Sixth Form Colleges Association

String Theory

The understanding performance in sixth form colleges project report 2014

Nicholas Allen

June 2014

SFCA works to lead and support a thriving and sustainable Sixth Form College sector by being an effective advocate, adviser and information provider for members and a reliable and authoritative source of insight, data and expertise for policy-makers and opinion formers.

Chief Executive:

David Igoe

Chair of Council:

Jonathan Godfrey

Principal of Hereford Sixth Form College

For more information about this report please contact Nicholas Allen:

Sixth Form Colleges' Association

Local Government House

Smith Square

London

SW1P 3HZ

☏ 020 7187 7349

✉ info@sixthformcolleges.org

💻 sixthformcolleges.org

String Theory: The understanding performance in sixth form colleges project report 2014

Contents **Page**

Introduction

The 2014 six dimensions analysis builds on the twin-pronged approach developed in The *Six Dimensions of Performance* report[1] and *Beyond the Sixth Dimension*[2]: reporting on aspects of provision across the sector and reporting on performance in individual colleges. This year we focus our attention on eighteen year old students and 'student level' measures of success. The funding cut for eighteen year old students is predicated on the assumption that these students somehow require less teaching and support than other students. The *chapter The Truth About Eighteen Year Olds in Sixth Form Colleges* below seeks to bring some evidence to bear in this discussion, looking at the equality and diversity profiles of eighteen year old students, the courses they are on, how long they have been in sixth form colleges, how successful they are, and so forth.

The return to a linear model of A level brings with it certain challenges, one of which is the question of how you measure success. The project explores some 'student level' measures of success, examining how successful students are over a full two year programme. This is an area that presents some challenges. Looking at 'pure A level' students following a programme of one year AS level courses and tracking them through to look at the outcomes for these students a year later on a programme of A2 level courses is simple. Tracking BTEC students and mixed programme students is much more problematic. Colleges use a variety of approaches to recording BTEC programmes – some simple, some complex, and some, frankly, questionable.

It is useful and interesting to know and understand the national patterns, but knowing how performance in an individual institution relates to these national patterns takes the power of data to another level. The 2014 project introduces new measures of 'student level success' and, in the context of an inspection framework that is concerned with 'narrowing' of 'achievement gaps', it provides a new equality and diversity analysis. To date there has been nothing available that does this job particularly well. Analysis provided by Ofsted in the CPR has explored variation in success rates by gender and ethnicity, but no account has been taken of the subjects being studied or of the prior attainment profile of the students. The analysis presented here seeks to illuminate how performance across certain groups varies nationally once prior attainment and subject choice has been taken into account, and then overlay how variation between groups in an individual college compares to these national patterns.

To the standard six dimensions reports we have added an additional two dimensions – points per completer and points per achiever. The application of these additional measures is explored in detail below, but the idea is to provide an additional incisive insight to help colleges in the accurate diagnosis of underperformance and in the focusing of improvement plans on actual rather than assumed issues.

Three core values underpin this work – fairness, honesty and duty. It is worth repeating how they inform the measures developed, and the expectations of how the reports might be used.

> **Fairness** is the simple notion that if we subject colleges and individual subject departments to performance measures, then these measures should be fair. In this context they should make adjustment for the sort of students that are being dealt with and the courses the students are following. We know that performance varies according to prior attainment: we

[1] Six Dimensions of Performance: The understanding sixth form colleges project report 2012
[2] Beyond the Sixth Dimension: The understanding performance in sixth form colleges project report 2013

should take this into account when judging effectiveness. To introduce such adjustments into our analysis is fair to both those dealing with relatively high GCSE profiles and those dealing with more modestly qualified students alike. It is our contention that this project provides a 'fair' analysis.

Honesty is about being clear where performance falls below accepted standards. It is about being honest with ourselves where the data really does suggest that performance is diverging from what is typical nationally. We cannot, for example, excuse low success rates by saying that these reflect an 'inclusive' admissions policy. Honesty, in turn, informs:

Duty – the notion that we owe it to our students do challenge underperformance wherever it may lie, and however challenging that process may be.

We owe it to our colleagues to be fair, to ourselves to be honest, and we owe it to our students to not flinch from doing the things that need to be done.

The quality of performance in sixth form colleges presents us with a few issues. After the Spring Term inspections, some 86% of colleges were holding a 'current' inspection grade of good or better. In terms of success rates and value added sixth form colleges outperform all other institution types, though it should be noted that the gaps are not as dramatic as one might imagine (unless one focuses on small school sixth forms, where performance is well adrift of national averages). In the context of strong overall performance and favourable inspection outcomes what does it mean to be in line with the sixth form college average? At what point does performance become a matter of concern? I would argue that if well over three quarters of sixth form colleges are good, then anything out of the bottom quarter must be 'good', and anything in the bottom quarter really needs some attention. I would suggest that he real value of the reports lies below the headline figures. It is the variation between departments in an individual college, or variations in performance with different groups of students or with students at different points in the prior attainment spectrum that gives us the opportunity to scrutinise and the opportunity to act.

It is recognised that the success of this project rests on the hard work of MIS teams across the sector, producing the data to an agreed and occasionally fiddly specification alongside numerous competing challenges. To those teams, and to the senior managers who authorised the work, I extend my thanks and admiration in equal measure.

Key conclusions

- **There is a relationship between prior attainment and student level outcomes**, measured by examining the proportion of students that start three or more AS levels who subsequently achieve three or more A2 levels. At low levels of prior attainment (average GCSE score below 5.2) less than 50% of the students starting AS level programmes subsequently achieve three or more A2 levels. (**Figure 1.2**)

- **Students with relatively low GCSE scores are far more likely to complete BTEC or mixed A level/BTEC programmes than they are to complete A level programmes.** In the 5.2 to 5.5 band, 48% of students starting AS levels subsequently achieve three or more A levels, 61% of students starting mixed programmes subsequently achieve the equivalent of three A levels and 81% of students starting BTEC programmes achieve three A levels worth of qualifications. (**Figure 1.6**)

- **At AS level, male students outperform female students once prior attainment and subject choice are taken into account**. While the raw AS level success rate is 84.6% for female students and 79.6% for males, once expected levels of performance have been adjusted for prior attainment and subject choice male performance is above female performance. At A2 level, male and female performance is almost exactly in line. (**Figures 2.1 and 2.2**)

- **Black and Asian Students outperform White British students.** Once prior attainment is taken into account, the only minority ethnic group with success rates below expectation is mixed ethnic background students. These patterns are repeated at A2 level. (**Figure 2.1 and 2.7**)

- **Students with disabilities perform below expectation.** In particular, students with mental health difficulties (-14.0%) and emotional and behavioural difficulties (-7.1%) are well below expectation. This pattern is repeated at A2 level, where success rates compared to similarly qualified students doing similar subjects are -8.2% for students with mental health difficulties and -7.9% for those with emotional and behavioural difficulties. (**Figures 2.3 and 2.8**)

- **There is virtually no difference in the performance of students from different income quartiles once prior attainment and subject choice are taken into account.** While the raw success rate for students in the top income quartile (85.2%) is well above that for those students drawn from the bottom income quartile, (78.4%), once performance is adjusted, the gap narrows to 1.0%. Similar patterns are found at A2 level. (**Figures 2.5, 2.6, 2.10**)

- **Eighteen year old students are far more likely to be drawn from disadvantaged groups than typical sixth form college students.** Eighteen year olds are disproportionately male (51%), drawn from minority ethnic backgrounds (34%), the bottom income quartile (35%), and are more likely to have learning difficulties (14%) and disabilities (11%) and more likely to be summer born (28%). (**Figures 3.4 and 3.5**)

- **The range of A levels offered in some school sixth forms is worryingly low.** The average number of A levels subjects in school sixth forms is 15. In sixth form colleges it is 36. (**Figures 4.1, 4.2 and 4.3.**)

Section One: Student level measures of success

One consequence of a success rate methodology that focuses on whether students achieve the individual qualifications that they start, is that it is actually rather difficult to develop a view of how successful students are. For sixth form colleges and others where the focus is largely on A level provision, Curriculum 2000 further clouded this area with the AS/A2 split. The shift to two year courses with a gap between the end of the first course and the start of the second created a window where students are able to disappear without any negative impact on the image of performance in the college that an outside agency might have. Furthermore, there is nothing in the success rate methodology that recognises the breadth of programme that students achieve, and nothing that looks at whether students that start AS programmes seeing themselves as A level students actually achieve A levels. Such holes in the accountability system make it entirely possible that poor provision could go undetected and unchallenged.

More recent curriculum developments have not helped. Many colleges are making use of mixed programmes blending AS/A2 level courses with BTEC level 3 courses, OCR level 3 nationals, and other courses. We need to subject these mixed course programmes to scrutiny. It may well be that these courses offer very positive routes, particularly (as is often claimed) for less well qualified students, but frankly this has never actually been demonstrated with any hard research.

As a first step in our scrutiny of this area, we start by establishing what happens at A level. We need to establish the proportion of students who started AS levels in 2011-12 who successfully achieved A levels in 2012-13, and we need to explore how this varies with prior attainment.

The key challenge of such an analysis is producing a consistent data-set that genuinely is capable of reporting on the topic in question. In order to provide a consistent platform for analysis, general studies was removed from both the AS level cohort from 2011-12 and from the A2 cohort from 2012-13. BTEC records were also removed in order to generate a 'pure' AS level cohort. The data set was further narrowed to include only those students who started three of more AS levels. The residual data-set contained records on 52,592 students who started at least three AS levels in 2010-11 and did not do any BTEC courses in either year one or year two of their studies.

The subsidiary challenge in the process is to consider what outcomes to analyse. It was decided to focus on what might be termed 'student level success outcomes' – what proportion of students successfully completed and achieved the programme of study they started. The primary measure used is the proportion of students achieving three or more A levels. A secondary measure of the proportion achieving two A levels is also used.

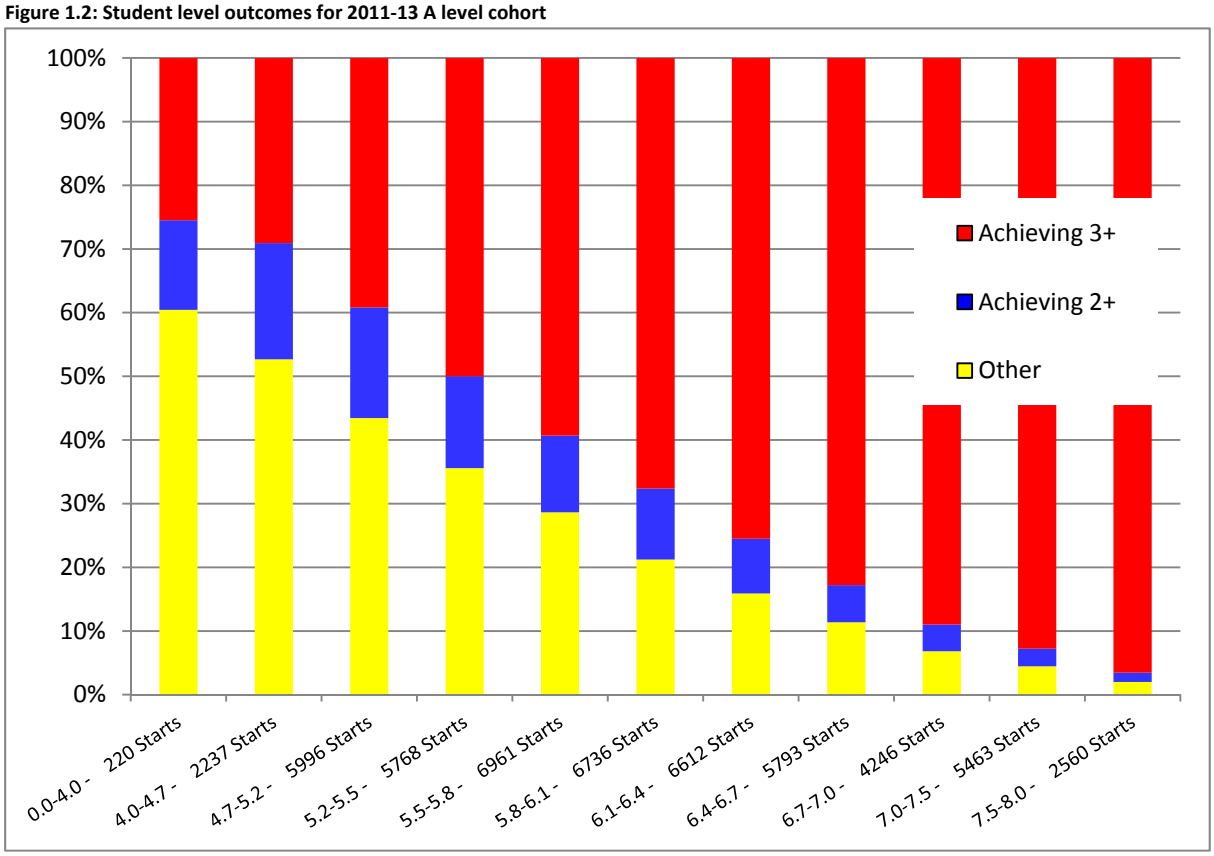
Figure 1.1 explores how the proportion of students achieving these two outcomes varies by prior attainment. Students have been divided into eleven prior attainment bands, based on average GCSE score. We find that in the top prior attainment bands, more than 90% of students that start an AS level programmes subsequently achieve three A levels. By the time we reach an average GCSE score of 5.8 to 6.1 (around straight B grades at GCSE) a full third are not achieving three A level. For those students with an average GCSE score below 5.5, less than 50% of students are successfully achieving three A levels.

Figure 1.1: Student level outcomes for 2011-13 A level cohort

GCSE Band	Started 3 AS levels	Did not achieve 2 or more A levels	Achieved 2 A levels	Achieved 3 or more A levels
0.0-4.0	220	60.5	14.1	25.5
4.0-4.7	2237	52.7	18.2	29.1
4.7-5.2	5996	43.5	17.4	39.2
5.2-5.5	5768	35.6	14.4	50.0
5.5-5.8	6961	28.7	12.0	59.3
5.8-6.1	6736	21.3	11.1	67.6
6.1-6.4	6612	15.9	8.6	75.5
6.4-6.7	5793	11.4	5.8	82.8
6.7-7.0	4246	6.9	4.2	89.0
7.0-7.5	5463	4.5	2.8	92.8
7.5-8.0	2560	2	1.4	96.5

Figure 1.2 expresses the same outcomes graphically. Note how the proportion of students achieving two A levels increases towards the bottom end of the ability range. While we have only included 'pure' AS level students in our analysis, these two A level achievers may be achieving perfectly valid additional level 3 qualifications such as the extended project and A level general studies. If an individual college were to have a significant volume of students in the blue zone at higher levels of prior attainment, there would be some very interesting questions to explore regarding why so many students are ending up achieving just two A levels.

Figure 1.2: Student level outcomes for 2011-13 A level cohort

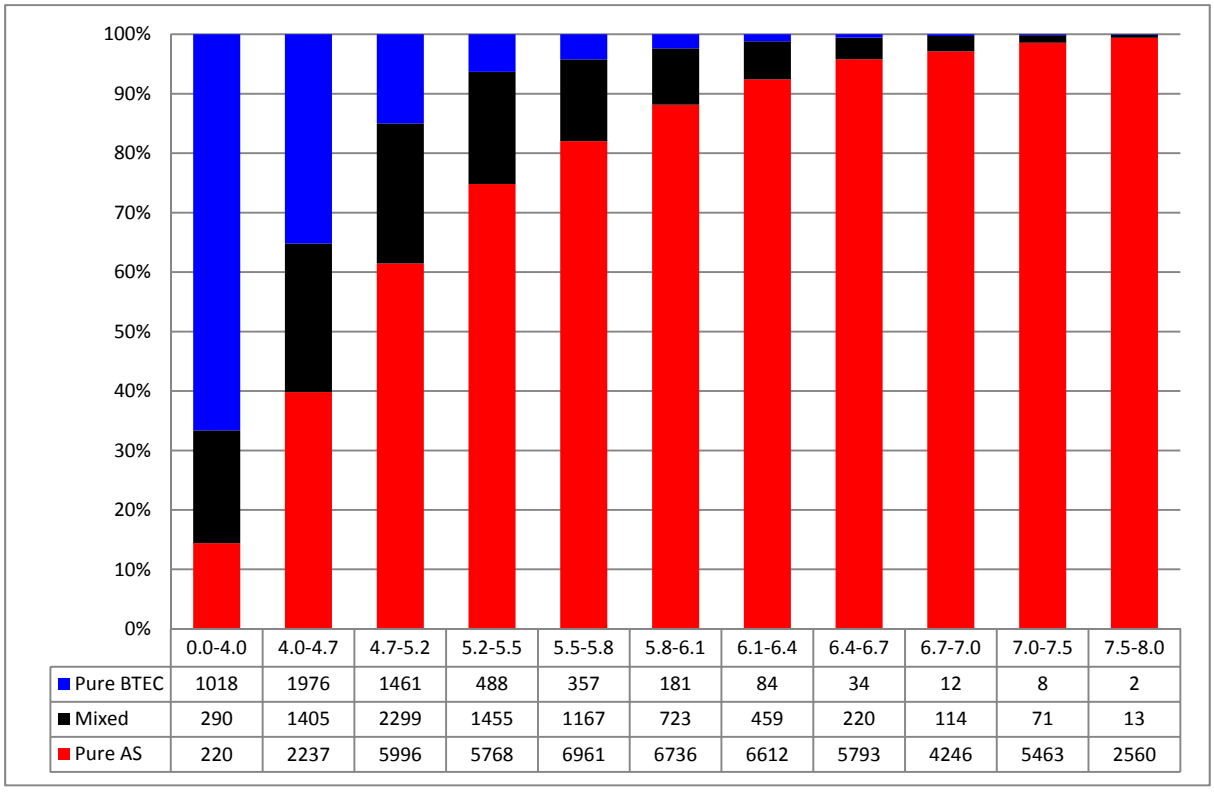


We can repeat this methodology for students on pure BTEC courses and Mixed A level / BTEC programmes. It should be noted this this is not as straightforward as one might expect, due to the

varying ways in which colleges organise and record BTEC programmes. Some students on a BTEC Extended Diploma course are recorded as on a two year extended diploma course (as one might expect). Others are recorded as doing a subsidiary diploma or 90 credit diploma in year one, and are then (if they survive to the second year of the course) recorded as doing a one year extended diploma in year two. One effect of this is that the benchmarks for BTEC courses produced by the Data Service for 'long' BTEC courses are largely worthless – those colleges running two year courses will tend to find that their success rates are lower than average; those running BTEC provision as two one year courses will see success rates higher than average. A parallel problem would be trying to compare the success rates of a college that records A level study as AS courses followed by A2 courses, with one that enrols students on a two year A level course on day one.

The effects of these curriculum pathways and recording strategies for this analysis is that identifying those students who started a full or mixed BTEC programme in 2011-12 is problematic. Our solution is to combine data for those students starting two year BTEC courses and 2011-12 with those starting one year BTEC courses in 2012-13, and then select those students who have at least three A levels worth of BTEC starts. This provides a parallel 'pure BTEC' data set to the AS level data-set we used in the A level analysis. Any students who attempted AS level qualifications in year one of their studies are also removed. We have also constructed a data-set of those students on mixed programmes. Inclusion in the data-set again rests on having at least three A levels worth of starts, but students must have BTEC qualifications and AS level qualifications to qualify for this category. No student is included in more than one of the three data-sets developed.

