (see paragraph 4.11) refers to whether the VA score is statistically valid and reliable. A VA score may be statistically significant and different from the norm, but that difference may be small.

4.7
There are a number of reasons why a score’s confidence interval line may cross the line at the zero:

- the national sample size or the provider sample size may be greater than five learners but still be relatively small
- the distribution of results for the cohort may be skewed
- the performance of the provider may be very similar to national average performance.

4.8
The VA national comparison chart for the given subject/qualification will help to identify the potential reasons why the confidence interval line may cross the line at the zero.

4.9
The blue shading represents one **standard deviation (SD)** from the national average result for a given subject/qualification. This information is generated from the national data, and shows where a typical provider offering the same subject/qualification would lie. In this context, the word ‘typical’ covers about two-thirds of providers’ results. For more information about standard deviation and the blue shaded area, see Section 9: *Value Added and Distance Travelled for 16–19 Learners: Further Questions*, and below, on *How to interpret the VA Summary Chart*.

4.10
The VA summary chart report also includes a data table, presented below the chart, containing the following information:

- qualification type or subject
- VA score
- 95 per cent confidence intervals
- national sample size and fails
- provider sample size and fails
- national standard deviation.
How to interpret the VA Summary Chart

4.11 If the VA score is positive and the confidence interval line is above the national line (0) (Figures 4A and 4B) we can be confident that the VA score is positive. In these cases, the VA score means that on average, when prior attainment is taken into account, the provider has a positive effect on the performance of its learners in the given subject/qualification compared to the national average performance. This suggests that on average, the performance of the provider’s cohort of learners is higher than that of national average performance of learners with the same range of prior attainment.

4.12 If the VA score is positive and the confidence interval line crosses the national line (0) (Figures 4C and 4D), we cannot be confident that the VA score is positive. In these cases, we need to exercise caution when interpreting the VA score since there are several reasons why the confidence interval line might cross the national average line (0), as mentioned in paragraph 4.7.

4.13 If the VA score is negative and the confidence interval line is below the national line (0) (Figures 4E and 4F) we can be confident that the VA score is negative. In these cases, the VA score means that on average, when prior attainment is taken into account, the provider has a negative effect on the performance of its learners in the given subject/qualification compared to the national average performance. This suggests that on average, the performance of the provider’s cohort of learners is lower than that of national average performance of learners with the same range of prior attainment.

4.14 If the VA score is negative and the confidence interval line crosses the national line (0) (Figures 4G and 4H), we cannot be confident that the VA score is negative. In these cases, we need to exercise caution when interpreting the VA score since there are several reasons why the confidence interval line might cross the national average line (0), as discussed in paragraph 4.7.

4.15 The blue shading shows the national Standard Deviation for the given qualification/subject. If the column is within the blue shaded area, this indicates that the performance of the provider’s cohort of learners reflects a typical provider’s performance for the given qualification/subject (see Figure 4). If the VA score is below the national standard deviation, this indicates that the score is lower than that of a typical provider, conversely, if the VA score is above the national standard deviation, this indicates that the score is higher than that of a typical provider.
How can VA summary charts be used for quality improvement?

4.16
The summary charts provide an immediate and clear opportunity to assess where there are particular strengths and areas for improvement within the provision of a particular institution. It is anticipated that a wide range of users, including senior managers, governors, heads of department and staff involved in quality assurance will find these outputs invaluable in indicating where good practice might be identified and disseminated, and conversely, where there are areas which might benefit from additional quality improvement initiatives. Summary charts provide the first indication of how particular areas have performed in a given academic year but they only give an average of the VA across the range of prior attainment, that is, they do not show how the provider performs for learners at a different level of prior attainment. This information is available in the VA National Comparison Charts. Users can access the VA National Comparison Charts to drill down into the more specific subject/qualification to see a detailed picture of how the institution has performed.

How are VA summary charts calculated?

4.17
The VA scores generated for each subject by qualification type, from producing the national comparison charts, are used to produce VA summary charts for a qualification type, such as in Figure 3. For more information about the VA national comparison charts, see Section 5: Value Added National Comparison Charts and Ad hoc Reports.

4.18
VA summary charts for all qualifications types are produced by combining the scores from all subjects within their qualification types and weighting them according to the number of learners in each. The overall VA score for all subjects is then presented in each case.

For further information on using the VA summary charts, please go to https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/ and select 'Learner Achievement Tracker tutorial'.
5 Value Added National Comparison Charts and Ad Hoc Reports

What does the VA national comparison chart show?

5.1 The VA national comparison chart shows the provider’s performance in the given subject and qualification (subject/qualification) compared to the national performance across the full range of prior attainment. Figure 5 (on page 30) shows a VA national comparison chart for A-level English.

5.2 A subset of learner’s can be obtained using the Ad Hoc reports link. For more information on Ad Hoc reports, please see paragraph 5.31.

5.3 The horizontal axis shows the prior attainment of the cohort of learners taking the subject/qualification in the previous academic year. The prior attainment is indicated in QCA points and is the average prior attainment for qualifications taken up to and including Key Stage 4. For example, a learner achieving five GCSEs at grade D will have an average prior attainment of 34 QCA points (that is, 34 x 5/5). More information about prior attainment and QCA points can be found in Section 2: Scope of the VA and DT Measures for 16–19 Learners.

5.4 The vertical axis shows the outcome of the cohort of learners taking the subject/qualification in the previous academic year. The outcome is given as a grade, and also measured in rebased QCA points (for example, grade C at A-level is equivalent to 90 rebased QCA points). For further information on rebased QCA points, please see Section 2: Scope of the VA and DT Measures for 16–19 Learners.

5.5 The solid line is the national best fit line and represents the average outcome attainment of all learners in England taking the subject/qualification in the previous academic year. The average outcome attainment is shown in relation to the prior attainment of the learners taking the qualification. For example, in Figure 5, learners with an average prior attainment of 40 QCA points (that is, an average of grade C at GCSE level or equivalent) achieved approximately 60 rebased QCA points (that is, a grade D) in A-level English. Learners with a prior attainment of 52 QCA points (that is, an average of grade A at GCSE or equivalent) achieved just over 120 rebased QCA points (that is, just above a grade B) in A-level English.
The individual points on the chart represent individual learners taking the subject/qualification with the provider in the previous academic year. The points show prior attainment and achievement in the post-16 qualification. Male learners are represented by diamonds and female learners are represented by triangles. Where two or more learners share an identical combination of prior attainment and attainment, this is presented by a square.

The dotted line is the provider’s best fit line and represents the best estimate of the provider’s performance in this subject/qualification in the previous academic year relative to the prior attainment of the learners involved. The provider line is generated from information from both the individual learner points and the national data sample.

Please note: the provider line will not be displayed if the sample size of learners for the given subject/qualification is lower than five. In these cases the chart will only show the average national performance, represented by the solid line (see paragraph 5.5), and the individual points of learners (see paragraph 5.6). There will also be a asterisk note indicating this. However, a table containing information about the provider’s cohort of learners will be shown below the chart, see paragraph 5.13.

