Mind the gap: An analysis of the FSM gap in Buckinghamshire County Council

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Executive Summary - Key findings

PART 1: Comparing the FSM gap across English Local Authorities

- Buckinghamshire has a larger FSM achievement gap than many Local Authorities (LAs) in England and well above the England average. The gap is generally larger at KS4 than at KS2, both in absolute terms and in relation to the England average. Specifically looking at data averaged over the last three years, at KS2 pupils not entitled to FSM are 3.7 times more likely to achieve level 4 in English & maths than pupils entitled to FSM. At KS4, pupils not on FSM are 5.4 times more likely to achieve 5+ A*-C including English and maths (5AC-EM) than their FSM peers.

- However Bucks is not isolated in this issue. The FSM gap in similar LAs, as indicated by the LAs statistical neighbours, is also substantially larger than the England average (KS2 OR=3.4 and KS4 OR=4.4). However the Bucks FSM gap is larger than its statistical neighbours particularly at KS4.

- The FSM gap at KS2 is driven by both (i) lower performance of FSM students compared to the England average and (ii) higher performance of non-FSM pupils compared to the England average. For students entitled to FSM Bucks results have been consistently below the England average over the last three years, though they are around the average for the LA Statistical Neighbours.

- The FSM gap at KS4 is more powerfully driven by the extremely high performance of non-FSM students compared to the England average. However there has been a decline over recent years in the performance of FSM students. For FSM pupils Buckinghamshire was above the England average in 2007-2009 but has subsequently fallen below, with a particularly substantial drop in 2012. The Bucks FSM gap is higher than other fully selective LAs.

- The very large FSM gap at the end of KS4 suggest a need to address the under-achievement of pupils entitled to FSM in secondary schools. However this needs to be balanced with a preventive focus on working with primary schools, since generally research indicates early intervention is more powerful for effecting change in the long term (Allen, 2011).

PART 2: Analyses of student level data 2010-2012 for Key Stage 2

- Student level data were collated over three cohorts who sat their KS2 tests in 2010, 2011 and 2012 respectively. This generated a total sample of over 1,000 students entitled to FSM (6.7% of all students). Because of changes to KS2 assessment in 2012 the outcome variables selected were KS2 average fine-grade score and the % of students achieving level 4 or above in both the English and mathematics tests.

- The analyses were used to generate robust three-year averages for schools, particularly important for primary schools where numbers of FSM students in any one year are frequently too small to allow reliable and robust estimates. Even so of the 131 mainstream primary schools 79 schools (60%) had five or less pupils entitled to FSM, including 19 schools (15%) who had not

had a single Y6 student entitled to a FSM in the three year period. The DFE do not publish data where groups include 5 or fewer students and this convention was followed here. School by school results for the 52 schools with sufficient FSM pupils are presented in tables and figures. There was substantial variability across schools. At one extreme were four schools where students on FSM achieved better result than those not on FSM, at the other extreme were two schools where on average students on FSM scored a whole National Curriculum (NC) level lower than those not on FSM.

- Student level factors that moderated the FSM gap included:

    * gender - with particularly low achievement by boys entitled to FSM

    * ethnicity - with particularly low achievement by White British, Black Caribbean, Mixed White and Black Caribbean and Pakistani pupils entitled to FSM

    * Prior attainment - with particularly low achievement for FSM pupils with high prior attainment at age 7

- The only school level factor that moderated the FSM gap was the % of students entitled to FSM in the school. Students entitled to FSM in low deprivation schools made particularly poor progress age 7-11, not only relative to non-FSM students in these schools but also in relation to pupils on FSM in more disadvantaged schools. This lends some empirical weight to HMCI Michael Wilshaw's contention (OFSTED, 2013) that that there are particular challenges for pupils entitled to FSM when they are isolated in schools where they represent very much a minority.

- School by school three-year averages for FSM and Non-FSM students based on all students between 2010-2012 are presented.

PART 3: Analyses of student level data 2010-2012 for GCSE

- Data were collated over the three years 2010-2012 in a similar fashion as described above for primary schools.

- Similar student factors were found to moderate the FSM gap. The most notable outcomes were:

    o The proportion of ethnic minority students in LA secondary schools (22.8%) is close to the England age 5-16 average of 26.6% (DFE, 2013). White British, Black Caribbean and Mixed White & Black Caribbean students entitled to FSM were the lowest achieving groups.
    o The FSM gap tended to be wider among students with high prior attainment.