Figure 1.3: Qualification routes 2011-13 cohort



	0.0-4.0	4.0-4.7	4.7-5.2	5.2-5.5	5.5-5.8	5.8-6.1	6.1-6.4	6.4-6.7	6.7-7.0	7.0-7.5	7.5-8.0
Pure BTEC	1018	1976	1461	488	357	181	84	34	12	8	2
Mixed	290	1405	2299	1455	1167	723	459	220	114	71	13
Pure AS	220	2237	5996	5768	6961	6736	6612	5793	4246	5463	2560

Figure 1.3 examines how many students there are in each of the bands following each of the three curriculum routes we have defined. We see that at higher levels of prior attainment, virtually all students are following a pure AS/A level route. With average GCSE scores below 5.5, at least a

quarter of students are following BTEC or mixed programmes. In the lowest bands, BTEC and mixed programmes are followed by the majority of students.

Figure 1.4: Student level outcomes for 2011-13 BTEC cohort

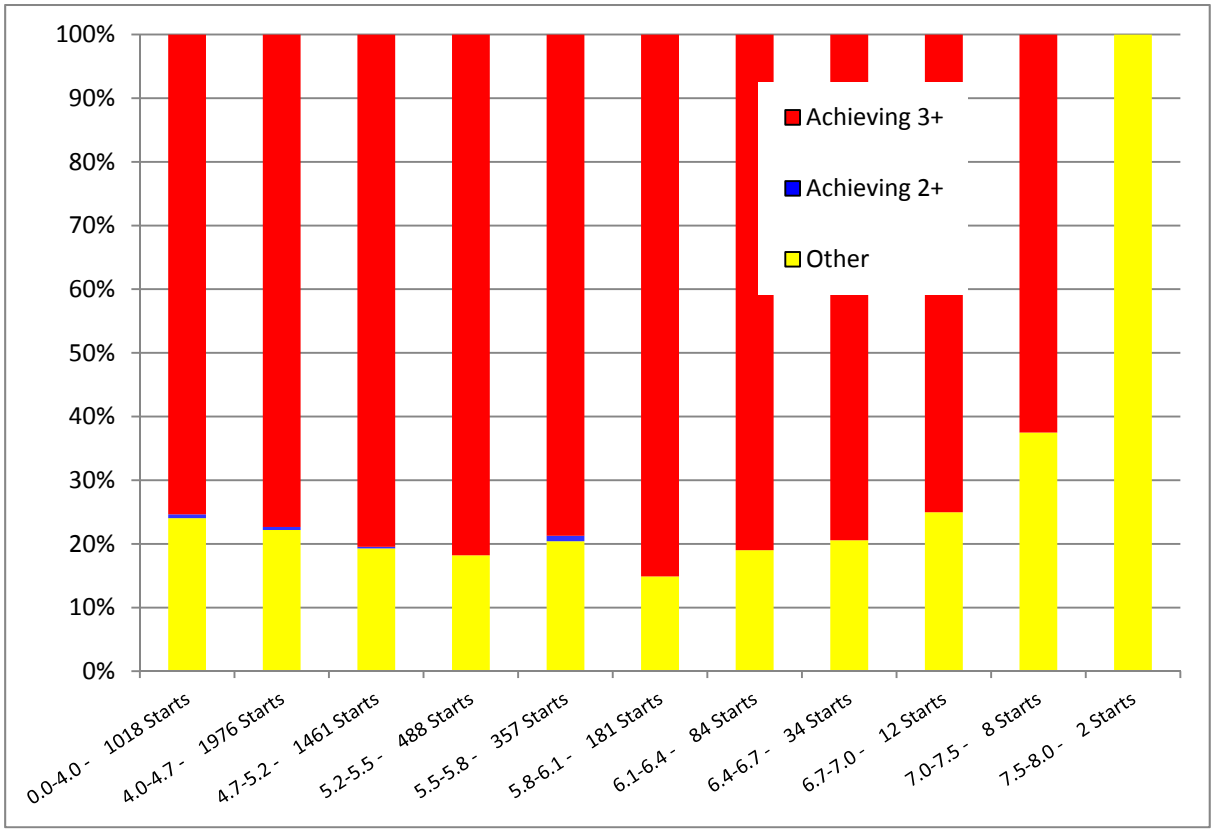


Figure 1.4 examines the outcomes for students on pure BTEC courses, the vast majority of whom are on extended diploma courses. One thing that is clear is that outcomes are nothing like as dependant on prior attainment (and, by extension, on 'ability') as they are at A level. If we look towards the right hand side of the graph where the vast majority of students are, we see that there is a slight increase in achieving equivalent to three A levels as prior attainment increases. In the 5.8 – 6.1 band, 85% of students meet this standard, in the 0.0 – 4.0 band it is 75%.

Figure 1.5: Student level outcomes for 2011-13 Mixed A level and BTEC cohort

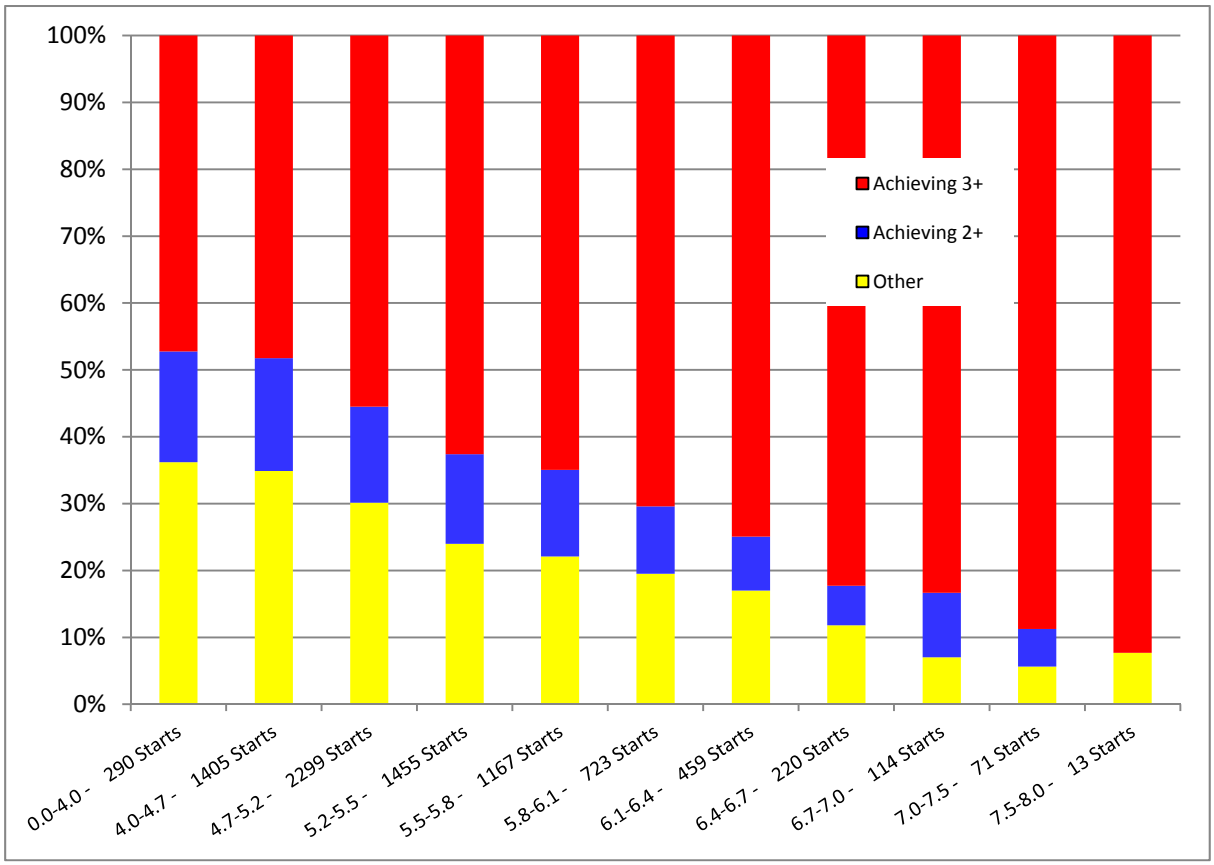
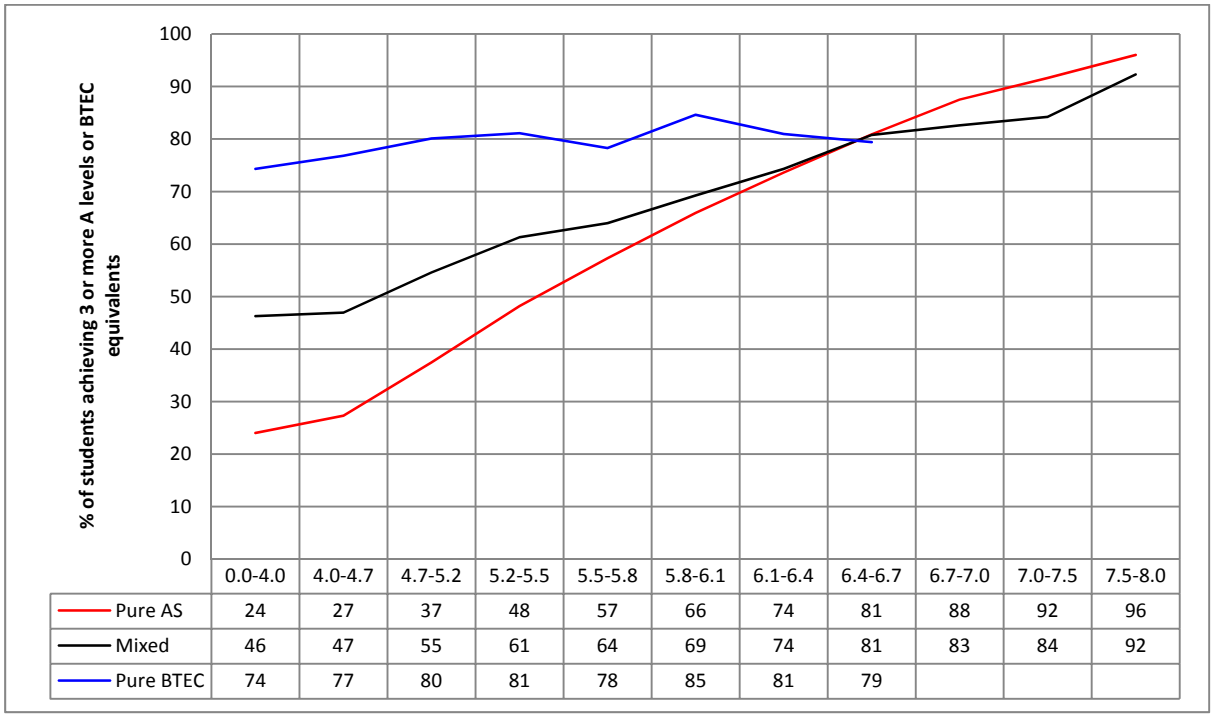


Figure 1.5 completes the picture by looking at those students on mixed programmes.

Figure 1.6: Student level outcomes for 2011-13: Pure A level, Pure BTEC, and Mixed programmes



	0.0-4.0	4.0-4.7	4.7-5.2	5.2-5.5	5.5-5.8	5.8-6.1	6.1-6.4	6.4-6.7	6.7-7.0	7.0-7.5	7.5-8.0
Pure AS	24	27	37	48	57	66	74	81	88	92	96
Mixed	46	47	55	61	64	69	74	81	83	84	92
Pure BTEC	74	77	80	81	78	85	81	79			

Figure 1.6 compares the outcomes for students on the three routes examined in terms of achieving 3 or more A levels worth of qualifications. There are a few reasons why we should be cautious about

the data. Concerns about categorisation were explored earlier, and it may be that students on the mixed route did not necessarily start off on a mixed route, but started one year BTEC qualifications after failing some of their AS level qualifications. The effect on the data-set could be to slightly depress the performance of the pure AS level cohort. Nevertheless, it is not likely that issues of categorisation and late BTEC uptake would explain the whole of the contrasting performance on the three routes. At lower levels of prior attainment (GCSE scores below 5.2 in particular), it is clear that the majority of students that start pure AS level programmes do not successfully achieve three A levels within two years. By contrast, the vast majority of those that start a two year BTEC course are successful.

Looking at the band for students with average GCSE scores from 4.0 -4.7 we find that just a quarter of those starting AS level go on to achieve 3 A levels, around half of those on mixed programmes achieve the equivalent of three A levels, and around three quarters of those on pure BTEC programmes achieve the equivalent of three A levels. Any colleges guiding significant numbers of students from this band on to AS level programmes has some serious questions to ask itself.

Section Two: Monitoring Equality and Diversity

The analysis of performance of different equality and diversity groups is problematic. Principally, the issue is that there is very little national data available, which makes it very difficult to ascertain whether a college is doing a good job for its students. What data there is takes no account of the prior attainment of students, which is a vital element for consideration given that performance at GCSE varies significantly by ethnicity and gender and that students with learning difficulties and disabilities are more likely to have complicated educational histories (and thereby lower GCSE profiles) than other students.

The 2012 Common Inspection Framework places significant priority on the narrowing of achievement gaps. The absence of any reliable picture of what gaps there are nationally makes this a somewhat curious demand.

The analysis presented here offers a solution to the problem. In essence, the national data-set for sixth form colleges has been used to establish how well each category of students performs once subject difficulty and prior attainment is taken into account. Once this background has been established, performance in individual colleges can be compared to this national picture.

An example might make the issue and the solution adopted clearer. One of the disability categories comprises those students with a mental health difficulty. It might be expected that students drawn from this group might be less likely than other students to complete their courses and to achieve the qualifications they take. Currently we have no idea how much less likely they are. Without a sense of what happens nationally it would be very easy for a college to dismiss poor performance in this group, by simply assuming that all students with mental health difficulties struggle to complete courses.

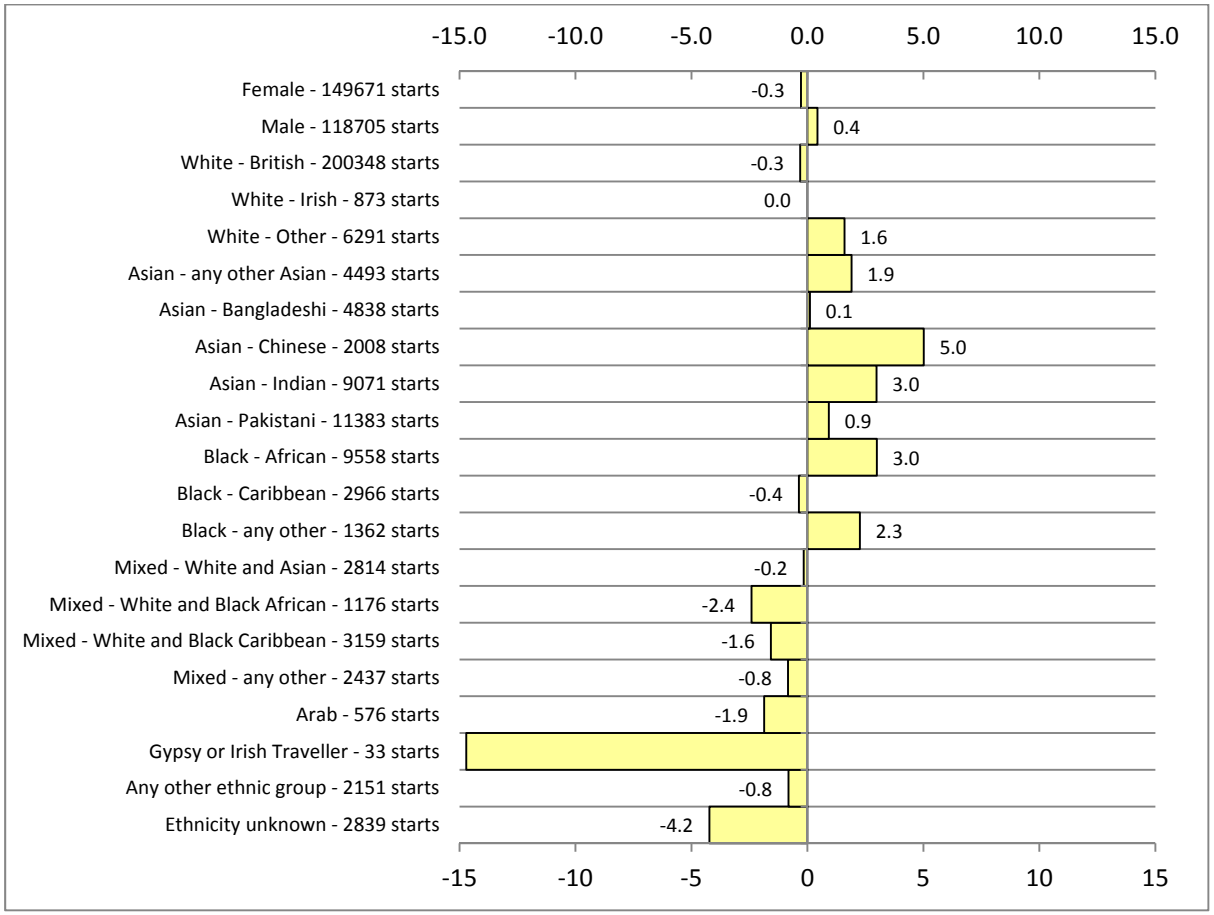
The methodology we use in analysing the performance of students that fall into the 'Mental Health Difficulty' category treats all students in the group across all the colleges as if they were from a single college. We look at the prior attainment profiles of the individual learners concerned, and the subjects that they follow in order to establish 'expected' levels of performance. This is then compared to actual levels of performance to establish whether the category of students concerned performs as well as 'all' students with similar levels of prior attainment. Using this we can be definite about how well a group performs nationally, and be clear about whether a particular college is following the national pattern.

We repeat this process for gender, ethnicity, disability, learning difficulty, income quartile and GCSE band. The analysis we present is for success rates, but it would be equally possible to repeat the analysis using retention, high grades rates, or QCA points per subject.

AS level

Gender and ethnicity

Figure 2.1: success rate performance by gender and ethnicity: AS level



Each of the bars in **Figure 2.1** represents the success rate performance of a particular equality and diversity group. The descriptor for each bar notes the number of AS level courses started by the students in the category in 2012-13, and the bar represents how well the group is performing compared to national performance by similarly qualified students doing similar subjects.

- If a bar extends to the right of the zero line it suggests that the group performs better than would be expected given the prior attainment profile of the students in the group and the subjects concerned.
- If a bar extends to the left of the zero line it suggests that the group performs less well than would be expected given the prior attainment profile of the students in the group and the subjects concerned.
- If a bar does not extend either way from the zero line, it suggests that performance is in line with what would be expected.
- The bars report the difference between expected and actual success rates. A score of 2.0 suggests that the success rate is 2.0% above what would be expected of similarly qualified students

The first two bars represent gender. We see that female students started, 149,671 AS level courses. The score of -0.3 suggests that the success rate for these students was almost exactly what would be

expected. Male students started 118,705 AS level courses. The success rate for males was 0.4% above expectation. What this shows is that when we adjust for prior attainment and subject choice there is very little difference between the performance of male and female students. The gap between male and female students is 0.7% (in favour of male students), suggesting that in sixth form colleges there is a slight narrowing of the gender gap that opens in 5-16 provision.

The need for the adjustment for prior attainment comes into even sharper relief if we return to the raw analysis of success rates by gender.