The grey shaded area around the provider line represents the 95 per cent confidence intervals associated with the provider line. This information is generated from data used to produce the national line, and shows the range between which we are 95 per cent confident that the provider line actually lies. That is, it tells us that 19 out of 20 times, the provider line will lie somewhere within the shaded area, but on average it will be along the dotted line. The grey shaded area needs to be considered when interpreting the chart. For more information about 95 per cent confidence intervals, please see Section 9: Value Added and Distance Travelled for 16–19 Learners: Further Questions, and below, on How to interpret the national comparison chart.

The blue shaded area around the national line represents one standard deviation from the national line (that is, one standard deviation from the nationally averaged result for this subject/qualification). This information is generated from the data used to produce the national line, and shows the spread of scores over which a typical provider offering the same subject/qualification would lie. In this case, our meaning of the word ‘typical’ is defined as being one standard deviation around the national average line, that is approximately two thirds of the learners around the national average taking the given subject/qualification. For more information about standard deviation and the blue shaded area, please see Section 9: Value Added and Distance Travelled for 16–19 Learners: Further Questions, and below, on How to interpret the national comparison chart.
5.11
The top right-hand corner of the chart shows the **VA score** in QCA points. In most cases, this score is the average distance between the national line and the provider line across the full range of prior attainment\(^1\). The VA score represents the amount of difference the provider has made to the achievement of its learners across the full range of prior attainment compared to how those learners would have performed in a nationally average provider. In Figure 5, the VA score is \(-6.85\) QCA points. This means that learners within this provider achieve on average around a quarter of an A-level grade lower than they might have performed in a nationally average provider (note, 30 QCA points are equivalent to one A-level grade).

5.12
The VA score also has associated 95 per cent confidence intervals, also indicated in the top right-hand corner of the chart. The confidence intervals show the range within which we are confident that the provider’s VA score actually lies. The confidence intervals need to be considered when interpreting the VA score. For more information about the VA score and confidence intervals, please see Section 9: *Value Added and Distance Travelled for 16–19 Learners: Further Questions*, and below, on *How to interpret the VA score and associated confidence intervals*.

5.13
The VA national comparison chart reports produced by the LAT will also include a data table, below the chart, containing information about:

- individual learner names
- individual learner gender
- individual learner prior attainment
- individual learner outcome attainment (rebased QCA points and grade)
- VA score for individual learners

5.14
Please note: local LSCs and Local Authorities do not have access to individual learner level data.
Figure 5: An example of a Value Added National Comparison Chart showing a provider’s performance in A Level Mathematics compared to the national performance across the full range of prior attainment.

- Output type: Value Added National Comparison Chart (fails included)
- Organisation: A real provider
- Qualification type: A Level
- Subject/Area of Learning: English Literature
- Provider sample size (fails shown in brackets): 10 (0)
- National sample size (fails shown in brackets): 37,669 (508)
- Data source: 16 - 19 learners achieving in 2005/06 (amended)

VA score: -6.85
We are 95% confident that this score lies between 5.09 and -18.80

Key:
- 95% confidence interval of provider line
- National Line
- Provider Line
- Individual Male Learner
- Individual Female Learner
- Multiple Individual Learners
- A typical provider’s line will fall within this range

Prior attainment of learners (Average QCA points at GCSE / GCSE equivalent (40=D))
How to interpret the VA national comparison chart

5.15
If the **provider line and the grey shaded area are always above the national line** (that is, across the full range of prior attainment), as in Figure 6a, then the provider is having, on average, a positive effect on the performance of all learners who enter the programme with different levels of prior attainment, compared to the national average performance.

5.19
If the **provider line and the grey shaded area are always below the national line** (Figure 6c) then provider is having, on average, a negative effect on the performance of all learners who entered the programme with different levels of prior attainment, compared to nationally average performance.

5.20
**If the provider line and the grey shaded area cross the national line** (Figure 6e) then, relative to the national average, the provider's effect on the performance of learners in the given subject/qualification varies according to the prior attainment of these learners. In this example, the provider is having a positive effect on the performance of learners who entered the programme with high prior attainment, but negative effect on the performance of learners who entered the programme with low prior attainment.

5.21
**If the provider line is above, below or crosses the national line but the grey shaded area contains the national line** (Figures 6 b, d and f) we cannot be confident that the provider has a positive or negative effect on the performance of all learners who enter the programme with different levels of prior attainment. In these cases, the chart suggests that the provider's effect on the performance of learners is similar to the national average performance.

5.22
**If the provider line and the grey shaded area are always above the national line, and the provider line is always above the blue shaded area** (Figure 6a) then the provider is having, on average, a positive effect on the performance of all learners who enter the programme with different levels of prior attainment, compared to nationally average performance, and this effect is significantly above the spread of VA scores of typically performing providers.

5.23
**If the provider line and the grey shaded area are always below the national line, and the provider line is always below the blue shaded area** (Figure 6c) then the provider is having, on average, a negative effect on the performance of all learners who entered the programme with different levels of prior attainment, compared to nationally average performance, and this effect is significantly below the spread of VA scores of typically performing providers.
5.24

If the provider line is above, below or crosses the national line but the grey shaded area contains the national line, and if the grey shaded area and the blue shaded areas always cross (Figures 6 b, d and f) we cannot be confident that the provider is having a positive or negative effect on the performance of all learners who enter the programme with different levels of prior attainment. In these cases, the chart suggests that the provider's effect on the performance of learners is similar to the national average performance, and similar to the spread of scores of typically performing providers.
Figure 6: Six examples of Value Added National Comparison Charts to illustrate a variety of different interpretations.
Interpretation of the points on the chart

5.25
The position of the points on the graph representing individual learners provides further information about how learners performed in the given subject/qualification, and whether the prior or outcome attainment of the cohort are skewed. Points below the provider line, for example learner A in Figure 4, indicate that a learner achieved a lower grade than would be expected given their prior attainment. Similarly, points above the provider best fit line, for example, learner B in Figure 4, indicate that those learners achieved a higher grade than would be expected given their prior attainment.

Using the information in the VA national comparison chart for reflection and quality improvement.

5.26
The information in national comparison charts allows providers to make judgements that assist in answering the following questions:

- Are learners at this institution making better or worse progress than would be expected when compared to the national picture?
- Do learners with a given prior attainment (for example a low or high prior attainment) make better or worse progress than expected?
- Have any learners achieved higher or lower than expected?

5.27
Answering these questions will provide a detailed picture of the strengths and weaknesses of a provider, which can be used to focus quality improvement strategies. For example, if the national comparison chart shows that performance in a particular subject/qualification is worse than the national average, providers may wish to target resources and quality improvement in that area. Similarly, there may be areas of provision where learners with a particularly high or low prior attainment are not achieving as well as other learners within the provider. In such cases, some targeting of learners with a given prior attainment may be appropriate to improve their achievement.

5.28
The charts will also show where there are areas of demonstrably good practice, in which learners are performing substantially better than the national average when prior attainment is taken into account. Institutions may wish to target this type of provision, and use the practice identified in this area used to drive quality improvement across the organisation.

How are VA national comparison charts calculated?

5.29
The information in the VA national comparison charts is calculated using a statistical methodology called multilevel modelling (MLM). Further information
about MLM is available on the LSC website’s Framework for Excellence technical pages: [http://ffe.lsc.gov.uk/support/va/](http://ffe.lsc.gov.uk/support/va/)

**How to interpret the VA score and associated confidence intervals**

**Table 1: Summary of the interpretation of VA scores and the associated 95 percent confidence intervals.** (Please refer to the text for further details).