Figure 2.2: success rate performance by gender: AS level

	Starts	% of cohort	Average GCSE score	Actual Success Rate (%)	Expected Success Rate (%)	Actual - expected
Female	149,671	56	6.07	84.4	84.7	-0.3
Male	118,705	44	5.90	79.6	79.2	+0.4

Figure 2.2 reveals some interesting features of the data regarding gender and performance at AS level. We see that male students are under-represented in the AS level cohort. There are 27% more female students than there are male students – equal to a missing 30,966 male enrolments and in the region of 7,700 missing male students. Male underperformance at GCSE is also evident in the average GCSE scores. The male score of 5.9 suggests that the average male student who goes on to do AS level at a sixth form college has nine grade 'B's and one grade' C' at GCSE, where the average female student is touching one grade 'A' and nine grade 'B's.

When we look at raw performance, the success rate for female students (84.4%) is well ahead of that for male students (79.6%). At first sight we have evidence of further male underperformance, and for Ofsted, a gap that needs to be closed. However, when we adjust our expected level of success according to the prior attainment profile of the students concerned a rather different picture emerges. We see that both male and female students are performing close to what would be expected of similarly qualified students nationally, but the male students are actually performing better than female students. If there is a gender gap, it is female students that need to improve.

Figure 2.1 also examines performance by ethnic group once prior attainment has been taken into account. We find that all groups of Asian students have higher success rates than would be predicted on the basis of GCSE scores. Black - African and Black – other perform better than would be expected, but Black – Caribbean students are performing fractionally worse. The only group that sees consistent underperformance is students with a mixed ethnic heritage. We should discount the figures for Gypsy and Irish Travellers, as there are fewer than ten students in the group, with only 33 course enrolments.

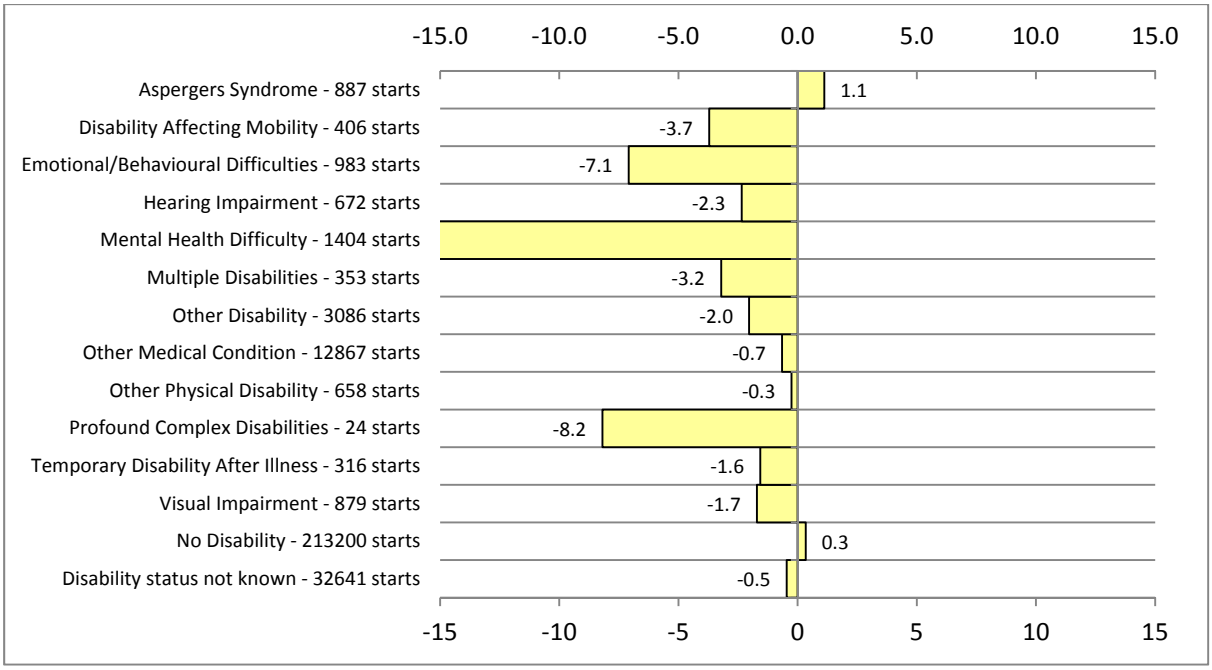
To attempt an equality and diversity analysis without an awareness of the patterns evidence in **Figure 2.1** is unsatisfactory. It can lead to inappropriate judgements, and actions to address non-existent problems. As we explain below, this year's six dimensions project will include an analysis of individual college performance for each equality and diversity group, set against national patterns. There is an important point to note here. The aim of such an analysis is to produce a fair analysis which identifies where there are gaps in performance, and helps the user to understand whether the gaps at their college are typical of the patterns found nationally. It is important to note that the

intention here is not to explain away underperformance by saying it happens everywhere, but to identify whether what you are looking at is a common problem.

Disability and Learning Difficulty

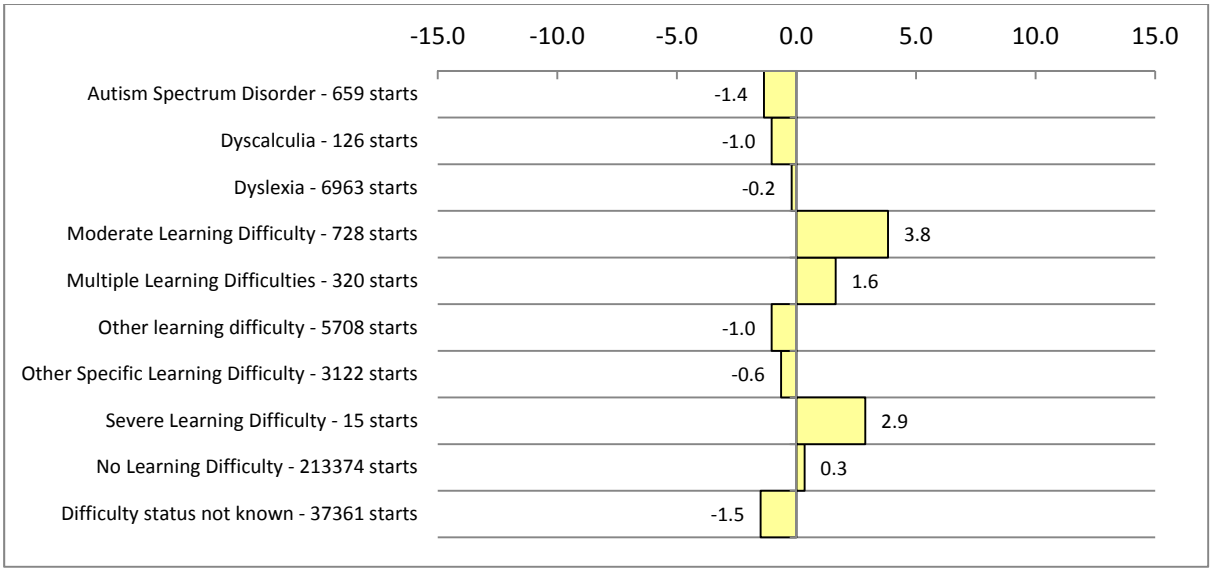
This form of analysis can be extended to looking at disability and learning difficulty. It is perhaps here that the 'is it our problem or part of a national problem' approach works particularly well, and allows colleges to look at groups of students in a new and intelligent way.

Figure 2.3: success rate performance by disability category: AS level



We find that it is students with mental health difficulties and emotional/behavioural difficulties that are most likely to underperform. We should, perhaps, not be too surprised by this.

Figure 2.4: success rate performance by learning difficulty: AS level



None of the categories of learning difficulty are performing at a level that would cause concern, with no group more than 2.0% below expectation. There is a significant issue of categorisation here, as

the group used really depends on the type of tests that have been used. Many students will have been identified during their sixth form studies and are likely to have had a general test for learning difficulty, rather than the relatively more expensive test for (for example) dyslexia.

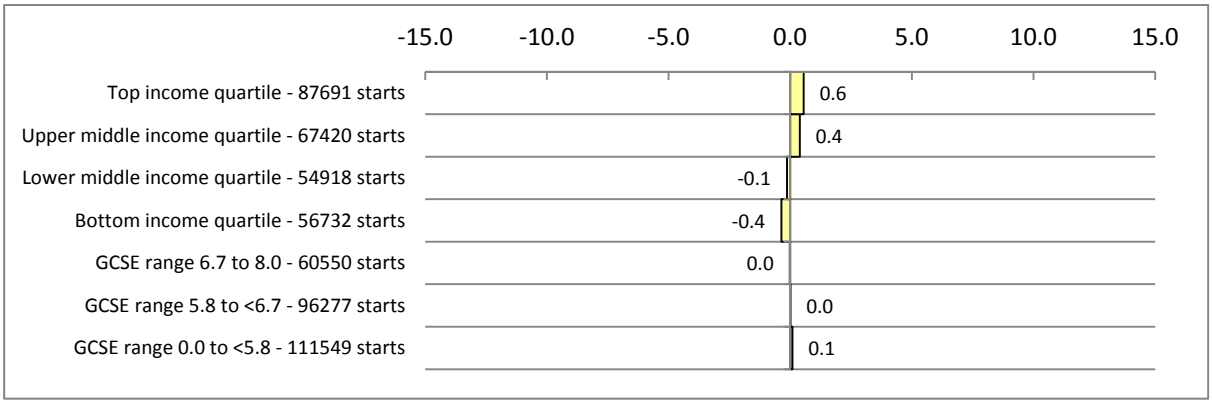
Income quartile and GCSE band

The final data we present for AS level looks at income quartile and (simply for completeness) at GCSE band.

Income deprivation has been calculated by the IDACI (Income Deprivation Affecting Children Indicator) methodology. This looks at the level of deprivation in the postode area that a student resides in, rather than the specific data relating to the household a student lives in. This, therefore is a measure of community deprivation, and arguably a much more important factor than individual household income. In the background analysis produced by the government postcodes are matched to one of 38,000 different 'areas'.

In the analysis postcodes have been allocated to income quartiles. The 'top income quartile' represents those students who live in the most affluent quarter of 'areas'.

Figure 2.5: success rate performance by income quartile and prior attainment band: AS level



What we see here is rather interesting, potentially somewhat controversial and worth exploring in a little detail.

Figure 2.6

	Starts	% of cohort	Average GCSE score	Actual Success Rate (%)	Expected Success Rate (%)	Actual - expected
Top Quartile	87,691	33	6.2	85.2	84.7	0.6
Upper Middle	67,420	25	6.0	83.4	83.0	0.4
Lower Middle	54,918	21	5.9	81.0	81.1	-0.1
Bottom Quartile	56,732	21	5.8	78.4	78.8	-0.4

Figure 2.6 shows us that the raw success rate for the most disadvantaged quartile (78.4%) is well below that for the most affluent quartile (84.7%). However, looking at the average GCSE score for

each group we see that there is a relationship between income quartile and incoming GCSE score. In the top quartile the average student has eight grade Bs and two grade As. In the bottom quartile it is eight grade Bs and two grade Cs – four grades below those in the top quartile. Once we take these profiles into account, the gap in success rate performance narrows from 6.8% to 1.0%.

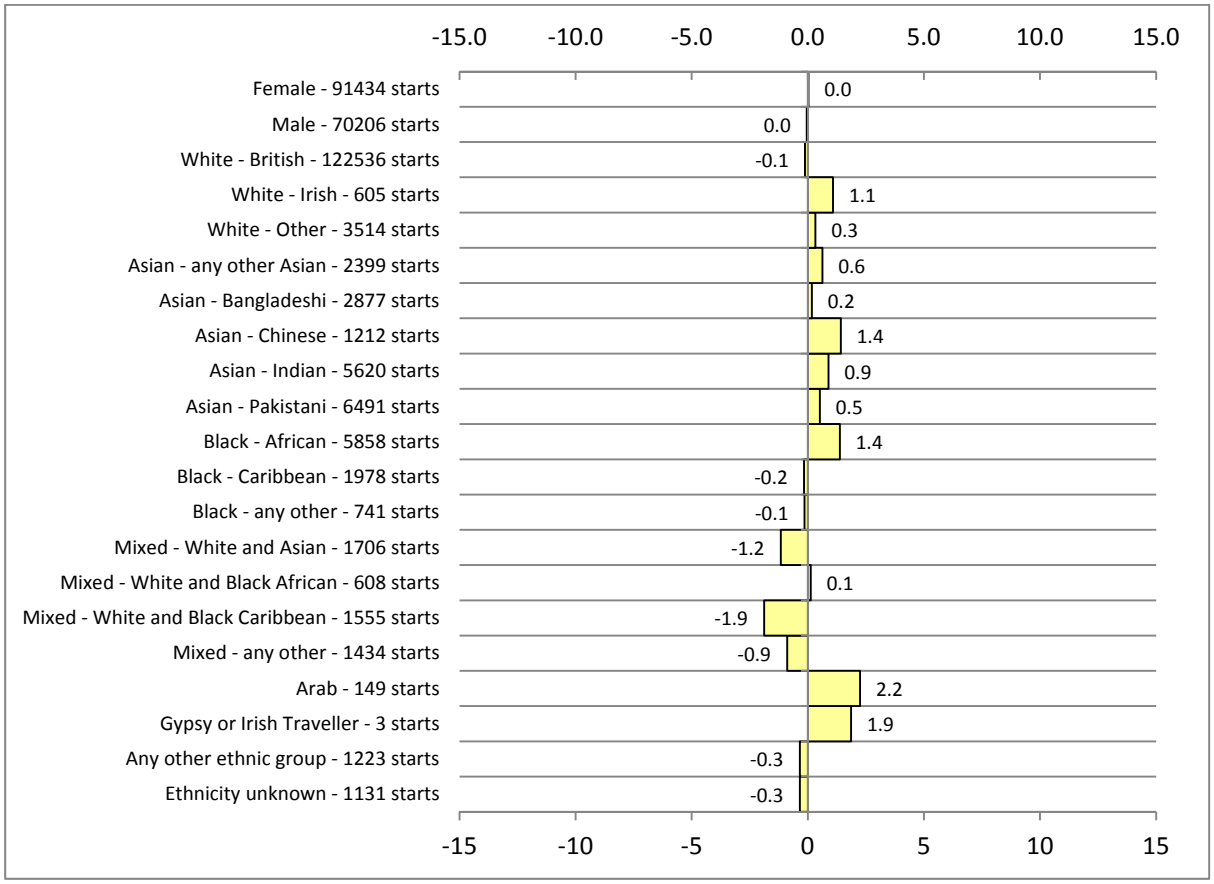
We see that once at sixth form college there is virtually no difference in the outcomes for different quartiles once prior attainment has been taken into account. One could read this as evidence that the enhanced funding for students from disadvantaged socio-economic backgrounds is a bit misguided. Alternatively one could take it as evidence that such funding clearly works as students in the bottom quartile perform just 1% below their most affluent peers once prior attainment has been taken into account.

A2 level

Figures 2.7 to 2.10 repeat the analysis for A2 level. Success rate performance at A2 level tends not to vary as much as AS level performance. This is largely because students are not counted as having 'started' until November of the upper sixth year.

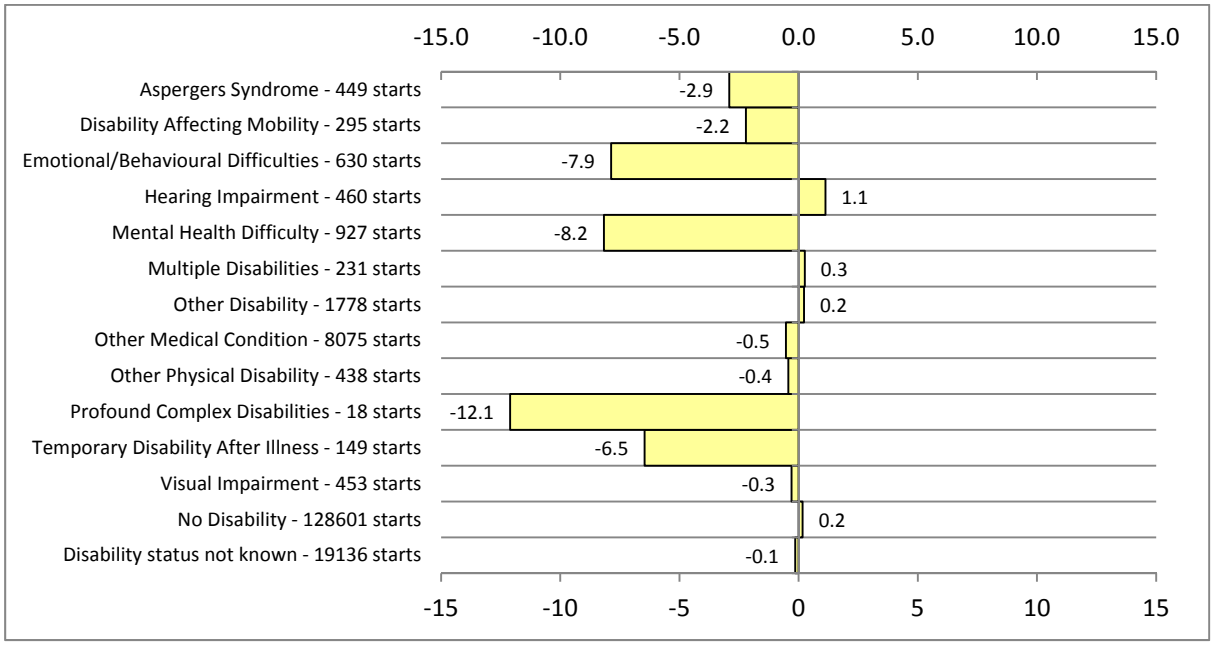
Gender and Ethnicity

Figure 2.7: success rate performance by gender and ethnicity: A2 level



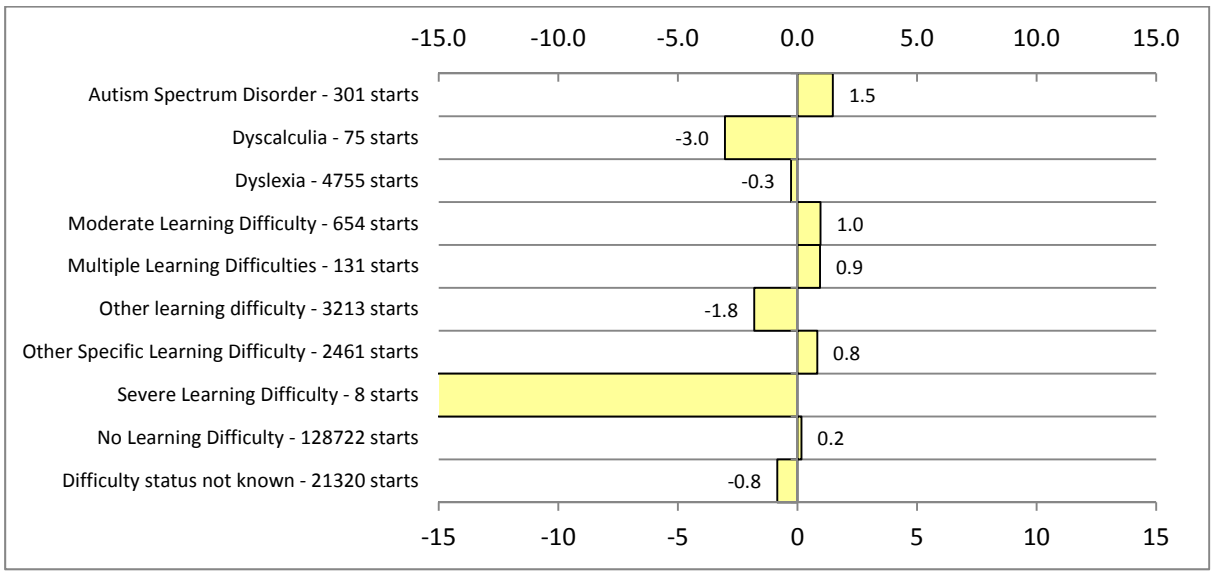
Disability

Figure 2.8: success rate performance by disability category: A2 level



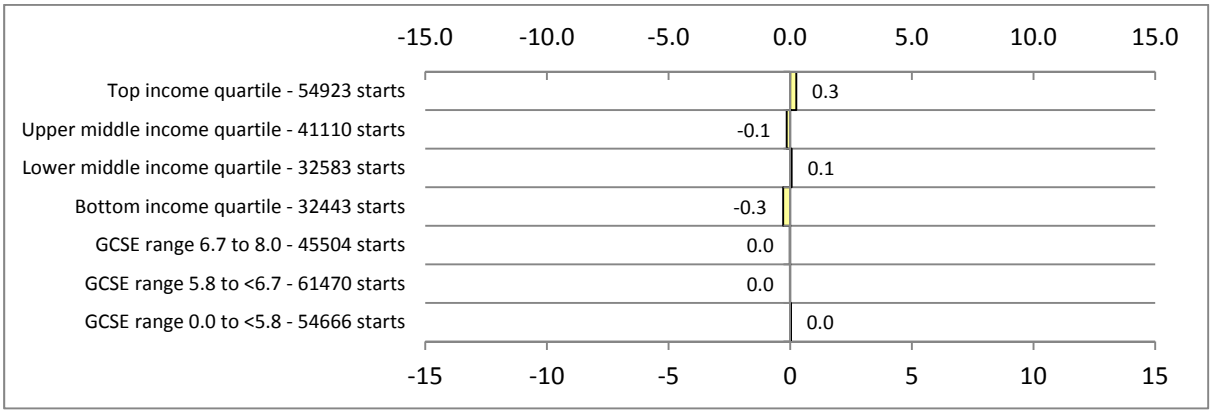
Learning Difficulty

Figure 2.9: success rate performance by learning difficulty: A2 level



Income quartile and prior attainment

Figure2.10: success rate performance by income quartile and prior attainment: A2 level



Armed with this data we can construct a much fairer model for investigating performance. There are, however some important factors to consider when conducting such and analysis.

- The methodology gives us a profile of typical variation. It should not be assumed that this variation is in any way 'acceptable' variation.

- We must be wary of over-interpretation of national patterns. National cohorts for these monitoring groups are often very small. Note the contrasting performance of Arab students at AS and A2. This cannot possibly be the result of Arab students being ill-suited to AS level study, but well suited to A level study. The AS cohort of Arab students has just 576 entries (suggesting around 150 students) and the A2 cohort just 149 (suggesting around 50 students)

- We must be wary of the over-interpretation of the performance of monitoring groups within individual institutions. Cohorts are often very small.

- The purpose of the analysis is to help us ask 'fair' questions, and give us clues regarding which groups are wary of further investigation, and possibly further action.

- The methodology can be used for success rates, attendance, retention, achievement, high grades and QCA points per student,

Participation Gaps

Before we leave the topic of equality and diversity, it is worth looking at the question of participation at AS level in sixth form colleges, and examine how it relates to levels of performance at key stage four. In our analysis of performance in sixth form colleges, we have found that once prior attainment and subjects choice are taken into account the gaps between the progress made by different groups are narrow. However we have seen that in the context of gender, it appears that male students are particularly under-represented. It is also the case that students are more likely to come from relatively affluent households, with 33% of AS level students drawn from the top income quartile.

Figure 2.11 explores the question of participation by gender and ethnicity at AS level by comparing the proportion of the sixteen year old population that each group represents with the proportion in

each group that achieve five or more GCSEs including Maths and English, and the proportion that start AS level courses.

Figure 2.11: Attainment and Key stage 4 and participation at AS level

Group	% of 16 year old population	% of the cohort of students achieving 5 or more GCSEs including Maths and English	% of AS cohort
Female	48.9	53.0	55.0
Male	51.1	47.0	45.0
White	81.1	80.8	77.6
Mixed	3.6	3.6	3.6
Asian	8.0	8.5	10.9
Black	4.7	4.3	5.2
Chinese	0.4	0.5	0.7
Any Other Ethnic Group	1.2	1.2	2.0

The first row of **Figure 2.11** looks at female students. We find that in the Year 11 cohort as a whole, 48.9% of the school population is female, but female students make up 53% of the students who pass five or more GCSEs at grade C or higher including Maths and English. We find that this over-representation is furthered when we look at the gender balance of the AS cohort in sixth form colleges. Conversely, if the male student sixth form college population simply mirrored performance at GCSE we would expect males to make up 47% of students. In fact they make up 45% of students. There is an interesting and perhaps important question here as to why male students are less likely to start AS programmes than female students.

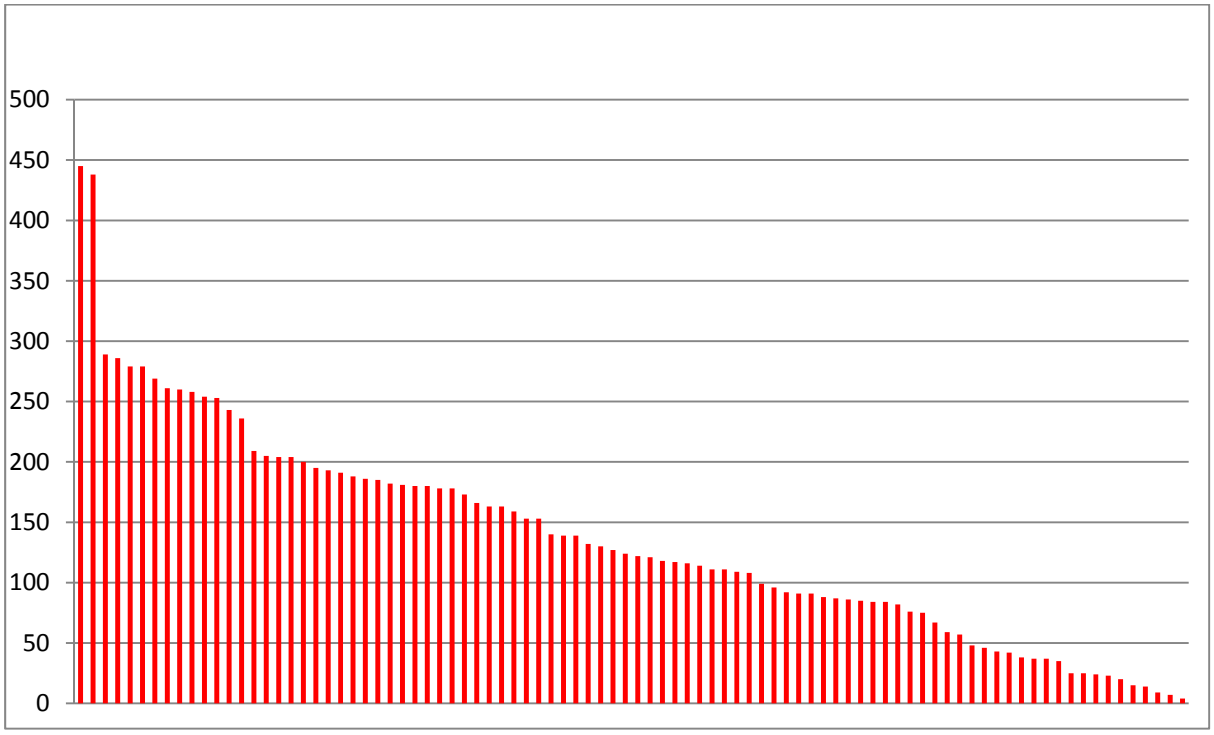
With regards to ethnicity, we find that ethnic minority students are overrepresented in sixth form colleges. Student of a minority ethnic heritage make up 18.9% of the school population in year 11, 19.2% of students passing GCSEs and 22.4% of AS level students.

Section Three: The truth about eighteen year old students in sixth form colleges

The decision to reduce funding for eighteen year olds was made suddenly, without consultation and without any evidence of a clear rationale or a clear vision of how individual institutions would be affected by this change. The analysis we present here seeks to look at the impact of the funding cut across sixth form colleges and to develop an evidence base regarding the characteristics of eighteen year old students, how they became eighteen year old students, the courses they are doing, and how successful they are.

In 2012-13, there were 12,388 eighteen year old students in sixth form colleges, equating to a funding cut of £8,671,600 for the sector, or an average cut per college of £96,351. **Figure 3.1** looks at how eighteen year old students are distributed across the sector.

Figure 3.1: Number of eighteen year old students by sixth form college 2012-13



In our graph, each red bar represents a sixth form college – the height of the bar represents the number of eighteen year olds at a particular institution. What is striking is how wildly the number of eighteen year old students varies from institution to institution. In the college with the fewest eighteen year olds (and the one affected least by the funding cut) there are just four students in this group. In the college most severely affected there are over 400. Some colleges, therefore, see a cut over 100 times as large as others. Even if one accepted the contention that there needed to be further cuts to the 16-18 budget, it is difficult to believe that the cut for eighteen year olds was the outcome of a process of genuine modelling of various cutting methodologies and that this was found to be the most appropriate way to do it. To develop a funding cutting methodology that takes a hundred times as much funding away from one college as it does from another is unhelpful, unfair and ultimately destabilising for a significant number of institutions.

Figure 3.2 takes this further, and presents a percentile analysis of the number of eighteen year olds and the scale of the funding cuts.

Figure 3.2: Percentile analysis of number of eighteen year old students in sixth form colleges

Percentile	Number of Students	Total Funding Cut
100	445	311500
90	258	180600
80	200	140000
70	180	126000
60	153	107100
50	122	85400
40	108	75600
30	85	59500
20	48	33600
10	25	17500
0	4	2800
All	12388	8671600

Figure 3.2 is based on a ranking exercise which sorts colleges according to how many eighteen year old students they had in 2012-13. The 50th percentile figure indicates that the typical college has 122 eighteen year old students, and faces a cut of £85,400. The ten per cent of colleges with the fewest eighteen year old students face cuts of under £17,500. Towards the top end of the graph we see that the 90th percentile figure is 258 students. With 93 sixth form colleges, this indicates that nine institutions will see cuts of £180,000 from this cut alone.

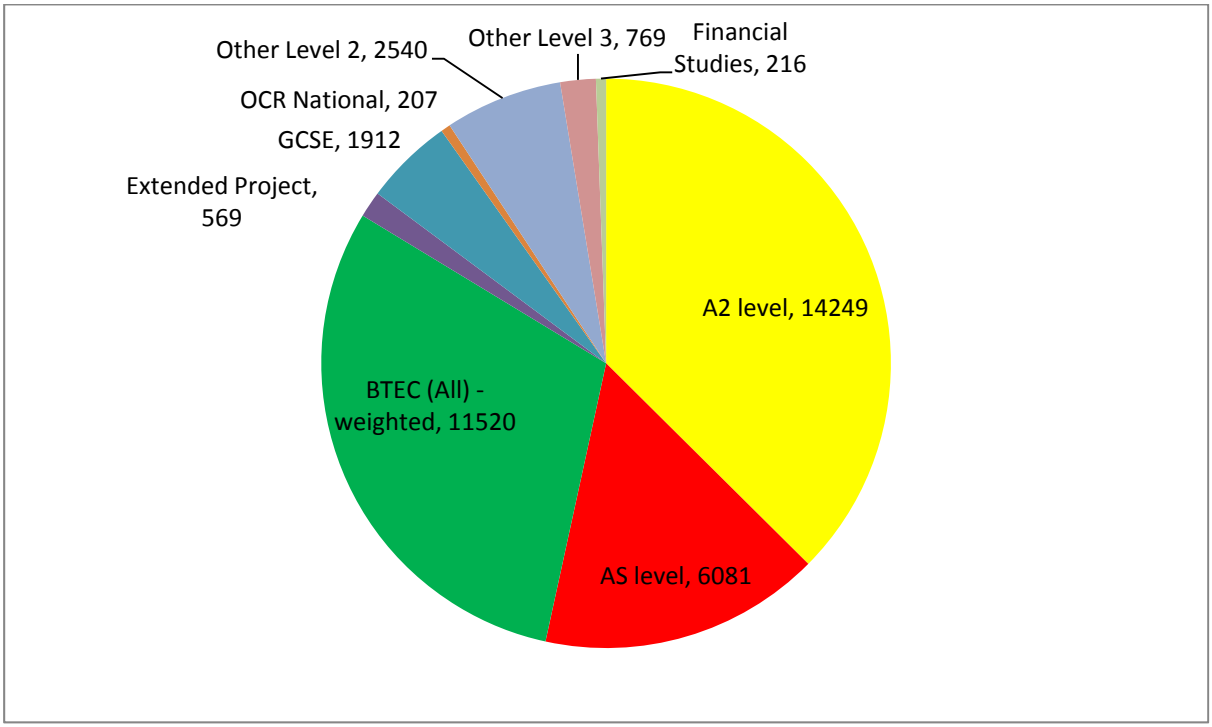
Figures 3.1 and 3.2 have established how the impact of the funding cut will affect certain colleges disproportionately, and established the remarkable variation in impact across the sector. But one argument advanced to justify the cuts is that the eighteen year olds have already benefitted from two years of pastoral support and so do not require the full range of services that a college would typically offer. This argument is based on a fundamental misunderstanding of what high quality pastoral support actually involves. It is an on-going process which will be subtly, and occasionally dramatically different for each student, regardless of their age. Pastoral support is not a fixed series of hurdles to be overcome followed by a gentle canter towards the finish line.

To shed some light on this discussion we need to provide exactly what has been missing from the Department for Education's announcements – we need to look at the characteristics of the eighteen year old students in sixth form colleges. We need to understand how they differ from typical sixth form college students. We need to understand how they became 'third-year' students. We need to understand how successful they are.

Figure 3.3 examines the enrolments by course type of the eighteen year old students in sixth form colleges. The BTEC section has been weighted to take account of the various course widths in the BTEC offer. Some early announcements from the Department seemed to suggest that the third-year students were overwhelmingly students re-sitting A2 level courses. If true, their arguments that these students need less support might have held water. It is true that students are doing more A2 level qualifications than anything else, but significantly less than half of the courses being studied are

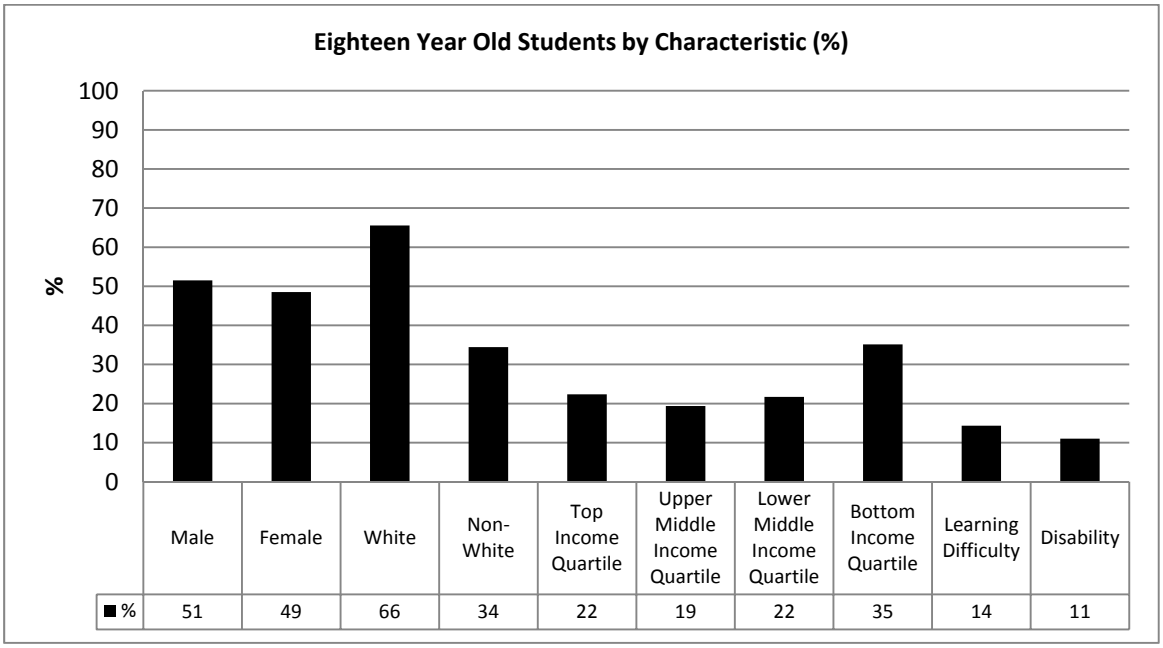
A2 level courses. There are almost as many students on BTEC courses, and significant numbers on AS levels, GCSEs and other courses. **Figure 3.3** conclusively demonstrates that the picture for eighteen year old students is far more complex than a matter of relatively independent students preparing to re-sit A levels.

Figure 3.3: Enrolments in sixth form colleges 2012-13 by course type: eighteen year old students



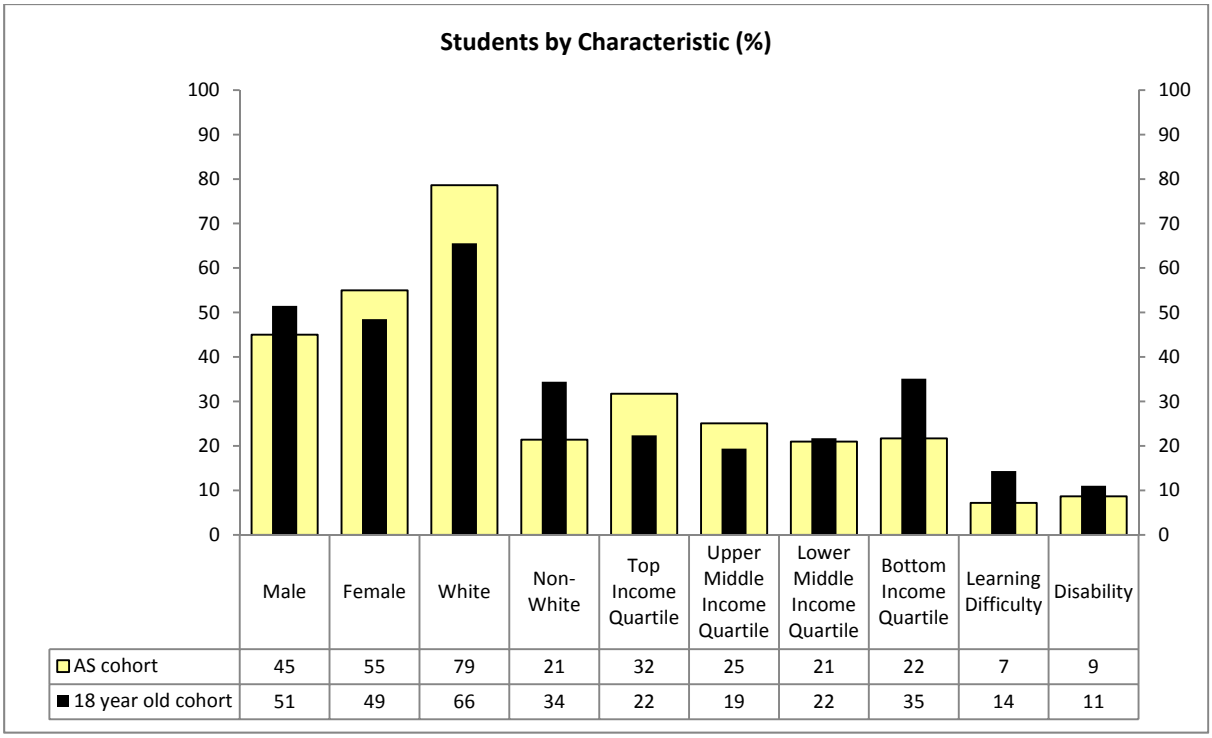
Having developed a sense of what these students do, it is worth considering who these students are. **Figure 3.4** presents and equality and diversity category breakdown . In addition to an analysis of student characteristics by gender, ethnicity and learning difficulty and disability, a breakdown is given by income quartile.