<table>
<thead>
<tr>
<th>VA Score</th>
<th>Confidence intervals</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Positive (for example, +8.0)</td>
<td>Between two positive numbers (for example, +5.0 to +11.0)</td>
<td>On average, when prior attainment is taken into account, the provider has a positive effect on the performance of its learners in the given subject/qualification compared to the national average performance.</td>
</tr>
<tr>
<td>b Positive (for example, +8.0)</td>
<td>Between a positive and a negative number (for example, +10.0 to -1.2)</td>
<td>Care needs to be exercised when interpreting the VA score. Please see paragraph 5.12 for further information.</td>
</tr>
<tr>
<td>c Negative (for example, -8.0)</td>
<td>Between two negative numbers (for example, -5.0 to -11.0)</td>
<td>On average, when prior attainment is taken into account, the provider has a negative effect on the performance of its learners in the given subject/qualification compared to the national average performance.</td>
</tr>
<tr>
<td>d Negative (for example, -8.0)</td>
<td>Between a negative and a positive number (for example, -15.0 to +11.0)</td>
<td>Care needs to be exercised when interpreting the VA score. Please see paragraph 5.14 for further information.</td>
</tr>
</tbody>
</table>

5.30 If the **VA score is positive** and the **confidence intervals are positive** (Table 1, a), we can be confident that the provider’s VA score is positive. In these cases, the VA score means that the provider has, on average, a positive effect on the performance of its learners in the given subject/qualification compared to the national average performance when prior attainment is taken into account. In other words, the performance of the provider’s cohort of learners is higher, on average, than that of national average performance of learners with the same range of prior attainment.

5.31 If the **VA score is positive but the confidence intervals include a positive and negative number** (Table 1, b) we cannot be confident that the VA score is positive (that is, above zero). In these cases, we need to exercise caution when interpreting the VA score, and it may not be possible to make a judgement about performance in the given subject/qualification. There are several reasons why the confidence intervals might include a positive and negative number:
• the national sample size or the provider sample size may be greater than five learners but still relatively small
• the distribution of results for the cohort may be skewed
• the performance of the provider may be very similar to national average performance.

The chart will help you identify why the confidence intervals include a positive and negative number.

5.32
If the **VA score** and the **confidence intervals are negative** (Table 1, c) we can be confident that the VA score is negative. In these cases, the VA score means the provider has, on average, a negative effect on the performance of its learners in the given subject/qualification compared to the national average performance when prior attainment is taken into account. In other words, the performance of the provider’s cohort of learners is lower, on average, than that of national average performance of learners with the same range of prior attainment.

5.33
If the **VA score is negative but the confidence intervals include a positive and negative number** (Table 1, d) we cannot be confident that the VA score is negative. In these cases, we need to exercise caution when interpreting the VA score, and it may not be possible to make a judgement about performance in the given subject/qualification. Further information can be found in paragraph 5.15.

5.34
Please note: care must be taken in interpreting the VA score. The VA score is an average score across the range of prior attainment of learners at that provider. The chart shows how the performance of learners differs according to their prior attainment and this provides a more sophisticated interpretation of how the provider contributes to the attainment of learners with different levels of prior attainment.

**Ad hoc reports**

5.35
The **ad hoc reports** facility was introduced in 2006. This allows users to tailor the VA national comparison chart to include subsets of learners rather than a provider’s whole cohort of learners. The user is able to flag which learners they require to be included in the calculation of VA and compare these learners to the national average. For example, a user may want to look at learners who were taught by a particular teacher. Another reason a user may want to use the ad hoc reports facility is if there is a learner who has performed particularly different to the other learners (an
outlier). This learner could then be excluded to see what difference this would make to the over-all score.

5.36
For further information on using the Ad Hoc reports, please go to
https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/
and select 'Learner Achievement Tracker tutorial'.

Endnote:

1 The VA score is the average of the distance from the individual learner points to the national line. In most cases this difference represents the average distance between the national line and the provider line.
6 Value Added and Distance Travelled National Chances Charts

What do VA and DT National Chances Charts show?

6.1 A National Chances Chart shows the chances of an individual learner with a given prior attainment achieving each of the outcomes for a particular subject/qualification, according to national trends. Figure 7 shows the chances of a learner with a prior attainment between 40 and 46 QCA points achieving either grade A, B, C, D or E in A-level English. For further information on prior attainment, see Section 2: Scope of the VA and DT Measures for 16–19 Learners.

6.2 National Chances Charts for a given subject/qualification are available for ten, fixed bands of prior attainment. The LAT software does not allow chances to be displayed for customised values of prior attainment.

6.3 National Chances Charts are based on the national data set. They do not take into account the difference made by a provider to a learner’s chances, and so all providers see the same set of national chance charts.

6.4 The vertical axis shows the probability of achieving the outcome for the given subject/qualification, shown as a percentage. The horizontal axis shows the grades available in the subject/qualification.

6.5 Figure 7, using data from 2005/06 shows that, for that year:

- 5,977 of the learners who passed A-level English in 2005/06 had an average prior attainment of between 40.01 and 46 QCA points
- of these 5,997 learners:
  - 7 per cent achieved a grade E in A-level English
  - 28 per cent achieved a grade D in A-level English
  - 38 per cent achieved a grade C in A-level English
  - 22 per cent achieved a grade B in A-level English
  - 4 per cent achieved a grade A in A-level English
in total, over half of this group of learners achieved grade C or higher in A-level English.

Please note that fails are not indicated in the VA chances chart but the remaining per cent left over designates fails. Referring to Figure 7, 100-(7+28+38+22+4) = 1%, therefore, 1 per cent of this group of learners failed A-level English when there is a prior attainment of 40.01 to 46 QCA points. The number of those who failed are also shown in brackets next to the national band sample size, in Figure 7 this is 67.

6.8
Based on this information predictions can be made about how learners with similar prior attainment might achieve in the future.

**How can VA and DT National Chances Charts be used for quality improvement?**

6.9
VA and DT Chances Charts can be used to support learner progress by helping:

- tutors to establish challenging but realistic targets to which individual learners may aspire
- to monitor a learner’s progress throughout their course and judge whether it is in line with expectations
- to judge whether a learner is likely to need extra help and support to achieve their aims
- to help inform decisions about the selection of the most appropriate course for the individual learner. Note: the chances charts should be used in combination with other factors, and their use is not recommended as the primary tool for recruitment.
Figure 7: An example of a Value Added National Chances Chart, showing the chances of an individual learner with average prior attainment of between 40.01 and 46 QCA points attaining each of the possible grades in A Level English.
6.10 Care should be taken over the use of chances charts and tutors will need to use their professional judgement to ensure that they are used as a motivational tool, where appropriate, to encourage learners to realise their potential. Chances Charts could have a demotivating effect on individual learners if their chance of achieving their desired grade or qualification is low. Chances Charts only take into account the average prior attainment of the learner. Other factors will influence the actual grade that the learner attains, and a personal tutor may wish to build discussion of these factors into their motivational target-setting process.

6.11 Combined with the application of the RARPA process, the VA and DT Chances Chart should provide a powerful tool to enable providers to track the progress of individual learners towards their given target. There are many examples of the effective use of VA and DT methods alongside effective tutorial and support arrangements to drive up achievement. Further information about this resource can be found in the Further Information and Glossary section of the Performance Indicators Handbook. More information about RARPA and its extension to accredited provision can be found in the RARPA section of the Performance Indicators Handbook.

**How are VA and DT National Chances charts calculated?**

6.12 VA and DT Chances Charts are calculated in a different way from VA and DT National Comparison Charts. The VA and DT Chances Charts are based on data from learners who pass their qualification only, and do not take into account those learners who failed the given qualification. The outcome grade of each learner in their post-16 qualification within the national sample for the given subject/qualification is grouped into bands of prior attainment. The LAT then counts the number of learners achieving a particular grade for a given prior attainment band, and converts this number into a percentage of the sample size for the given prior attainment.

6.13 VA and DT Chances Charts are calculated in a different way from VA and DT National comparison graphs. The outcome grade of each learner in their post-16 qualification within the national sample for the given subject and qualification is grouped into bands of prior attainment. The LAT then counts the number of learners within the given band of prior attainment who attained each of the grades and converts this number into a percentage of the sample size for the given prior attainment. An example is included at paragraph 6.5.

6.13 For further information on using the National chances charts, please go to [https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/](https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/) and select 'Learner Achievement Tracker tutorial'.
7 Distance Travelled Summary Charts

What does the DT summary chart show?

7.1 The DT summary chart gives an overview of a provider’s performance across the range of provision compared to the national average performance. They are available at the following levels:

- for each provider, one chart showing the DT scores for each qualification type; for example, NVQ level 2, NVQ level 3, Foundation GNVQ, Intermediate NVQ
- for each qualification type, one chart showing each subject grouping; for example, all subject groups offered within a provider’s NVQ level 2 provision. This type of summary will also show the DT score for the given qualification type, for example, NVQ level 2.

7.2 Note: a DT score will not be produced if the sample size of learners taking the subject group/qualification is lower than five. This is because judgements about a provider’s performance in a given subject group and qualification cannot be made if the group size is lower than five.

7.3 Figure 8 (on page 44) shows a DT summary chart of a provider’s performance in different subject groups where NVQ level 2 provision is offered.

7.4 Note: users seeking information about the interpretation and application of GCSE summary charts should see Section 4: Value Added Summary Charts.

7.5 The vertical axis shows the DT score, indicated as the percentage difference in the provider’s achievement or success rate compared to the national average.¹ The national average achievement or success rate for each subject group has been normalised and is represented by zero on the vertical axis. It is important to note that the summary chart does not indicate whether the national average achievement or success rate is high or low. In order to fully interpret this chart, the user will need to refer to qualification success rate data to identify the level of the national average attainment.

7.6

¹ DT scores are indicated as the percentage difference in an achievement or success rate, which takes into account prior attainment. For more information, please see Section 2: Scope of the VA and DT Measures for 16–19 Learners.
The columns labelled along the horizontal axis represent the provider’s performance in each of the indicated subject groups in the indicated qualification. The DT score for each subject group/subject is indicated below the relevant column. Please note: if the sample size of the learners taking the indicated subject group/qualification is lower than five, no column will be produced.

7.7
The vertical line enclosed by two small horizontal lines, on each column, (known as the confidence interval line) represents the confidence interval generated from the data used to calculate the DT score. These intervals show us the range within which the provider’s DT score actually lies. If the confidence interval does not cross the line at zero, we can be 95 per cent confident that the provider’s performance is above (Figures 9A and 9B, on page 45) or below (Figures 9E and 9F) the national average. If the confidence interval crosses the line at zero (Figures 9C, 9D, 9G and 9H), irrespective of whether the column is above or below this line, the provider’s performance may not be significantly different from the national average. For more information about confidence intervals see Section 9: Value Added and Distance Travelled for 16–19 Learners: Further Questions, and below, How to interpret the VA Summary Chart, from paragraph 7.12.

There are a number of reasons why a score’s confidence interval line may cross the line at the zero:

- the national sample size or the provider sample size may be greater than five learners but still relatively small
- the distribution of results for the cohort may be skewed
- the performance of the provider may be very similar to national average performance.

The DT national comparison graph for the given subject group/qualification will help to identify the potential reasons why the column may not be shaded.

7.8
The vertical line on each column represents the 95 per cent confidence intervals and is generated from the data used to calculate the DT score. These intervals show us the range between which we are confident that the DT score actually lies. If the vertical line (or 95 per cent confidence intervals) crosses the line at zero (Figures 9c, 9d, 9g and 9h), irrespective of whether the column is above or below this line, the provider’s performance may not be different from the national average. If the 95 per cent confidence intervals do not cross the line at zero, we can be confident that the provider’s performance is above (Figure 9a and 9b) or below (Figure 9e and 9f) the national average.
Figure 8: An example of a Distance Travelled summary chart, giving an overview of a provider’s performance across the range of NVQ level 2 provision.

Output type: Distance Travelled Sector Subject Area Chart  
Chart type: Summary of provision by Sector Subject Area for FE NVQ Level 2 (2 Year)  
Organisation: A Real Provider  
Data source: 16 - 19 learners completing in 2005/06

DT score = the difference in the chances of achievement in this provider compared to the national average. This is measured in percentage points and takes prior attainment into account.  
Overall DT score 9.35

We are 95% confident that this score lies between 17.20 and 1.50
Figure 9: Examples of Distance Travelled Summary Charts illustrating a variety of different interpretations. Please see text for details.
7.9
For more information about 95 per cent confidence intervals, please see Section 9: Value Added and Distance Travelled for 16–19 learners: further questions.

7.10
The use of the term 'significant' in the Key for the DT summary chart refers to whether the DT score is statistically valid and reliable. Please note that a DT score may be statistically significant and different from the norm, but that difference may be trivial.

7.11
The DT summary chart output reports produced by the LAT software released in August 2007 will also include a table, below the chart, containing the following information:

- qualification type or subject
- DT score
- 95 per cent confidence intervals.

How to interpret the DT summary chart

7.13
If the DT score is positive and the confidence interval line is above the national line (0) (Figures 9a and 9b) we can be confident that the DT score is positive. In these cases, the DT score means that on average, when prior attainment is taken into account, the provider has a positive effect on the performance of its learners in the given subject/qualification compared to the national average performance. This suggests that on average, the performance of the provider’s cohort of learners is higher than that of national average performance of learners with the same range of prior attainment.

7.14
If the DT score is positive and the confidence interval line crosses the national line (0) (Figures 9c and 9d), we cannot be confident that the DT score is positive. In these cases, we need to exercise caution when interpreting the DT score since there are several reasons why the confidence interval line might cross the national average line (0), as mentioned in paragraph 7.7.

7.15
If the DT score is negative and the confidence interval line is below the national line (0) (Figures 9e and 9f) we can be confident that the DT score is negative. In these cases, the DT score means that on average, when prior attainment is taken into account, the provider has a negative effect on the performance of its learners in the given subject/qualification compared to the national average performance. This suggests that on average, the
performance of the provider’s cohort of learners is lower than that of national average performance of learners with the same range of prior attainment.