Figure 3.4: Eighteen year old students by characteristic



The significance of this profile can be drawn out by comparing the profile of the eighteen year old students with the overall AS level cohort, which gives us a good indication of the 'standard' sixth form college intake. **Figure 3.5** does just this.

Figure 3.5: Eighteen year old students by characteristic: AS cohort and eighteen year old cohort compared



	Male	Female	White	Non-White	Top Income Quartile	Upper Middle Income Quartile	Lower Middle Income Quartile	Bottom Income Quartile	Learning Difficulty	Disability
AS cohort	45	55	79	21	32	25	21	22	7	9
18 year old cohort	51	49	66	34	22	19	22	35	14	11

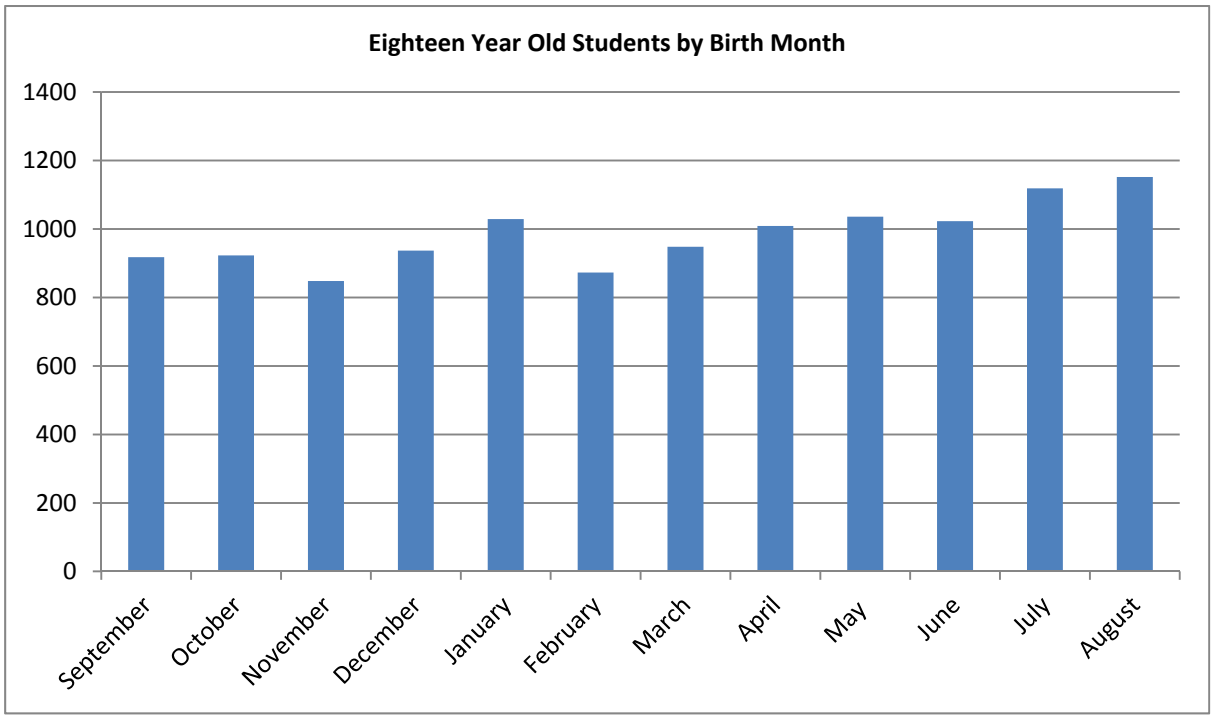
The pale yellow shaded background represents the profile of AS level students in sixth form colleges. The black bars represent the eighteen year old students. By contrasting these bars we can see which groups are under- and over-represented in the eighteen year old cohort. The first thing we see is that in the standard AS level cohort, female students significantly outnumber male students. By contrast, in the eighteen year old cohort, male students fractionally outnumber females. There is a certain irony here –we see one of Ofsted's 'gaps' being closed with those underrepresented at sixteen benefitting from a third year of study.

The ethnicity profile is interesting also. In the standard AS level cohort, 21% of students are from a minority ethnic heritage. The figure for eighteen year olds (34%) is far higher.

The analysis of income quartiles reveals that for the standard AS level cohort, students are most likely to be in the top income quartile. Touching a third (32%) of AS level students are drawn from the top income quartile. Just 22% are drawn from the bottom quartile. The figures for the eighteen year old students are reversed: 35% of students are drawn from the bottom income quartile, 19% from the top quartile.

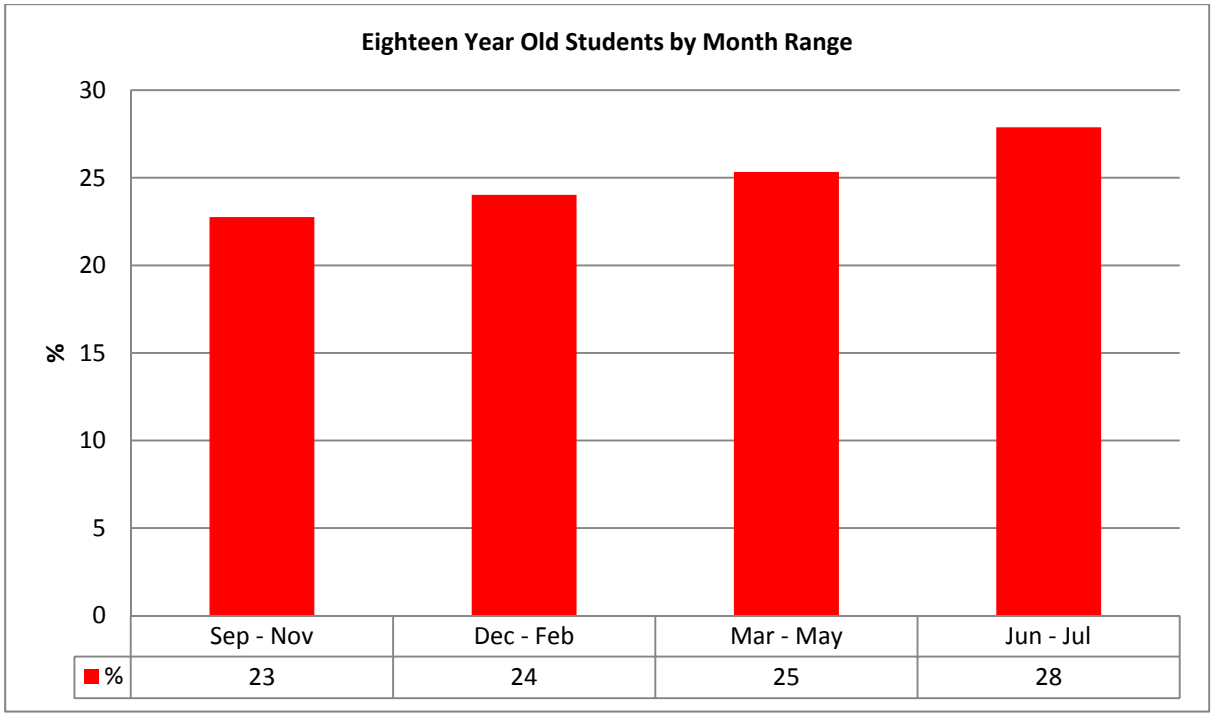
To conclude then, when compared to the standard sixth from college AS level cohort, eighteen year old students are far more likely to be male, far more likely to be from a minority ethnic group, far more likely to be drawn from the bottom income quartile, twice as likely to have a learning difficulty and more likely to have a disability.

Figure 3.6: Eighteen year old students by birth month



Figures 3.6 and 3.7 examine the birth month of the eighteen year old cohort. **Figure 3.6** breaks it down by month, and **Figure 3.7** divides the academic year into quarters. We find that eighteen year old students are disproportionately 'summer born'. In part, the sixth form colleges dealing with large numbers of eighteen year old students are addressing problems caused by the academic year which involves (for example) some students taking GCSEs when they are nearing seventeen, while others are still fifteen.

Figure 3.7 Eighteen year old students by month range



We can also explore the extent to which our eighteen year old cohort are in the third year at the same sixth form college.

Figure 3.8 Eighteen year old students by year of joining

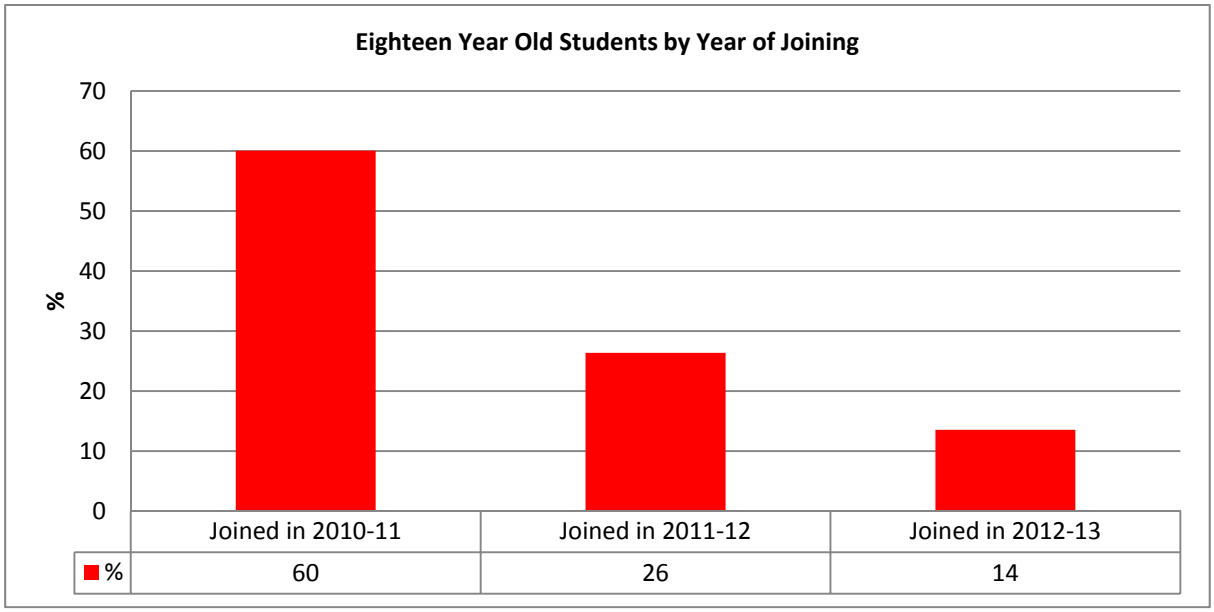


Figure 3.8 breaks down the eighteen year old students from 2012-13 by year of joining. We find that 60% joined at sixteen are in a third year at the same institution, 26% joined age seventeen, and the remaining 14% joined age eighteen. The picture that is emerging is that eighteen year old students are a complex group which defies easy categorisation. Even the third year students are not simple to summarise. Some will have done level 2 before progressing to a two year level 3 programme of A/AS levels, BTECs or equivalent. Others will have started AS levels, performed badly after year one and, in effect, restarted in year two and, age eighteen, nearing the end of A2. Others still will have done a two year A level programme. Others a blend of the above, with a few GCSE resit courses thrown in for good measure.

Figure 3.9: level 2 students from 2010-11

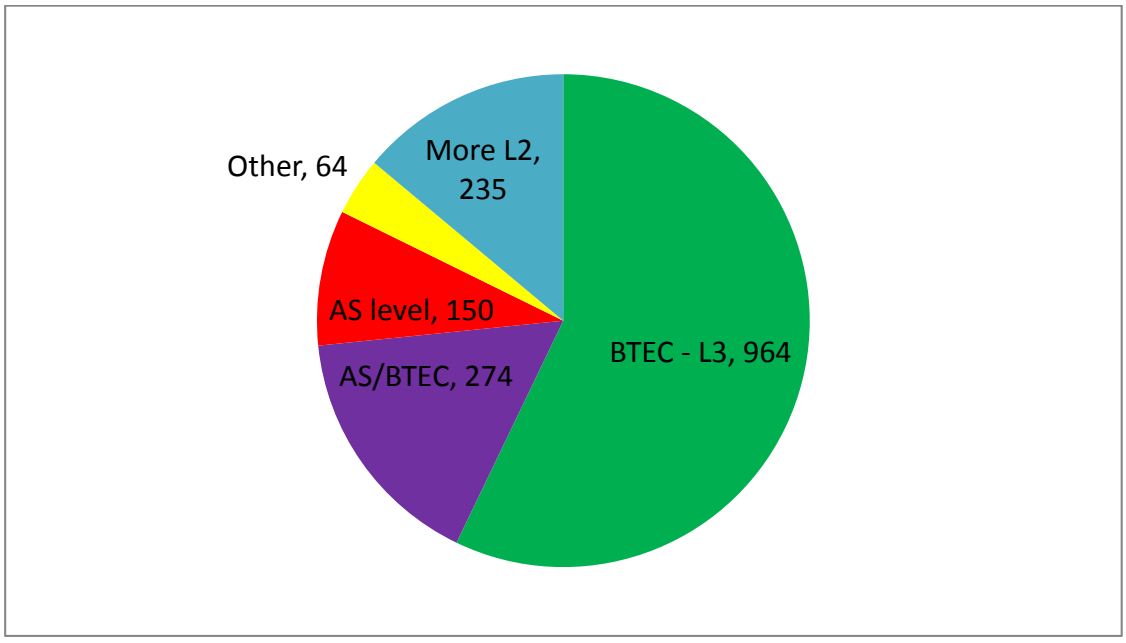


Figure 3.9 focuses on one particular segment of the three year cohort. It looks at those students that were doing level 2 vocational programmes in 2010-11 and looks at their programmes of study in 2011-12. We see that the majority of students progress to BTEC courses, around a quarter do an AS or AS/BTEC blend, and around 10% continue to pursue level two qualifications.

The point about the complexity of sixth form college provision is an important one. While some sixth from colleges do follow a relatively narrow A/AS level curriculum, there are many sixth form colleges that are actually more tertiary than the tertiary colleges. What goes on in sixth form colleges is simply not defined by age in the way that the curriculum is from key stage one to four.

Figure 3.10: AS Students from 2010-11 – what doing the following year

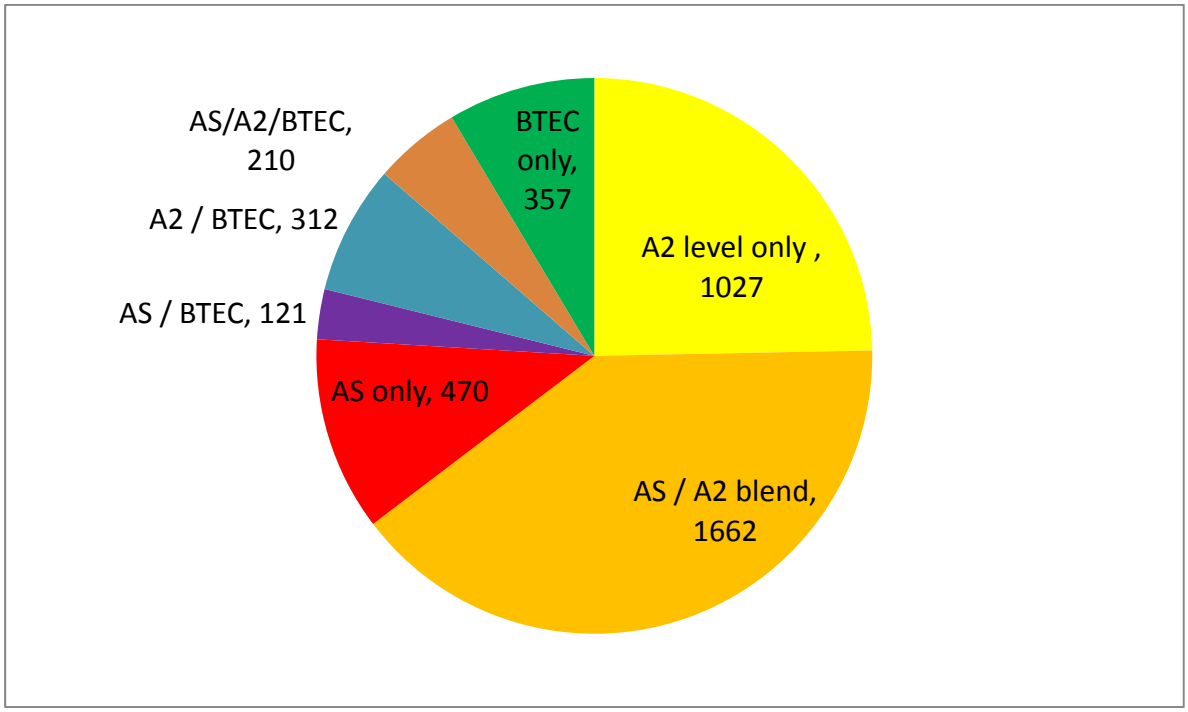


Figure 3.10 examines a different segment of the three year students – those that started an AS level programme in 2010-11, and looks at what they were doing in 2011-12 – the second year of their three year programme. We see that only 10% (470 students) were on a pure AS level programme. Forty per cent had had mixed experienced in their initial AS choices and were pursuing a blend of AS and A2 courses. A quarter were pursuing A2 courses only (suggesting that these students subsequently performed less well than they had expected in 2011-12 and returned for a third year to re-sit.) The remaining quarter had switched to BTEC courses or a blend of AS, AS and BTEC.

Before we leave the topic of eighteen year old students it would be remiss not to consider how successful these students are in success rate terms. **Figure 3.11** presents a success rate analysis for AS level, A2 level and other level 3 courses.

Figure 3.11: outcomes for eighteen year old students 2012-13

	Starts	Success %	Success (SFC) %	Gap
AS level	5668	83.4	82.0	+1.4 %
A2 level	14027	92.0	95.4	-3.4 %
Other L3	6352	85.0	83.1	+1.9%

The eighteen year old students actually outperform the national average success rate at AS level. It should be noted that these students have an average GCSE score of just 5.4, well below the national average so their performance is remarkably good. At A2 level, the success rate is a little below expectation, but this should be placed in the context of a relatively low average GCSE score (5.6 against 6.0 for all students).

Section Four: Curriculum breadth analysis

The publication of subject level performance by institution as part of the Department for Education's achievement and attainment tables allows us to explore some interesting lines of comparison. The analysis we present here looks at the question of curriculum range. It looks at the number of subjects students did at A level (not AS level) in 2010. We know intuitively that sixth form colleges have a broader curriculum range than other institutions, but to data we do not have an accurate picture of how much wider the A level offer is. The analysis presented here is limited to A level, but it would be in interesting exercise to explore other level 3 courses, and indeed level two courses. Cohorts of fewer than five students have been excluded from the analysis.

Figure 4.1 A level subjects per institution by institution type

Institution type	Number of Institutions	A level subjects	A level subjects per institution
GFE	119	1797	15
Independent	513	6216	12
Miscellaneous	7	63	9
School	1807	26532	15
SFC	92	3299	36
Tertiary	31	775	25

Figure 4.1 gives us a headline analysis of the range of A level subjects in each institution type. We see that there are 1807 schools offering A levels. Between them they offer 26,532 A level courses: an average of fifteen each. By contrast, the 92 sixth form colleges in the analysis offer, on average 36 A level subjects each. The headline figure does not give us a sense of whether all school sixth forms offer 15 A levels, or whether there is variation within this sector.

Figure 4.2 A level subjects per school: percentile analysis

Percentile	Number of A level Subjects
90th	**24**
75th	**20**
50th	**15**
25th	**10**
10th	**5**

Figure 4.2 presents a percentile analysis of the number of A level subjects offered in maintained schools. The 90th percentile figure is 24, indicating that 10% of schools offer 24 or more subjects. At the 25th percentile just 10 subjects are offered: a full quarter of schools offer ten or fewer A levels. The 10th percentile figure is even more concerning, suggesting that one in ten school sixth forms offers five or fewer subjects. We are perhaps being a little cruel to schools here, as there will be partnership and consortium arrangements which allow students to access a wider curriculum.

Figure 4.3 explores this on a subject by subject basis. It looks at a selection of courses, and looks at the percentage of sixth form colleges that offer the subject, and then the percentage of school sixth forms that offer the subject.

Figure 4.3: proportion of students offering A level subjects: sixth form colleges and maintained schools compared

Subject	Number of SFCs offering subject	% of SFCs offering subject	Number of schools offering subject	% of schools offering subject
Biology	92	100.0	1450	80.2
Business Studies	89	96.7	837	46.3
Chemistry	90	97.8	1313	72.7
Classical Civilisation	42	45.7	108	6.0
Computer Studies/Computing	64	69.6	133	7.4
Economics	82	89.1	628	34.8
English Literature	91	98.9	1471	81.4
Film Studies	81	88.0	220	12.2
French	74	80.4	399	22.1
General Studies	39	42.4	409	22.6
Geography	85	92.4	1133	62.7
German	44	47.8	131	7.2
Government & Politics	86	93.5	518	28.7
Health & Social Care	79	85.9	423	23.4
History	91	98.9	1452	80.4
Italian	9	9.8	8	0.4
Law	86	93.5	292	16.2
Logic/ Philosophy	52	56.5	69	3.8
Mathematics	92	100.0	1552	85.9
Mathematics (Further)	80	87.0	518	28.7
Media Studies	87	94.6	889	49.2
Music	56	60.9	176	9.7
Physics	88	95.7	1138	63.0
Psychology	92	100.0	1457	80.6
Religious Studies	71	77.2	892	49.4
Sociology	91	98.9	1022	56.6
Spanish	68	73.9	240	13.3

There are some subjects that are rarely offered by schools, and some of these we should not be too surprised about. For example, 88% of sixth form colleges offer film studies, but just 12% of schools do. Half the schools offer media studies, so this is probably a 'nice to have' rather than an essential element of the sixth form curriculum. But there are other subjects that are at the heart of the government's agenda, particularly the facilitating ones, that are not available at many school sixth forms. Remember that a cut-off of five for cohort size has been used for inclusion in the analysis. We find that less than a third (28.7%) of school sixth forms have more than four students studying Further Maths, a full quarter do not have four or more students studying chemistry, and a full third do not have a cohort of five or more physics students. Modern foreign languages and music A level are rarely taught.

A policy direction that supports the proliferation of small school sixth forms seems, again, fundamentally misguided.

Section Five: Building a value added system for six (or eight) dimensions of performance

The crucial difference between the value added measures presented in the six dimensions report and all hitherto existing models of value added is that this is value added based on those that start courses, rather than those that complete courses. This analysis extends the value added approach to attendance rates, retention rates, achievement rates, success rates, the proportion of students gaining high grades and a suite of points per student measures.

In essence the measures all involve asking the question of whether the college performance is good, for that profile of students enrolled on that individual qualification. Each analysis adjusts for prior attainment, and each subject is compared to performance in that individual subject nationally.

The eight dimensions of performance developed in this report are as follows:

a. **Attendance** – of those that complete a course, is their attendance typical for the subject in question and the prior attainment profile of the students. Typically, students with relatively low levels of prior attainment attend fewer lessons than those with very high levels of prior attainment. The measure is limited to completed enrolments, due to the difficulty of weighting the attendance of those that left mid-year
b. **Retention** – of those that start the course, is the proportion of students completing the course typical for the subject in question and the prior attainment profile of the students.
c. **Achievement** – of those that complete the course, is the proportion of students that go on to pass the qualification typical for the subject in question and the prior attainment profile of the students.
d. **Success** – of those that start the course, is the proportion that go on to pass the qualification typical for the subject in question and the prior attainment profile of the students.
e. **High grades** – of those that start the course, is the proportion that go on to secure a high grade pass (defined as grades A*- B) typical for the subject in question and the prior attainment profile of the students.
f. **QCA points** –of those that start the course, is the number of QCA points gained per student typical for the subject in question and the prior attainment profile of the students.
g. **Points per starter (PPS) –** of those that start the course, is the number of QCA points gained per student typical for the subject in question and the prior attainment profile of the students.
h. **Points per completer (PPC) –** of those that finish the course is the number of QCA points gained per student typical for the subject in question and the prior attainment profile of the students.
i. **Points per achiever (PPA) –** of those that pass the qualification, is the number of QCA points gained per student typical for the subject in question and the prior attainment profile of the students.

The idea here is to enable colleges to explore different dimensions of performance calculated using a consistent methodology. For example, colleges will be able to look at whether success rates are at the levels that would be expected, and then examine whether it is a retention issue or an achievement issue. They will be able to see whether the cohort in question attended at typical levels. One particularly interesting measure is the 'high grades of starters' measure, which in effect calculates whether the proportion of students that end up with a chance in competitive university entrance is typical for the students you are dealing with – far more powerful than the traditional 'high grades' measure used by Ofsted that takes no notice of students that leave mid-course or the prior attainment profile of students.

The methodology followed in the project is simple in the sense that it avoids complicated statistical processes such as multilevel modelling or linear regression. The first step is to establish national levels of performance.

Step One: Create national benchmarks which are sensitive to prior attainment and subject

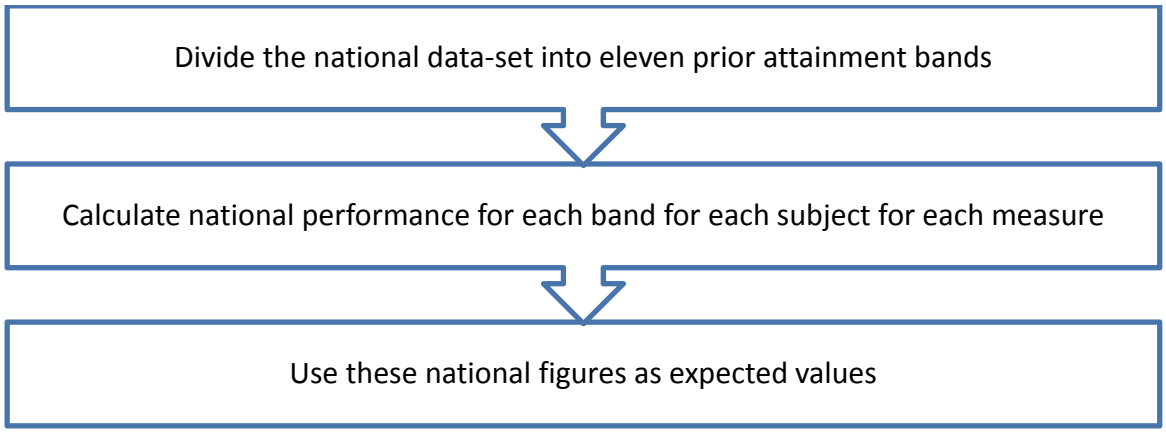


Figure 4.1 uses the example of success rates in A2 Biology to illustrate how the process works:

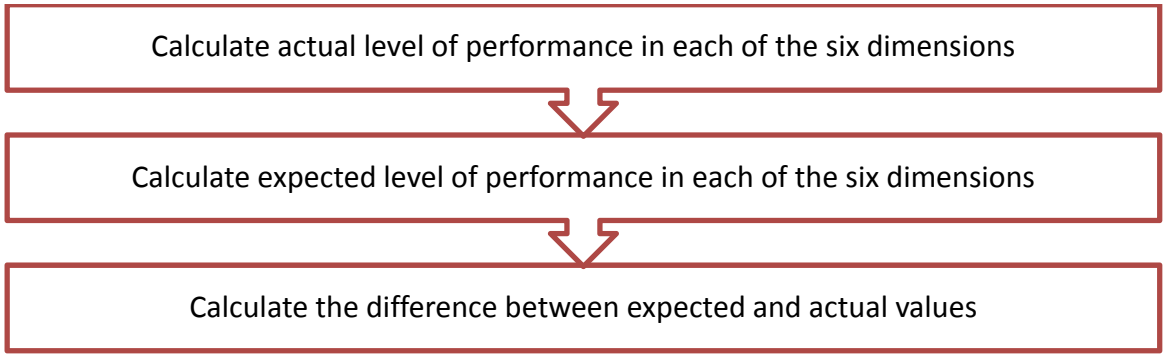
Figure 4.1: GCE A2 level Biology: Success rates by prior attainment band

GCSE band	Started Course	Achieved Qualification	Success Rate (%)	Expected value for use in model
7.5-8.0	1137	1133	99.6	0.996
7.0-7.5	2131	2113	99.2	0.992
6.7-7.0	1405	1383	98.4	0.984
6.4-6.7	1535	1477	96.2	0.962
6.1-6.4	1323	1245	94.1	0.941
5.8-6.1	960	859	89.5	0.895
5.5-5.8	594	520	87.5	0.875
5.2-5.5	264	224	84.8	0.848
4.7-5.2	145	121	83.4	0.834
4.0-4.7	28	23	82.1	0.821
0.0-4.0	4	3	75.0	0.750

Looking at the band for students with an average GCSE score from 7.5 – 8.0, we see that almost all (99.6%) of the students who started the course in this band successfully gained the qualification. In the band for students with an average GCSE score from 5.2 – 5.5 it is rather different, with 88.4% of students gaining the qualification. The column for 'expected value' converts these success rates into the multipliers used in the analysis. In essence, when we calculate an expected level of performance for an institution or a subject, we use these multipliers to calculate the totals.

The initial benchmarking process creates 88 benchmarks for each individual subject: some 11,088 benchmarks across the AS and A2 analysis. There are a small minority of subjects, largely modern foreign language subjects for native speakers, where the cohort size is too small to produce benchmarks. In these instances performance is compared to performance in all qualifications in the relevant qualification type. These national benchmarks enable us to calculate an expected level of performance for any group of students

Step Two: Run the data for each individual college



An example will make this clearer. A college has 55 students starting an A2 Biology course. **Figure 5.2** allocates these students to bands according to prior attainment. The number of students is multiplied by the 'expected value' for that band. These figures are then added together to calculate the total expected passes (B).

Figure 5.2: Calculating expected success rate for a cohort of A2 Biology students

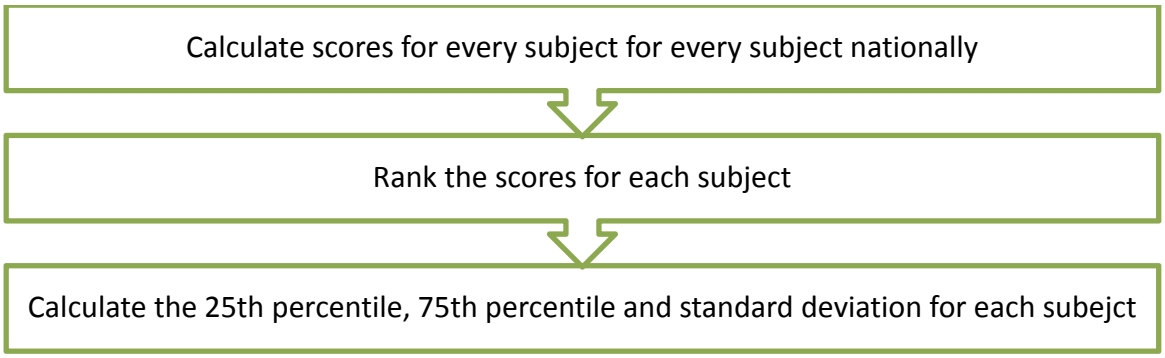
GCSE band	Started Course		Expected value		
7.5-8.0	3	X	0.996	=	2.988
7.0-7.5	6	X	0.992	=	5.952
6.7-7.0	9	X	0.984	=	8.856
6.4-6.7	12	X	0.962	=	11.544
6.1-6.4	11	X	0.941	=	10.351
5.8-6.1	8	X	0.895	=	7.16
5.5-5.8	4	X	0.875	=	3.5
5.2-5.5	2	X	0.848	=	1.696
4.7-5.2	0	X	0.834	=	0
4.0-4.7	0	X	0.821	=	0
0.0-4.0	0	X	0.750	=	0
Total starts (A) =	**55**		**Total expected passes (B) =**		**52.04**

In the 5.5-5.8 band, there are 4 students. Nationally 87.5% of students in this band pass A2 level Biology, so a multiplier of 0.875 is used. The model expects 3.5 students to be successful in this band. The figures for each prior attainment band are then aggregated. Overall the model expects 52.04 passes. As there were 55 students on the course this equates to an expected success rate of 94.61%. This is then compared to the actual success rate.

The value added score is calculated by subtracting the expected success rate from the actual success rate. If the actual success rate is higher, the value added success rate will be a positive figure.

Step two produces the individual college and department scores. In themselves these give an indication of how far a particular cohort is away from 'normal' performance, but they give us no sense of the distribution of scores in a particular subject. For this we need to calculate additional benchmarks.

Step Three: Establish interpretive statistics



Having the 25th percentile and the 75th percentile figure for each subject gives us the interquartile range. Armed with the individual cohort score and this information, we can gain a sense of whether a cohort is above or below average, and where the cohort sits relative to other departments in that subject. Scores above the 75th percentile are in the top quarter nationally, scores below the 25th percentile are in the bottom quarter nationally. The standard deviation gives us another way of understanding performance: 68% of scores will be within one standard deviation of the average. A score more than 1 standard deviation away from zero will be in the top 16% nationally. It is these benchmarks that give us a sense of aspiration, and transform the analysis from simple being one about quality assessment to being one of quality improvement.

Section Six: the developing six dimension methodology

One of the primary aims of the project is to report at college level on the features that we explore at national level. This is coupled with an appetite to refine the existing suite of reports to give colleges the best possible insight into performance by a range of measures. For this year, this brings additional reporting on student level measures of success and refinements to the existing reports. In this section we explain the changes to the methodology, and offer some comment on ways in which the reports are intended to be used.

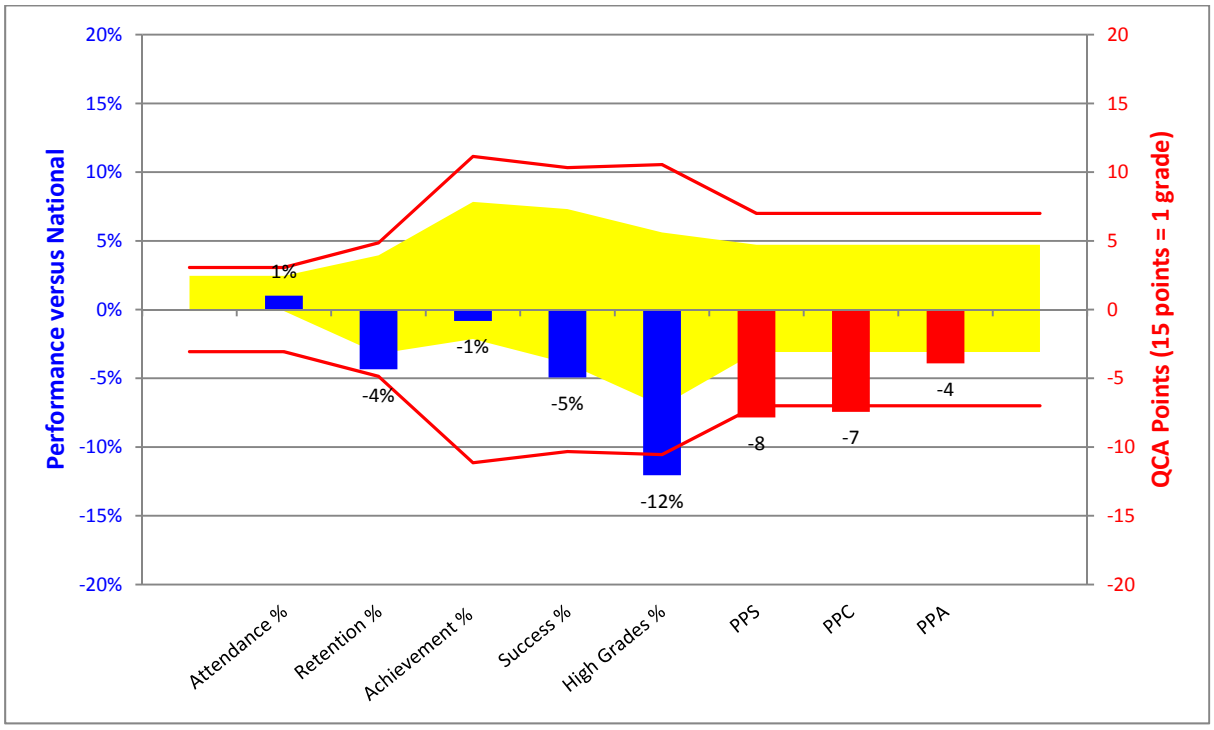
A: An additional two measures on the core AS level and A2 level reports

The core aim of the standard six dimensions report is to be able to explore multiple dimensions of performance in order to more accurately identify where issues in performance lie. What makes six dimensions reports unique is the opportunity to do this while looking at all the students that start a course, rather (as other value added models do) at those that complete them.

One key thing then that six dimensions reports highlight is retention. This does have consequences for other measures, in particular the points per starter measure, which is very sensitive to poor retention. Furthermore, while the points per starter measure provided an excellent overview of 'do the students who started this course amass a points total that would be expected of similarly qualified students doing the subject(s) in question' it could actually disguise other important features in the data. It might be that a subject suffers from poor retention, and students getting grades below what would be expected, but the poor exam performance is masked by the assumption that the points issue is a result of the poor retention alone.

In developing the six dimensions methodology, it has been decided to add two further 'points' measures to the suite of measures in the standard reports.

Figure 5.1 The standard six dimensions report with additional measures



The three measures in the new reports are points per starter (PPS), points per completer (PPC), and points per achiever. In **Figure 5.1** the points measures are represented by the red bars.

- **Points per starter (PPS)** is the original six dimensions points measure which reports on whether the points gained per student that starts the course is what would be expected of similarly qualified students starting the subject(s) in question
- **Points per completer (PPC)** is the measure closest to traditional value added measures. It reports on whether the points gained per student that completes the course is what would be expected of similarly qualified students completing the subject(s) in question
- **Points per achiever (PPA)** looks only at those students that achieve a qualification and reports on whether the students that achieve the course gain as many points per entry as would be expected of similarly qualified students achieving the subject(s) in question

The best way to see the value of the additional measures is to explore an example. **Figure 4.1** is a six dimensions chart for an underperforming AS level computing course. We see that retention is 4% below expectation, and achievement is 1% below expectation. It looks like the biggest issue the department has is poor retention – those that are retained are almost at the national average level for achievement. If that was the sole issue, the PPC and PPA measures would be in line with national figures, but they are not. We see the PPC measure is -7.0, suggesting that those that completed that course performed around half a grade below expectation. The additional measure prevents the lazy conclusion that results were OK, but a few more students than would be expected left the course. The PPA measure shows us that even those students who achieved the qualification did not get the grades they should. The analysis shows us that too few students reached the end of the course, too few of those that completed the course passed, and those that did pass did not achieve the grades that would be expected. We see the department has comprehensively underperformed – far better to face up to this, than convince yourself that it is just a retention issue.