7.16
**If the DT score is negative and the confidence interval line crosses the national line (0)** (Figures 9g and 9h), we cannot be confident that the DT score is negative. In these cases, we need to exercise caution when interpreting the DT score since there are several reasons why the confidence interval line might cross the national average line (0), as discussed in paragraph 7.7.

7.17
The blue shading shows the national **Standard Deviation** for the given qualification/subject. If the column is within the blue shaded area, this indicates that the performance of the provider’s cohort of learners reflects a typical provider’s performance for the given qualification/subject (see Figure 8). If the DT score is below the national standard deviation, this indicates that the score is lower than that of a typical provider, conversely, if the DT score is above the national standard deviation, this indicates that the score is higher than that of a typical provider.

**How can DT summary charts be used for quality improvement?**

7.18
The summary charts provide an immediate and clear opportunity to assess where there are particular strengths and areas for improvement within the provision of a particular provider. It is anticipated that a wide range of users, including senior managers, governors, heads of department and staff involved in quality assurance, will find these outputs invaluable in indicating where good practice might be identified and disseminated and conversely, where there are areas which might benefit from additional quality improvement initiatives.

7.19
Summary charts provide the first indication of how particular areas have performed in a given academic year, but they only give an average of the DT score across the range of prior attainment, that is, they do not show how the institution performs for learners at a particular level of prior attainment. This information will be available in the DT national comparison charts. Users will be able to access the DT national comparison charts to drill down into the more specific subject grouping and qualification type, to see a detailed picture of how the provider has performed which shows the profile of performance for the given area across the range of prior attainment of the learners.

**How are DT summary charts calculated?**

7.20
The overall DT scores generated from producing a national comparison graph for each subject group for that qualification type are used to produce DT
summary charts for a qualification type, such as Figure 8. For more information about the DT national comparison graphs, see Section 8: *Distance Travelled national comparison graphs*.

7.21
DT summary charts for all qualifications types/subject groups are produced by aggregating the scores from all subject groups and weighting them according to the numbers of learners in each. The aggregated difference in achievement or success rate over all subject groups is then presented in each case. This type of summary report is the highest level of aggregation possible in DT. It is not appropriate to calculate the overall difference in the expected achievement or success rate across all qualification types to produce an institutional DT score. This is because the qualifications included in DT are not similar enough to make an overall DT score meaningful.

7.22
For further information on using the DT summary charts, please go to [https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/](https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/) and select 'Learner Achievement Tracker tutorial'. 
8 Distance Travelled National Comparison Charts

What will the DT national comparison chart show?

8.1 The DT national comparison chart will show the provider’s performance in the given subject group in the given qualification (subject group/qualification) compared to the national performance across the full range of prior attainment. Figure 10 (on page 52) shows a national comparison chart for NVQ Level 2 in the subject group Engineering, Technology and Manufacturing.

8.2 Please note, a DT score will not be produced if the group of learners taking the subject group/qualification with the given prior attainment is lower than five. This is because judgements about the performance of a group of learners with a given band of prior attainment, in a given subject group/qualification cannot be made if the group size is lower than five.

8.3 The horizontal axis shows the prior attainment of the cohorts of learners who took the given subject group/qualification in the previous academic year. The prior attainment is banded and is indicated in QCA points and is the average prior attainment for qualifications taken up to and including Key Stage 4. For example, a learner who gets five GCSEs at grade D will have an average prior attainment of 34 QCA points (that is, 34 x 5/5). More information about prior attainment and QCA points can be found in Section 2: Scope of the VA and DT Measures for 16–19 Learners.

8.4 The vertical axis shows the DT score, which is the percentage difference in the provider’s achievement or success rate in the given subject group/qualification compared to the national average for the indicated band of prior attainment\(^2\). The national average achievement or success rate for each subject group has been normalised and is represented by zero on vertical axis. It is important to note that the DT national comparison chart does not indicate whether the national average achievement or success rate is high or low. In order to fully interpret this chart, the user will need to refer to qualification success rate data to identify the level of the national average achievement or success rate.

\(^2\)DT scores are indicated as the percentage difference in an achievement or success rate, which takes into account prior attainment. For more information, please see section 2: Scope of the VA and DT measures for 16–19 learners, paragraph 2.21.
8.5
The DT score for each band of prior attainment is indicated below the relevant column. If the sample size of the learners with the indicated band of prior attainment is lower than five, no column will be produced.

8.6
The vertical line enclosed by two small horizontal lines, on each column, (known as the confidence interval line) represents the 95 per cent confidence intervals and is generated from the data used to calculate the DT score. These intervals show us the range in which we are confident that the provider’s DT score actually lies. If the vertical line (or 95 per cent confidence intervals) crosses the line at zero (Figure 11b and 11d), irrespective of whether the column is above or below this line, the provider’s performance may not be different from the national average. If the 95 per cent confidence intervals do not cross the line at zero, the provider’s performance is above (Figure 11a) or below (Figure 11c) the national average.

8.7
There are a number of reasons why a score’s confidence interval line may cross the line at the zero:

- the national sample size or the provider sample size may be greater than five learners but still relatively small
- the distribution of results for the cohort may be skewed
- the performance of the provider may be very similar to national average performance.

8.8
For more information about 95 per cent confidence intervals, see Section 9: Value Added and Distance Travelled for 16–19 learners: further questions.

8.9
The use of the term ‘significant’ in the Key for the DT national comparison chart refers to whether the DT score is statistically valid and reliable. Please note that a DT score may be statistically significant and different from the norm, but that difference may be trivial.

8.10
The key for the chart shows the overall DT score across the full range of prior attainment. The overall DT score represents how much difference the provider has made to the achievement of its learners across the full range of prior attainment compared to how those learners would have performed in a nationally average provider. In Figure 10, the DT score is 6.85 per cent. This means that on average, when prior attainment is taken into account, the achievement rate of learners completing NVQ Engineering, Technology and Manufacturing is approximately 7 per cent higher than would have been expected had they completed the same qualification in a nationally average institution. The DT score also has associated 95 per cent confidence intervals,
which are also indicated in the key. The confidence intervals show the range between which we are confident that the provider’s DT score actually lies. The confidence intervals need to be considered when interpreting the DT score. The overall DT score and associated 95 per cent confidence intervals are used to generate the DT summary chart.
Figure 10: An example of a Distance Travelled National Comparison Chart showing a provider's performance in NVQ level 2 Engineering, Technology and Manufacturing compared to the national performance, in bands of prior attainment.

Output type: Distance Travelled National Comparison Chart (falls included)
Organisation: FE NVQ Level 2 (2 Year)
Qualification type: Hairdressing Services
Provider sample size (falls shown in brackets): 139 (46)
National sample size (falls shown in brackets): 13,303 (5,012)
Data source: 16 -19 learners completing in 2005/06

DT score = the difference in the chances of achievement in this provider compared to the national average. This is measured in percentage points and takes prior attainment into account. Overall DT score 6.85
We are 95% confident that this score lies between 14.00 and -1.00

Key
- Performance is significantly above or below the national average, taking prior attainment into account
- Performance is similar to the national average, taking prior attainment into account
- Confidence Intervals
- Figure in brackets: number of learners in prior attainment band
How to interpret the overall DT score and associated confidence intervals

8.11

Table 1: Summary of the interpretation of overall DT score and the associated 95 per cent confidence intervals. Please refer to the text for further details

<table>
<thead>
<tr>
<th>Overall DT Score</th>
<th>Confidence intervals</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Positive (for example, +8.0)</td>
<td>Between two positive numbers (for example, +5.0 to +11.0)</td>
<td>On average, when prior attainment is taken into account, the provider has a positive effect on the performance of its learners in the given subject/qualification compared to the national average performance.</td>
</tr>
<tr>
<td>b Positive (for example, +8.0)</td>
<td>Between a positive and negative number (for example, +10.0 to -1.2)</td>
<td>Care needs exercised when interpreting the DT score. Please see paragraph 8.13 for further information.</td>
</tr>
<tr>
<td>c Negative (for example, -8.0)</td>
<td>Between two negative numbers (for example, -5.0 to -11.0)</td>
<td>On average, when prior attainment is taken into account, the provider has a negative effect on the performance of its learners in the given subject/qualification, compared to the national average performance.</td>
</tr>
<tr>
<td>d Negative (for example, -8.0)</td>
<td>Between a negative and a positive number (for example, -11 to +5.0)</td>
<td>Care needs exercised when interpreting the DT score. Please see paragraph 8.15 for further information.</td>
</tr>
</tbody>
</table>

8.12
If the overall DT score and the confidence intervals are positive (a in table 1) we can be confident that the provider’s DT score is positive. In these cases, the DT score suggests that when prior attainment is taken into account, the provider has a positive effect on the performance of its learners in the given subject group/qualification, compared to the national average performance. This suggests that, on average, the performance of the provider’s cohort of learners is higher than that of national average performance of learners with the same range of prior attainment.
8.13
If the **overall DT score is positive but the confidence intervals include a positive and negative number** (b in table 1) we cannot be confident that the DT score positive. In these cases, we need to exercise caution when interpreting the DT score and it may not be possible to make a judgement about performance in the given subject group/qualification. There are several reasons why the confidence intervals might include a positive and negative number:

- the national sample size or the provider sample size may be greater than five learners but still relatively small
- the distribution of results for the cohort may be skewed
- the performance of the provider may be very similar to national average performance.

The chart will help to identify intervals why the confidence interval might include a positive and negative number.

8.14
If the **overall DT score** and the **confidence intervals are negative** (c in table 6) we can be confident that the DT score is negative. In these cases, the DT score suggests that on average when prior attainment is taken into account, the provider has a negative effect on the performance of its learners in the given subject group/qualification compared to the national average performance. This suggests that on average, the performance of the provider’s cohort of learners is lower than that of national average performance of learners with the same range of prior attainment.

8.15
If the **overall DT score is negative but the confidence intervals include a positive and negative number** (d in table 6) we cannot be confident that the DT score is negative. In these cases, we need to exercise caution when interpreting the DT score and it may not be possible to make a judgement about performance in the given subject group/qualification. Further information can be found in paragraph 8.13.

8.16
**Please note** that care must be taken in interpreting the DT score. The DT score is an average score across the range of prior attainment of learners at that provider. The chart shows how the performance of learners differs according to their prior attainment and this provides a more sophisticated interpretation of how the provider contributes to the attainment of learners taking a subject group/subject with different levels of prior attainment.
How to interpret the DT national comparison chart

8.17
If the DT score is positive and the confidence interval line is above the national line (0) (Figure 11a) we can be confident that DT score is positive. In these cases, the DT score means that, on average, the provider has a positive effect on the performance of its learners with the given band of prior attainment compared to the national average performance.

8.18
If the DT score is positive and the confidence interval line crosses the national line (0) (Figure 11b) we cannot be confident that the DT score is positive. In these cases, we need to exercise caution when interpreting the DT score since there are several reasons why the confidence interval line might cross the national line (0) as discussed previously in paragraph 8.13.

8.19
If the DT score is negative and the confidence interval line is below the national line (0) (Figure 11c) we can be confident that the DT score is negative. In these cases, the DT score means that, on average, the provider has a negative effect on the performance of its learners with the given band of prior attainment compared to the national average performance.

8.20
If the DT score is negative and the confidence interval line crosses the national line (0) (Figure 11d), we cannot be confident that the DT score is negative. In these cases, we need to exercise caution when interpreting the DT score since it may not be possible to make a judgement about performance in the given subject group/qualification. Further information can be found in paragraph 8.13.
Figure 11: Two examples of Distance Travelled National Comparison Charts illustrating a variety of different interpretations. Please see text for details.
How can DT national comparison chart be used for quality improvement?

8.21
The information in the DT national comparison chart should allow providers to make judgements which can answer the following questions:

- are learners at this institution making better or worse progress than would be expected when compared to the national picture?
- do groups of learners with a given band of prior attainment (for example a low or high prior attainment) make better or worse progress than expected?

8.22
Answering the questions in paragraphs 8.21 will provide a detailed picture of the strengths and weaknesses of a provider, which can be used to focus quality improvement strategies. For example, if the national comparison chart shows that performance in a particular subject group or subject is worse than the national average, providers may wish to target resources and quality improvement in that area. Similarly, there may be areas of provision where learners with a particularly high or low prior attainment are not achieving as well as other learners within the provider and some targeting of learners with a given prior attainment may be appropriate to improve their achievement.

8.23
The charts will also show clearly where there are areas of demonstrably good practice and where learners are performing substantially better than the national average when their prior attainment is taken into account. Institutions may wish to target this type of provision and use the practice identified in this area to drive quality improvement across the organisation.

How are DT national comparison charts calculated?

8.24
The information in the DT national comparison charts is calculated using a statistical methodology called multilevel modelling (MLM). Further information about MLM is available on the LSC website’s Framework for Excellence technical pages: [http://ffe.lsc.gov.uk/support/va/](http://ffe.lsc.gov.uk/support/va/)

Further Information on the DT national comparison charts

8.25
For further information on using the DT national comparison charts, please go to [https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/](https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/) and select 'Learner Achievement Tracker tutorial'.

9 Value Added and Distance Travelled for 16–19 Learners: Further Questions

Why has the LSC chosen to use a subject-based methodology?

9.1
Statistical analysis shows that the relationship between prior attainment of learners and their actual achievement is different for different subjects and different qualifications. In the post-16 sector, institutions offer a wide variety of subject and qualification mixes. The LSC believes that using a subject-based methodology and ensuring that for VA, the aggregated VA score reflects the different relationships between prior attainment and achievement, gives the fairest picture of provision across the sector. The subject-based approach also allows providers to look at the performance of their institution in a particular subject and qualification against the national average performance for that subject and qualification.

What is included in the calculation of VA and DT for 16–19 learners?

9.2
The calculation of VA and DT for 16–19 learners takes into account the learner’s prior attainment and their actual outcome in the main qualification aim. No other information is used as an input or output of the measure.

Why doesn’t the calculation take into account other factors such as socio-economic grouping or gender?

9.3
It is widely acknowledged that there are many other factors, besides prior success in qualifications, which will affect a learner’s ability to succeed in a given subject and qualification. These factors will include gender and socio-economic grouping alongside a learner’s personal motivation and drive. However, statistically speaking, prior attainment has been found to be a far better predictor of performance in the main qualification taken than any other factor, and for that reason, it is used as the input for the LSC model for VA and DT.