Using all three points measures we can translate to grades using the following scale:

Figure 5.2 Interpreting points scores in the six dimensions model

AS level points (15 points = one grade)	A level points (30 points = one grade)	% of a grade per student	Fraction of a grade per student
0	0	0	
1	2	7%	1/15
2	4	13%	2/15
3	6	20%	1/5
4	8	27%	4/15
5	10	33%	1/3
6	12	40%	2/5
7	14	47%	7/15
8	16	53%	8/15
9	18	60%	3/5
10	20	67%	2/3
11	22	73%	11/15
12	24	80%	4/5
13	26	87%	13/15
14	28	93%	14/15
15	30	100%	1/1

In our computing AS course, the PPS score was -8.0. Using **Figure 5.2** we can see that this equates to 53% of the students needing to get a grade higher (through moving from a fail/leave to a pass or moving from a E to a D grade and so forth), in order to perform in line with national standards for similarly qualified computing students. For those that completed the course, the PPC score of -7.0 suggests that 47% of students needed to score a grade higher to hit national standards. The PPA score of -4.0 tells us that of those that passed the qualification, around one in four needed to get a grade higher for them to be performing in line with national averages.

B: A slightly adjusted methodology for the destinations analysis

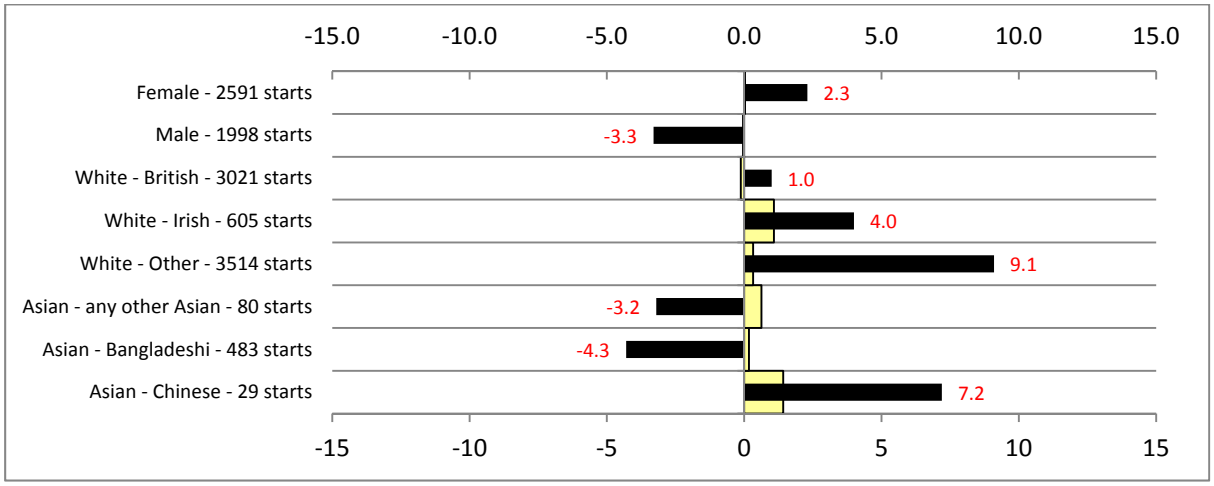
There are two adjustments to the methodology used in the analysis of secured university destinations:

- The measure has been adjusted to cover only those students starting two A2 qualifications in the year in question. In the original analysis, any students with one or more A level starts were included, but this drew a number of students taking A2 qualifications during their AS year in to the analysis. General studies is not included in the data-set.
- Four additional universities are included in the analysis of Russell Group destinations. York, Durham, Exeter and Queen Mary, University of London have recently accepted invitations to join the Russell Group. Colleges will often see a significant increase in the raw proportion of students progressing to Russell Group universities, but as these increases will be seen across the sector, it is likely that these increases will be proportionate.

C: Equal opportunities monitoring reports

The equal opportunities monitoring reports compare success rates in a particular college with the patterns found nationally. In the reports, national performance is represented by the cream coloured bars, performance in the individual college is represented by black bars. The score in the college is given in red.

Figure 5.3: Equal opportunities monitoring - extract from an example report



It is worth being clear about what the national lines and college bars represent. Both bars have been adjusted for prior attainment and subject choice. At national level, the line reports on the question 'does the equality and diversity group in question perform in line with performance for all students in terms of success rates once prior attainment and subject choice have been taken into account.' In the extract in **Figure 5.3** we see that the national performance for male and female students is so close to the national line that there is no cream bar extending above or below the zero line. There are a few categories where national performance is above what would be expected, and we see a cream bar extending from the zero line: White –Irish students and Asian-Chinese for example. Including these national variations allows us to avoid lazy assumptions about how well groups perform. It is often assumed that black groups in particular underperform in the English educational system. A college may explain away underperformance among black students by reference to the idea that such underperformance is normal. The background national data in the equality and diversity graphs reveals the true patterns of performance.

The performance in a particular college is overlaid on the national picture, and represented by the black bars. If a black bar extends out of the cream bar, it means that performance is more extreme than is found nationally. In **Figure 5.3** we see that Asian – Chinese students have a success rate 7.2+ above what would be expected of similarly qualified students doing similar subjects nationally. Perhaps much more significant for this college is the figure for Asian – Bangladeshi students, which is well short of what would be expected nationally, and in contrast to Bangladeshi student nationally, who perform in line with expectation once prior attainment and subject are factored in. Note also that this college has a large cohort of Bangladeshi students (483 starts), so we cannot explain away difference to national performance by saying that the cohort is very small, and therefore any variation is statistically meaningless.

There are a number of points made in the section on monitoring equality and diversity which are worth re-iterating. The methodology gives us a profile of typical variation. It should not be assumed that this variation is in any way 'acceptable' variation. We should never see an underperforming cohort and be satisfied if this group tends to underperform nationally. This analysis shows us where our students are underperforming and shows us whether this underperformance is found elsewhere.

We must be wary of over-interpretation of national patterns. National cohorts for these monitoring groups are often very small. Note the contrasting performance of Arab students at AS and A2. This cannot possibly be the result of Arab students being ill-suited to AS level study, but well suited to A level study. The AS cohort of Arab students has just 576 entries (suggesting around 150 students) and the A2 cohort just 149 (suggesting around 50 students)

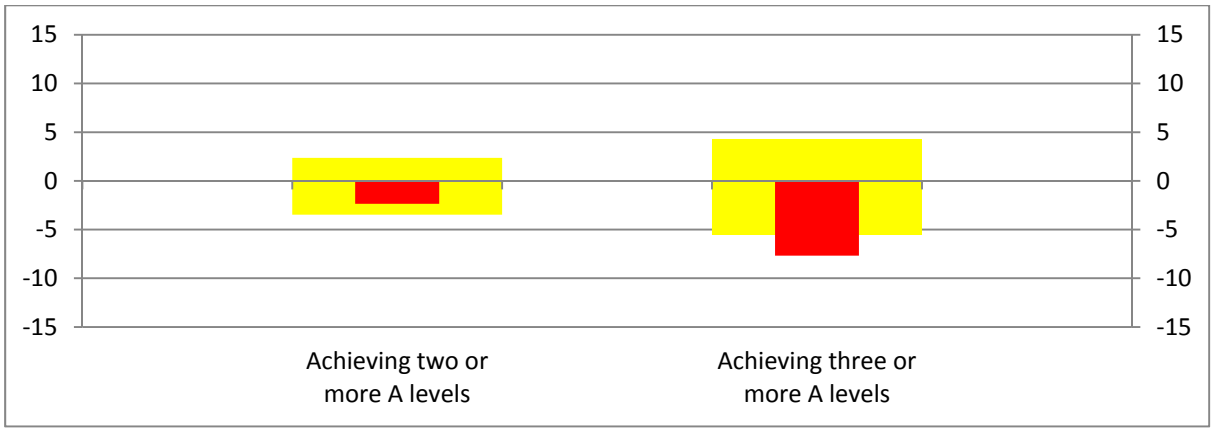
We must be wary of the over-interpretation of the performance of monitoring groups within individual institutions. Cohorts are often very small.

The methodology can be used for success rates, attendance, retention, achievement, high grades and QCA points per student, but in this analysis success rates have been selected for analysis as it is these which remain as the heart of the dialogue around performance with Ofsted and other bodies.

D: Student level success measures

This year's report introduces two measures of success at 'student level'. The analysis takes all those students starting three or more AS levels (and no BTEC qualifications) in September 2011, and looks at the proportion of these students that achieved two or more A levels, and three or more A levels in August 2013.

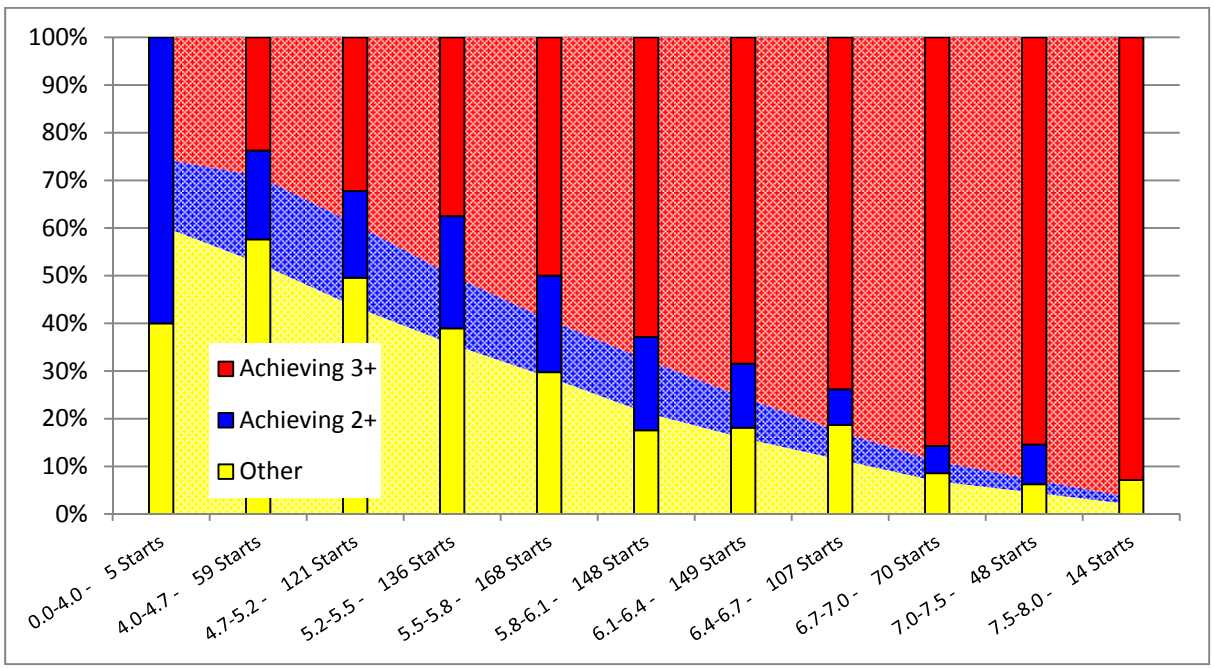
Figure 5.4: Whole student success scores



As with all six dimensions analysis, the expected level of performance is adjusted according to the prior attainment profile of the students involved.

The relationship between the two measures can often prove interesting. **Figure 5.4** shows the scores for a college which is getting a perfectly respectable proportion of its students to achieve at least two A levels, but is well below expectation when the proportion of students achieving three A levels is examined.

Figure 5.5: Whole student success by prior attainment band



Appendix One: Understanding and interpreting individual college reports

Core reports for college and subject performance all follow the same basic structure:

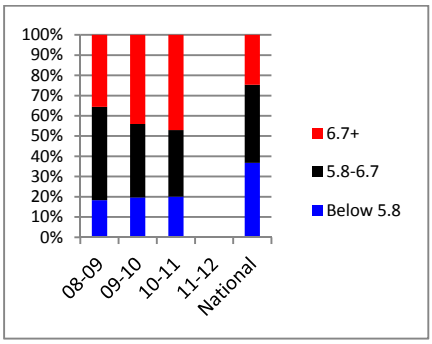
1. **Student profile**
2. **Value added analysis**
3. **Performance by prior attainment band**
4. **Four year trend analysis**

The idea here is to give management and subject teams the opportunity to examine the context in terms of the characteristics of the students a department or college is dealing with, explore multiple dimensions of performance, explore performance across the prior attainment spectrum and examine performance over time.

Student profile

		Gender			Ethnicity			Prior attainment				
	All	Male	Female		White	Non-white		Below 5.8	5.8-6.7	6.7+		Ave GCSE
		%	%		%	%		%	%	%		
2008-09	191	58	42		93	7		18	46	36		6.4
2009-10	193	53	47		98	2		20	36	44		6.5
2010-11	234	44	56		96	4		20	33	47		6.5
2011-12												

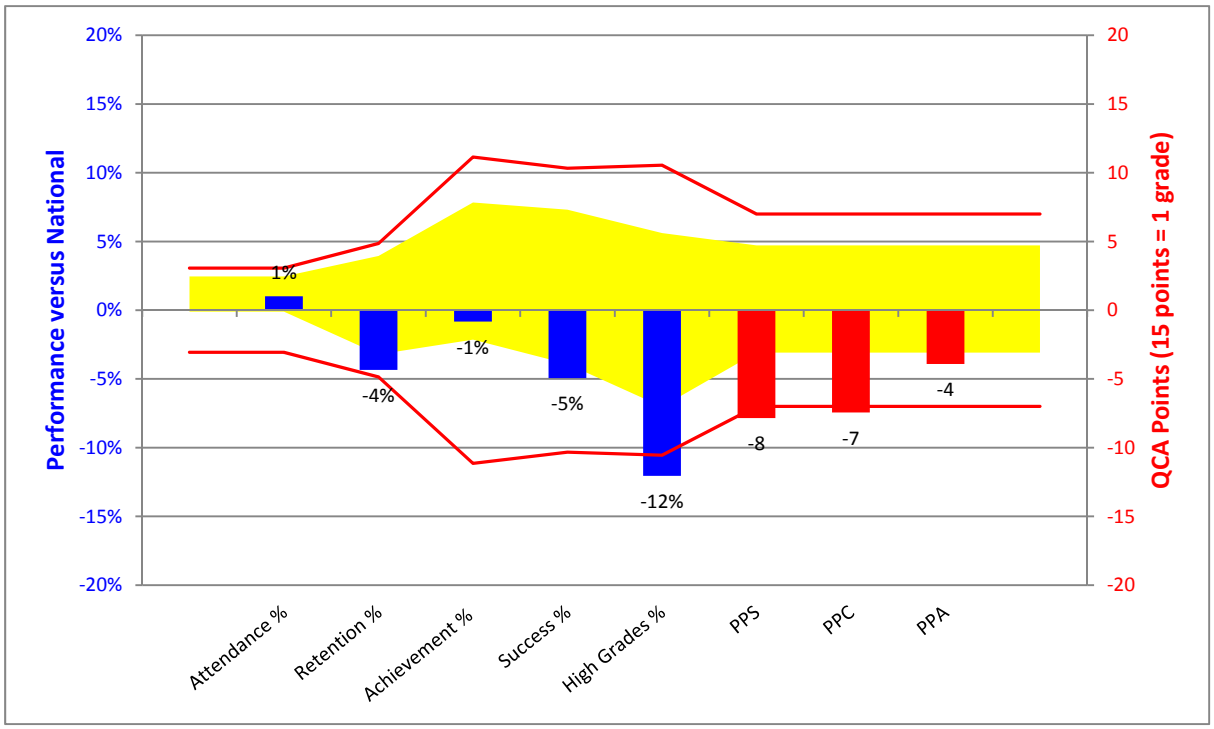
The student profile data is provided to give a sense of what the profile is in a particular institution, how this is changing, and how it relates to national patterns. In our example here we see an interesting switch in the gender profile, and a steady increase in the proportion of very well qualified students taking the subject.



The prior attainment profile is summarised in the graph above. To the right is the national profile of all students taking the qualification. The blue section represents those with an average GCSE score below 5.8; the red section represents those students with an average GCSE score of 6.7 or above. In our example, we can immediately see whether the profile is in line with what is typical nationally. We also see the increase in the proportion of well qualified students taking the subject. Department heads often comment on how their students relate to those found in the subject nationally – this analysis will allow such discussions to be based on actual evidence.

Value Added Analysis

The value added analysis section is where we present the outcomes for the current year in terms of the eight dimensions of performance.



In the data presentation, national performance is represented by the zero line. When a blue or red bar extends above or below the zero line, it indicates that performance is different to the national average.

The yellow shaded area represents the middle 50% of sixth form colleges. The upper limit of this yellow zone is the 75th percentile, the lower limit of the yellow zone is the 25th percentile. If a bar extends beyond this shaded area, it indicates that performance is in the top or bottom quarter nationally.

Position	Interpretation
Above 75th percentile	Scores above the 75th percentile are in the top quarter nationally
Between 25th and 75th percentile	This is, broadly speaking, 'normal' performance. Scores in this range are in the middle 50% of colleges
Below 25th percentile	Scores below the 25th percentile are in the bottom quarter nationally

The red lines indicate the limits of one standard deviation around the national line. 68% of scores will fall within this zone. A bar extending above this would be in the top 16% nationally.

In our example here, the department is not performing particularly well. We see that attendance is 1% above what would be expected in this particular subject for the profile of students the department is serving. Retention is some way below expectation, though achievement is close to the national line (again, a standard based on national patterns of prior attainment, retention and achievement) . The success rate is some 5% below what would be expected. We see the bar for success extends below the yellow zone, indicating that this performance is in the bottom 25% nationally. The high grades of starters figure is particularly worrying. Imagine a class of 25 students starting a course in September. In this department three fewer would achieve a high grade than would be typical nationally. Remember that this is high grades of starters: covering all the students on the course, rather than just those that completed the course. Getting a high grade is a powerful thing in terms of life chances for students. If in every class, three fewer students are getting a high grade than would be expected, that is real cause for concern.

The subject level reports use three different points measures to explore performance:

a. **Points per starter (PPS) –** of those that start the course, is the number of QCA points gained per student typical for the subject in question and the prior attainment profile of the students.
b. **Points per completer (PPC) –** of those that finish the course is the number of QCA points gained per student typical for the subject in question and the prior attainment profile of the students.
c. **Points per achiever (PPA) –** of those that pass the qualification, is the number of QCA points gained per student typical for the subject in question and the prior attainment profile of the students.

The points measures use QCA points, which means that the scale used for AS level is different to that used for A level. In the AS analysis 15 points is equal to a grade, in the A level analysis 30 points is equal to a grade.