9.4
The lack of a robust indicator for socio-economic status and the lack of a consensus on definitions of ethnicity and learning difficulties also prevent us from building these factors into the model used. Omitting them allows us to be sure that the outputs from the LAT are measuring like with like across the sector. Further work will be undertaken during 2007/08 to investigate the possible inclusion of contextual variables.

What’s the difference between VA and DT?
9.6
The scope of the qualifications included in the VA measure is different to that in the DT measure. Both measures are calculated using the same underlying methodology, multi-level modelling (MLM). However, the different scope of the measures means that the methodology is slightly adapted for DT. More information about the coverage of VA and DT for 16–19 learners can be found in Section 2: Scope of the VA and DT measures for 16–19 learners. Further information about MLM is available on the LSC website’s New Measures of Success page.

9.7
VA data can be used as a predictive tool for individual learners, that is, it gives historical data relating to the chances of a learner achieving a particular grade in the given qualification on the basis of their prior attainment. This information is reflected in the VA chances chart. Points which relate to individual learners are also illustrated on the VA National Comparison charts. VA scores are presented in QCA points, which can be translated into grades. More information about QCA points can be found in Section 2: Scope of the VA and DT measures for 16–19 learners.

9.8
The DT national comparison charts will not show individual learners, because the DT calculation relates to the difference in an achievement or success rate which takes into account prior attainment between the provider and a group of learners with similar prior attainment. The DT national comparison chart should not be used to attempt to predict the achievement of individual learners at a particular level of prior attainment, but can be used to predict the achievement of a group of learners. The DT chances chart gives an indication of the probability of outcome for a learner with a given level of prior attainment, but no further inferences can be made about the achievement of individual learners from the DT outputs. DT scores are expressed as the percentage difference in an achievement or a success rate which takes into account prior attainment from the national average achievement or success rate, which also takes into account prior attainment.

9.9
It follows that the difference between VA and DT for 16–19 learners also relates to use of the outputs. The outputs for VA can be used to:

- compare a provider’s performance with the national average performance of institutions
- look at performance in different areas within a provider, including at subject grouping, subject, subject by qualification
- set motivational grades for individual learners.

9.10
The outputs for DT can be used to:
• compare a provider’s performance with national average performance

• look at performance across the provider by subject area

• make judgements and, together with other evidence, provide advice to learners on the most appropriate level of qualification to pursue given their prior attainment.

**How does the LAT compare to other, proprietary systems for VA?**

9.11
During the development of the methodology used in the VA and DT for 16–19 learners, account was taken of existing systems which cover VA for learners on graded qualifications. The most well-known of these systems are the A Level information System (ALIS) and the A Level Performance System (ALPS). The VA and DT for 16–19 learners measures use a different methodology from these systems, called multi-level modelling (MLM), an introduction to which is provided in the annex, *Multilevel Modelling—An Introduction*. The use of MLM provides the following advantages:

• it is robust in terms of dealing with providers with small cohorts of learners, so that more institutions can be included in the national measure

• there is clear information about how providers are performing with learners at different levels of prior attainment.

9.12
The LAT will also:

• be provided free of charge to all LSC-funded providers and Local Authorities.

• cover a wider range of learners, including vocational qualifications, and compare providers’ performance with the national sample of all learners taking that particular subject or qualification

• produce an accurate calculation of an institution’s overall VA score, based on an aggregation of scores for different qualifications and subjects which reflect national variations in performance for those qualifications and subjects

• be used by the four partners and other stakeholders in making judgements about provider performance.

**How large does a group/class have to be to generate a reliable VA or DT score?**

9.13
Group or class sizes need to consist of more than four learners for a VA or DT score to be calculated and for a judgement to be made about the providers’ performance in that subject and qualification. The LAT outputs will always show the number of learners included in the national and institutional sample. Once a number of years’ worth of data is available, the LAT will also allow trend analysis to be carried out on multiple years’ data sets.

**Why would the number of learners shown in the LAT outputs not correspond to my group size?**

9.14 Learners need to meet a number of criteria for inclusion of the LAT dataset, for instance have prior attainment that was obtained in England. If learners within your cohort do not meet these criteria they will be excluded. Further details of the criteria used please see Section 2: Scope of the VA and DT Measures for 16-19 Learners.

**How is the qualification success rate used in the DT for 16–19 learners calculation?**

9.15 The outcome measures for DT will be based on achievement rate for some qualifications and success rate for other qualifications for the piloting phase. The DT measure for WBL-funded provision will be based wholly on the qualification success rate measure.

9.16 However, the DT measure for FE-funded provision will be based on qualification success rate for NVQs and achievement rate for all other qualifications in the scope of the FE DT measure. Analysis on the use of the qualification success rate for these other qualifications currently using achievement rate will be undertaken during the pilot phase once suitable data becomes available.

9.17 During the piloting phase, as part of the evaluation of the measures, there will be consultation with the sector to ensure the suitability of the success rate as the basis of the DT measure across all qualifications in the scope of the measure.

**Why are different outcome DT measures used for FE and WBL funded provision?**

9.18 The DT output measure for WBL provision needed to be based on the qualification success rate because no agreed definition of achievement rate exists in the WBL sector. In order for the DT measure to be consistent, it is proposed to use the qualification success rate measure for the DT output for FE provision as well. This is being taken forward during the piloting phase in
relation to NVQs, but further work is needed to obtain the required data for the other qualifications, which we will be undertaking as a matter of priority.

9.19 Modelling work will be carried out when this data becomes available to ensure that the qualification success rate is the most robust output measure. The analysis on NVQs identified a stronger correlation using qualification success rate than achievement rate.

What are 95 per cent confidence intervals?

9.20 The VA or DT score is the best estimate of the provider’s effect on the performance of its learners for the given qualification or subject/qualification, but how good is our estimate of the VA or DT score? The 95 per cent confidence intervals help us to answer this question by telling us about the accuracy of this best estimate (i.e. the VA or DT score). The confidence intervals do this by giving us the range between which can expect the actual provider’s effect to lie. The wider the range (i.e. the wider the confidence intervals) the less accurate the estimate is, and this is why we need to consider the confidence intervals when interpreting the LAT outputs.

9.21 Confidence intervals can be set at different levels of statistical confidence, for example, 90 per cent or 95 per cent. A 95 per cent confidence interval tells us that 19 out of 20 times, the provider’s VA or DT score will be somewhere within the range specified.

9.22 For example, Provider A’s VA score for A-Level maths is +15 and the 95 per cent confidence intervals are -1 and 31. This means that 19 out of 20 times, the provider’s VA score for A Level maths will be somewhere between -1 and +31 QCA points, but on average it will be +15 QCA points. Since the VA score will sometimes be -1 (that is, below zero which represents the national average), we cannot be statistically confident that the provider’s effect on the performance of its learners in A-Level Maths is different from the national average, even though the VA score is positive.

9.23 Provider A’s DT score for all NVQs is -4 per cent and the 95 per cent confidence intervals are -6 and -2 per cent. This means that 19 out of 20 times, the provider’s DT score for all NVQs will be somewhere between -6 and -2 per cent, but on average it will be -4 per cent. The confidence intervals tell us that the DT score is not expected to be above zero and therefore we can be statistically confident that the provider’s effect on the performance of its learners in NVQs is lower than the national average.

9.24 There are a number of reasons why a VA or DT score might have wide confidence intervals:
the national sample size or the provider sample size may be greater than five learners but is still relatively small

- the distribution of results for the provider’s cohort may be skewed.

**What is Standard Deviation and how is it used in the LAT?**

9.25 Standard deviation is a statistical term which measures the spread of scores around the average. Therefore, a bigger standard deviation would imply a wider spread of scores, indicating more variation; a smaller standard deviation would imply that the scores are gathered more closely around the average, indicating less variation.

9.26 In the context of the LAT, one standard deviation is used as a guide to show a 'typical' provider doing the same subject/qualification. One standard deviation covers 68% (approximately two thirds) of the learners doing the given subject/qualification. Hence, if a provider’s score or line is outside the blue shaded area on the charts, the score is higher or lower than that of a typical provider.

**Why don’t the measures use the Universal Marking Scheme (UMS)?**

9.27 UMS data is not currently available for us to use in the measures and to use it would involve imposing an additional data collection burden on providers. As there is a commitment to introduce the new measures of success without increasing the burden on providers, we need to wait until we can access this information centrally, from the awarding bodies, before it can be used. Once the data becomes available we will be able to model the use of UMS in the calculation of the measures.

**When will the 2006/07 data appear on the LAT?**

9.28 The data will be made available at the same time every year. Unamended VA data will be released during November, to be followed by amended scores in January. DT data will be released in late January of each year.

**Is the cashing in or not cashing in of AS-levels an issue for LAT? If so, what assumptions are made?**

9.29 In regards to cashing in of AS-Levels, we only get those results which are cashed in by providers.
I am a Local Authority and would like to know if I can have a 'data dump' of value added / distance travelled data for Schools in my area. Is this possible?

9.30
A 'data dump' for all schools in your area is not possible to download in one go. You would need to log onto the LAT, and select one school at a time. Having selected a school, then click on 'Download Data'. This will allow you to select the format of your choice, which will contain the data for that school. Repeat this process for each school you require data for.

Is there any training or literature that I could read to gain a greater awareness of the LAT?

9.31
Training material for the LAT is available on the Provider Gateway. Please click on the following link https://ffe.lsc.gov.uk/support/Provider+Gateway+Support/ and select 'Learner Achievement Tracker Tutorial'.

Having observed the data on the LAT, the data does not include some students. Please can you inform me how I can update the LAT records, and also an explanation as to why the student data is missing?

9.32
The data used to calculate the VA measure is obtained directly from awarding bodies. Attainment data for post-16 qualifications is subsequently matched to attainment information on pre-16 qualifications, using forename, surname, date of birth and gender. There is an opportunity for providers to amend this data as part of the DCSF Achievement and Attainment Tables (AAT) checking exercise.

For further information on why data is not included, please see Section 2: Scope of the VA and DT Measures for 16-19 Learners.

Is there an email address I can use for feedback and queries?

9.33
For feedback and queries, please email us via provider.gateway@lsc.gov.uk with the subject “LAT”.
ANNEX: Multi-Level Modelling—An Introduction

Introduction

A.1
The purpose of this annex is to introduce and describe multi-level modelling (MLM).

A.2
MLM is a sophisticated statistical technique, which has the potential to provide a more valid, fair and accurate way of calculating Value Added (VA) scores than other methods. It is also used for the calculation of DT scores.

A.3
The statistical advantage of MLM is that it considers the effects of the institution on learner outcome, in addition to the effect that learners have on their own outcome. Other statistical approaches such as linear regression and averages-based approaches do not directly recognize the impact that an institution has on an individual’s performance, as these approaches treat all learners identically, i.e. as if all learners went to the same school.

A.4
Additionally, MLM allows reliable scores to be calculated for small cohorts (i.e. where few individual take that subject in that qualification). Other approaches do not have methods to make the necessary adjustments, therefore data from small cohorts tend to be aggregated into larger groups or ignored.

A.5
Currently, MLM is being adopted by the DSCF for calculating pre-16 VA and will be used for the calculation of VA and DT for 16-19 year olds.

The Interaction of Individual and Institutional effects

A.6
It is important to acknowledge that actual attainment of learners is broadly dependent upon two sorts of factors: individual effects and institutional effects. Individual factors describe the learners themselves; age, gender, previous results, etc. In the context of education, the individual factor most strongly associated with attainment is the learner’s ability which is typically measured in terms of prior attainment.

A.7
Currently, the LAT does not include contextual factors such as age and gender as an individual factor. Further work will be undertaken during 2007/08 to investigate the possible inclusion of contextual variables.
A.8
Institutional factors relate to the school, college or work based learning provider attended by learners. They can arise from differences in curriculum offered, recruitment and catchment area and a host of other considerations. To appreciate how closely these two sorts of factors interact, we first must assume that both factors are independent.

A.9
For example, if we know that every learner who ever attended institution X, achieved 4 A grade A-levels, then the fact that they attend this institution would seem to tell us all we need to know to predict their attainment. Clearly, this is not the case, since just knowing which provider a learner attended is not sufficient to predict their attainment.

A.10
Similarly, if it was only individual factors that allowed one to completely and accurately predict a person’s attainment, then there would be no need to know which provider that individual attended. Everyday experience would say that this is not true; that providers do have an impact on a learner’s attainment.

A.11
As we know that both of these factors are important in predicting attainment, we need to ensure that they are both accounted for in the model used for Value Added and Distance Travelled. The issue is trying to determine to what extent the attainment of a learner depends on their abilities and to what extent it is influenced by the institution that the learner attends.

A.12
The calculation undertaken by MLM specifically determines the institutional effect on the attainment of a learner, while at the same time taking into account the distribution of the prior attainment of all learners in the national cohort under analysis (e.g. A-level Biology). In this sense, which institution attends now becomes an important variable in the calculation of predicted attainment for learners in any subject.

The case of small subjects

A.13
Another advantage of MLM is that it allows reliable scores for both VA and DT measures to be calculated when there are few learners in the institution cohort. Normally, when few learners are taking a subject in a qualification in an institution (for example, A-level Biology), other statistical approaches will tend to produce predictions that are volatile and unstable, that is they change substantially if there is any change in the data. This means that the VA or DT score of a small subject could be very high in one year, and then the next year could be very low. Such volatility is symptom that the scores are biased and they are not clear, fair or valid indicators of performance.
A.14
To solve this problem, the estimation using MLM is used to produce an adjustment factor (usually known as a shrinkage factor). This factor is a number between zero and one, which is used in the calculation of the average of the scores of each subject, independent of the cohort size. If the cohort is large, the shrinkage factor is close to one, and thus has no effect on the results. If the cohort is small, the shrinkage factor is close to zero, and reduces the score towards the national average. By doing this, the results of small cohorts are now more reliable and less volatile, while the scores for large groups or subjects remain virtually unchanged.

Conclusion

A.15
Multi-level modelling addresses some of the main limitations of other methods of modelling value added and distance travelled. It provides a valid, fair and accurate way of calculating value added and distance travelled data for the purpose of reflection and improvement and institutional accountability.