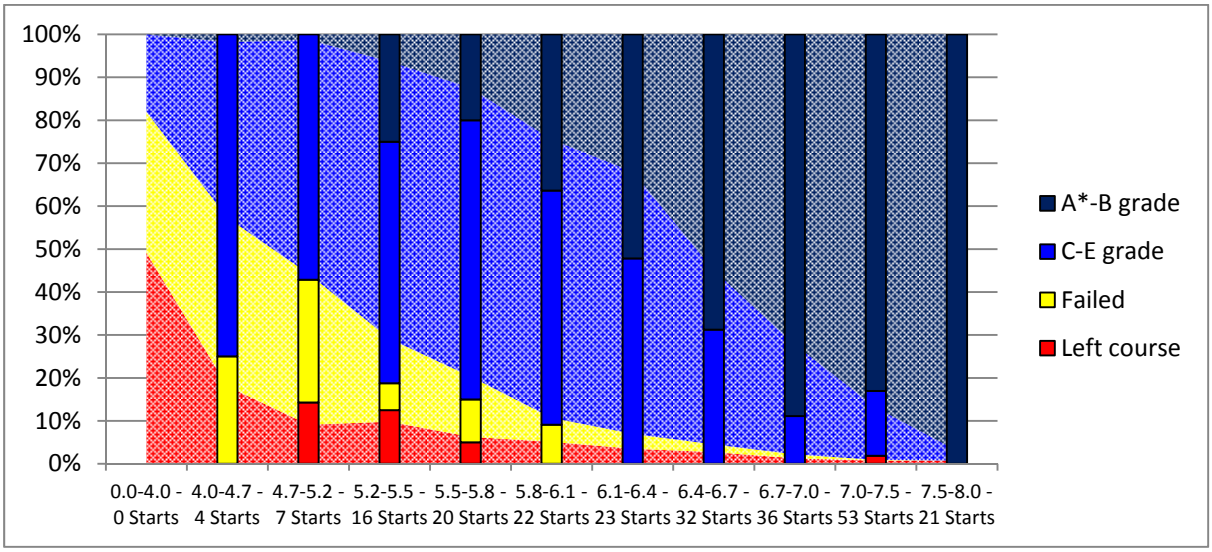
AS level points (15 points = one grade)	A level points (30 points = one grade)	% of a grade per student	Fraction of a grade per student
0	0	0	
1	2	7%	1/15
2	4	13%	2/15
3	6	20%	1/5
4	8	27%	4/15
5	10	33%	1/3
6	12	40%	2/5
7	14	47%	7/15
8	16	53%	8/15
9	18	60%	3/5
10	20	67%	2/3
11	22	73%	11/15
12	24	80%	4/5
13	26	87%	13/15
14	28	93%	14/15
15	30	100%	1/1

It is also vitally important to (literally) get a sense of proportion when interpreting scores. If there were only twenty students on a course, then each student represents 5% of the total. On such a course, a cohort could be 4% below the national rate, but would have been above the national rate if one more student has achieved the qualification. Even with much larger cohorts it is important to get a sense of how many additional 'passes' would have been required to achieve the national average, 75th percentile and so forth.

For example, a sociology cohort of 250 students at a large sixth form college achieves a success rate of 85.2%, but the value added success rates model expects it to achieve 88.3%: it is 3.1% below the national average. As there are 250 students, each percentage point represents 2.5 students. 3.1% equates to eight students. If eight more students had passed the qualification, the college would have scored a positive figure and been above the national average. Of course, in this instance there are 37 students who were not successful. The department needs to explore their case histories for clues as to how the department might have responded better to the needs of the students concerned. The discussion the department then needs to have is about the 37 students who were not successful and what could be done to drive-up success rates in the future.

Performance by Prior attainment band

In the performance by prior attainment band section we return to the graphical presentation we used when exploring the relationship between prior attainment, subject and student outcomes. The shaded background represents national performance in a subject; the narrow bars represent performance in an individual subject.



Note that the display includes the number of students that started the course in each band. We should be very cautious about over-interpretation if the sample size in a particular band is small. For example, in the 4.0-4.7 band in the above, there are only four students, so each will represent 25% of the total. It is performance in the bands where the majority of students lie that will prove most useful.

It does, however, give us a really clear idea of what happens nationally, and if performance (for good or bad) is significantly different to what happens nationally in a number of bands, then we need to know why.

Four year trend analysis

(4) Four Year Trend Analysis															
			Raw Performance							Value Added Performance					
	Starts		Att	Ret	Ach	Succ	High	PPS		Att	Ret	Ach	Succ	High	PPS
2008-09	191			100.0	97.4	97.4					3.7	4.0	7.1		
2009-10	193			98.4	98.9	97.4					2.1	5.6	7.1		
2010-11	234		95.4	97.9	96.5	94.4	62.8	54.1		2.0	1.5	3.0	3.9	7.9	4.0
2011-12															

The final presentation of data contrasts raw and value added performance. The value added scores are colour coded. Performance in the bottom quarter uses a blue font, performance in the middle half uses a black font, and performance in the top quarter is represented by a red font.

Destinations reports

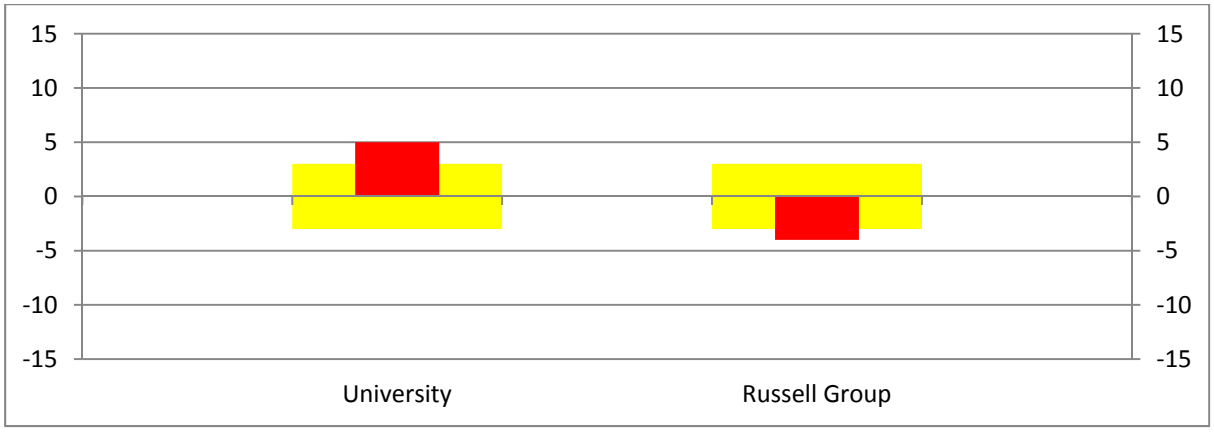
The destinations report is designed to compare performance in an individual college with national patterns of destination.

The report centres on those students starting at least two A2 level qualifications in 2012-13. The only destinations that are reported on are 'secured destinations' – when a student has a confirmed university place (for direct entry of deferred entry) by the close of clearing. Students applying to university in the year following A level results do not count as a 'positive' destination by this methodology.

There are two key measures in this report:

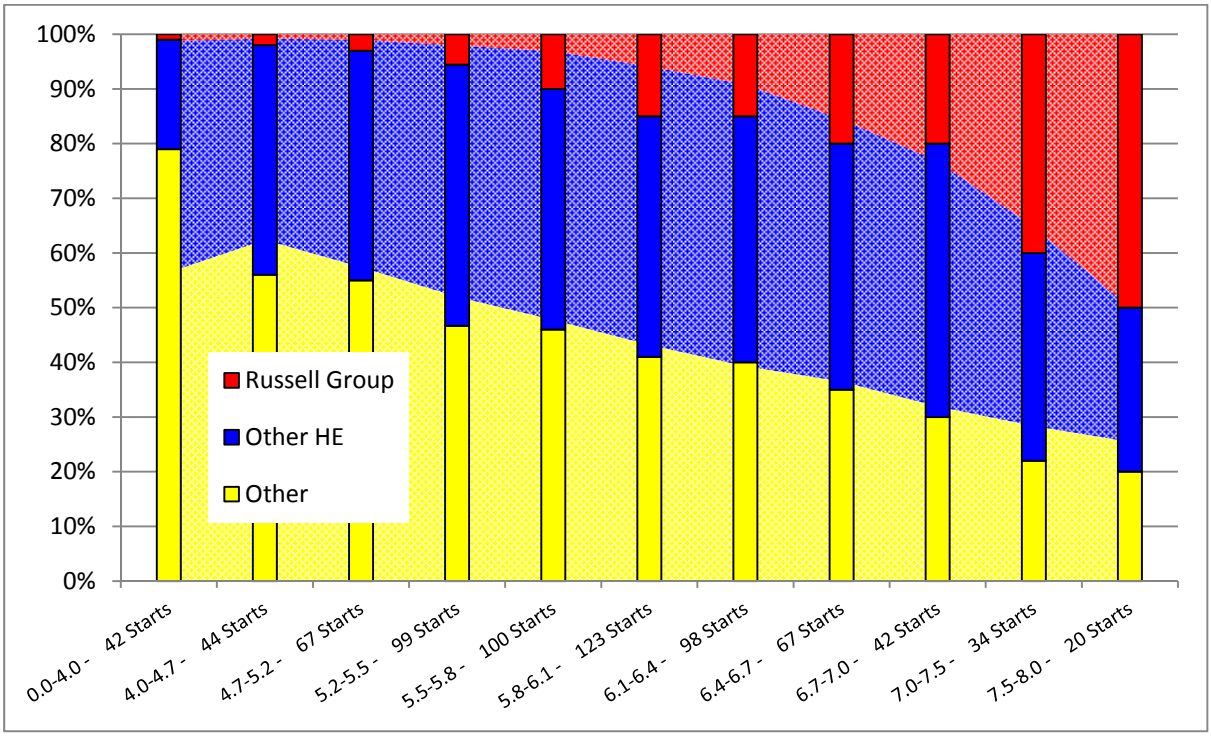
1. The proportion of students that secure a university place, compared to a benchmark which is adjusted according to prior attainment profile of students
2. The proportion of students that secure places at Russell Group universities, compared to a benchmark which is adjusted according to prior attainment profile of students

Secured University Destinations Analysis



This graph summarises the overall performance of an institution, which is represented by a red bar. If the bar extends above the zero line, it indicates that more students progress than would be expected. If a bar extended below the line, it suggests that fewer students than would have been expected secured progression at the end of their A level course. If the red bar is close to or at zero, it suggests that students secure progression to university in the proportion that would be expected. The yellow background represents performance in the middle half of colleges. If a bar extends above this yellow zone, it indicates that a cohort is in the top quarter nationally. If a bar extends below the yellow zone, it suggests a college is in the bottom quarter nationally. The graph reports in percentages. In the illustration above, university progression is 5% above expectation, progression to the Russell Group is 4% below expectation.

Secured University Destinations Analysis by Prior Attainment

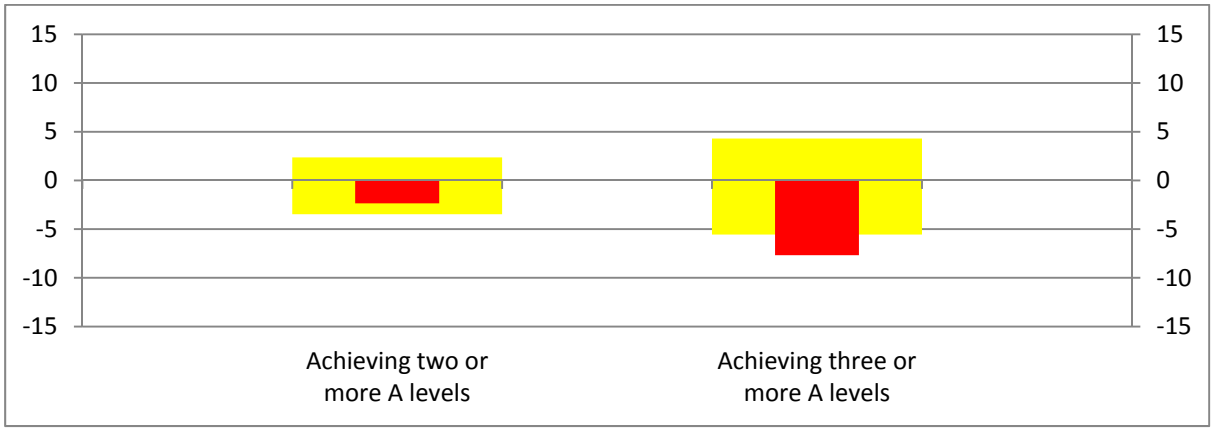


The secured university destinations analysis by prior attainment graph explores performance across the prior attainment spectrum. The background shading represents national performance, and the thin 'lollipop sticks' represent performance in the individual institution. Performance is divided into three possible outcomes: progression to a Russell Group university; progression to another university; any other outcome.

The report also contains four year prior attainment and secured progression trend analysis.

Student level success analysis

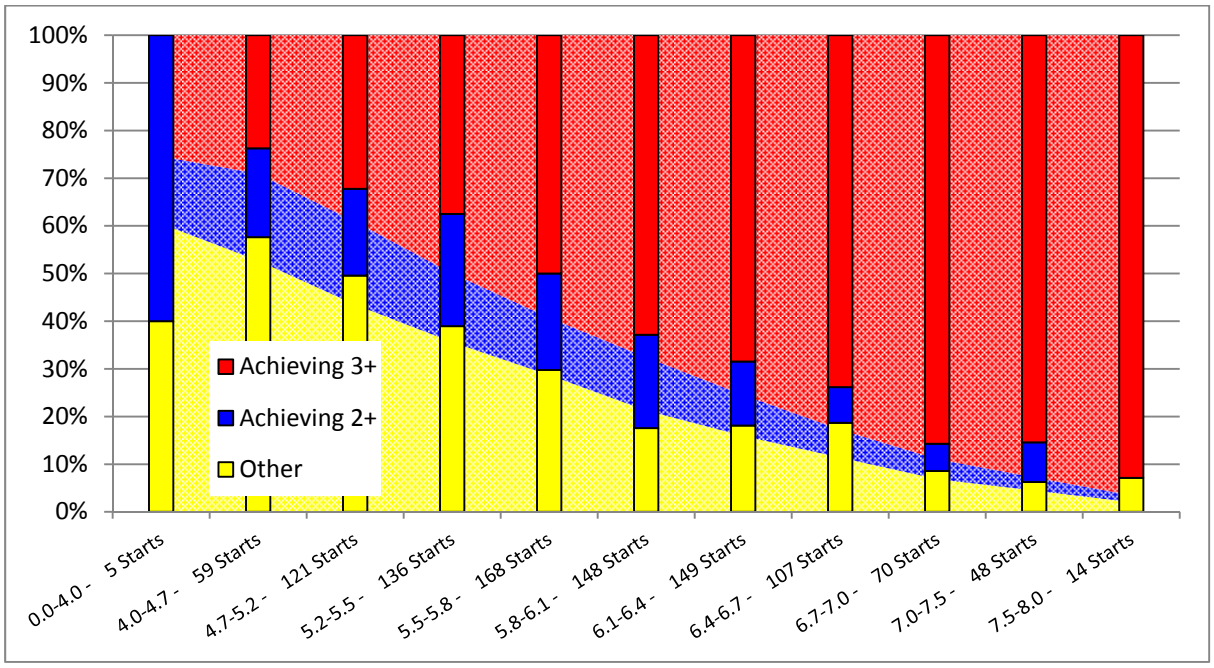
This year's report introduces two measures of success at 'student level'. The analysis takes all those students starting three or more AS levels (and no BTEC qualifications) in September 2011, and looks at the proportion of these students that achieved two or more A levels, and three or more A levels in August 2013.



As with all six dimensions analysis, the expected level of performance is adjusted according to the prior attainment profile of the students involved. A score of zero suggests performance exactly in line with national standards.

The relationship between the two measures can often prove interesting. **Figure 5.4** shows the scores for a college which is getting a perfectly respectable proportion of its students to achieve at least two A levels, but is well below expectation when the proportion of students achieving three A levels is examined.

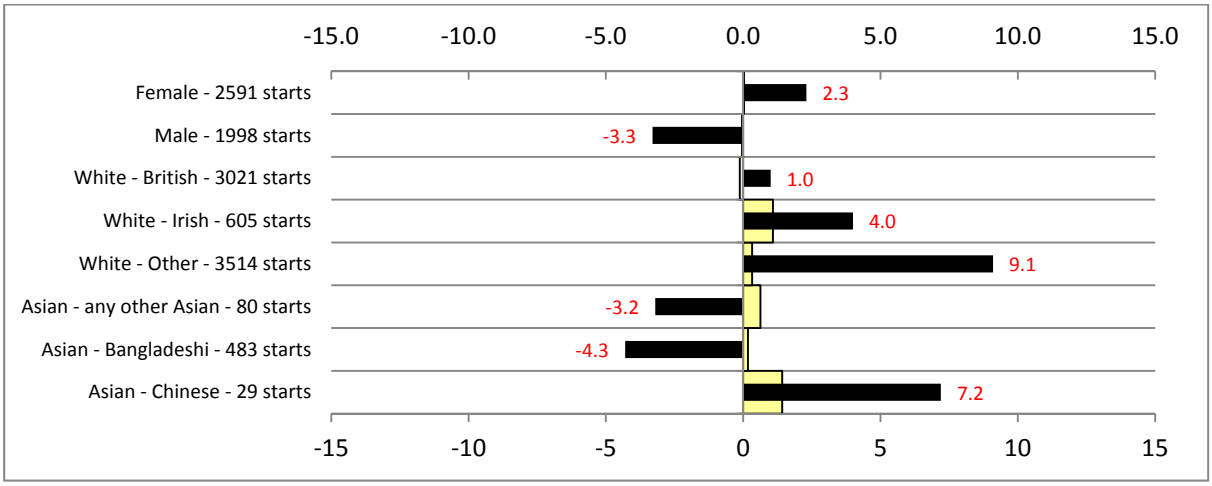
Figure 5.5: Whole student success by prior attainment band



Equal Opportunities Monitoring Reports

The equal opportunities monitoring reports compare success rates in a particular college with the patterns found nationally. In the reports, national performance is represented by the cream coloured bars, performance in the individual college is represented by black bars. The score in the college is given in red.

Equal opportunities monitoring - extract from an example report



It is worth being clear about what the national lines and college bars represent. Both bars have been adjusted for prior attainment and subject choice. At national level, the line reports on the question 'does the equality and diversity group in question perform in line with performance for all students in terms of success rates once prior attainment and subject choice have been taken into account.' In the extract above we see that the national performance for male and female students is so close to the national line that there is no cream bar extending above or below the zero line. There are a few categories where national performance is above what would be expected, and we see a cream bar extending from the zero line: White –Irish students and Asian-Chinese for example. Including these national variations allows us to avoid lazy assumptions about how well groups perform. It is often assumed that black groups in particular underperform in the English educational system. A college may explain away underperformance among black students by reference to the idea that such underperformance is normal. The background national data in the equality and diversity graphs reveals the true patterns of performance.

The performance in a particular college is overlaid on the national picture, and represented by the black bars. If a black bar extends out of the cream bar, it means that performance is more extreme than is found nationally. In the figure above we see that Asian – Chinese students have a success rate 7.2+ above what would be expected of similarly qualified students doing similar subjects nationally. Perhaps much more significant for this college is the figure for Asian – Bangladeshi students, which is well short of what would be expected nationally, and in contrast to Bangladeshi student nationally, who perform in line with expectation once prior attainment and subject are factored in. Note also that this college has a large cohort of Bangladeshi students (483 starts), so we cannot explain away difference to national performance by saying that the cohort is very small, and therefore any variation is statistically meaningless.

Nick Allen, 15/06/14