- The relationship between school factors and FSM associations was complicated because of confounding with school type. Pupils on FSM accounted for 10.6% of students within upper schools but just 1.8% of students within Grammar schools. Overall students on FSM in grammar schools made good progress and achieve highly, but they represent less than one-tenth of all FSM students in the LA.

- Within the 21 upper schools the relationship between entitlement to FSM and the school %FSM are the same as described for primary schools. Pupils on FSM made less progress than those not on FSM in all schools, but FSM students isolated in low deprivation schools made less progress than their FSM peers in schools with average or higher proportion of FSM students.

- School by school three-year averages for FSM and Non-FSM students based on all students between 2010-2012 are presented.

Recommendations

The recommendations from this analysis highlight particular aspects of the data rather than strategies or practice.

Schools should:

- Monitor and review regularly the progress of all students, paying particular attention to the achievement and progress of the following groups of students entitled to FSM:

  * boys

  * White British, Black Caribbean, Mixed White and Black Caribbean and Pakistani students

  * FSM students with high prior attainment, either at KS1 (for primary schools) or KS2 (for secondary schools).

- Where students on FSM constitute a small proportion of the school roll the school ensure their needs are not overlooked. FSM students in these schools appear particularly vulnerable to poor progress and low achievement. The DCSF report pockets of poverty (DCSF, 2010) provides helpful guidance.

- Schools should use the Pupil Premium Grant specifically to support interventions to close the gap between FSM pupils and their non-FSM peers

The LA should:

- Target support at raising the achievement of pupils on FSM to schools with the highest % of pupils on FSM in order to reach the greatest number of FSM students across the authority. The 32 schools with the highest %FSM (9.9% or above) educate 654 students on FSM, or nearly two-thirds (64%) of all FSM students at KS2.

- Consider means of supporting the progress of FSM students in low deprivation schools where they represent very much of a minority. While the absolute number of FSM students in these schools is low these students appear particularly vulnerable to poor progress and low achievement. The DCSF report pockets of poverty (DCSF, 2010) provides helpful guidance.

- Support schools in their analysis and use of data and facilitate the sharing of good practice across schools.

PART 1: Comparative data across Local Authorities (LAs)

Introduction

A comparison of Local Authority (LA) data was undertaken using the Local Area Interactive Tool (LAIT)[1]. Data for end of KS2 assessment at age 11 and end of KS4 at age 16 were evaluated. Specifically KS2 data are the percentage of students achieving Level 4 or higher in both the English and mathematics tests, and the KS4 data are the proportion of students achieving 5 or more A*-C grades at GCSE or equivalent including English and mathematics.

Local Authority comparisons

Comparisons are made against a range of other Local Authorities. Specifically the data for Buckinghamshire are compared to:

- England averages
- The average for the LA statistical Neighbours (SN). These are eleven LAs (including Buckinghamshire) judged by the DFE to be closely related in terms of demographic and socio-economic measures[2].
- Regional averages (e.g. South East of England and London)
- Selective LAs (for KS4 only) .

What are the trends in achievement over the last three years? How does Buckinghamshire compare to these other LAS at KS2 as opposed to KS4? To what extent might any difference between pupils in Buckinghamshire on FSM and national figures be driven by the types of the LA it is compared to?

Gap measures

Gap measures are not simple to interpret. For example it is possible to have a small gap through depressed performance of advantaged groups, as well as through raised performance of disadvantaged groups. To understand what the gap truly reveals it is necessary to consider separately comparative analyses of the groups in question, i.e. in this case to analyse both how pupils on FSM and how those not entitled to FSM in Bucks LA compare to other LAs.

There are also problems in interpreting simple percentage points gaps, particular when the proportions change over time, and in comparing across different measures at different key stages. The solution here has been to calculate odds ratios (OR) which give a single statistic that can be interpreted consistently regardless of the change over time and across different outcomes. The Odds Ratio (OR) expresses the odds that a student entitled to FSM will achieve the threshold measure of success at either KS2 or KS4 relative to the odds for a pupil not on FSM. For example in England at KS4 in 2012, 34% of pupils entitled to FSM achieved 5+A*-C GCSE passes (incl En & Ma) compared to 62.8% of pupils not on FSM, indicating that the odds of success for students not on FSM pupils were 2.9 times higher than the odds of success for a FSM student.

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[1]. http://www.education.gov.uk/childrenandyoungpeople/strategy/research/lait/a0070240/lait

[2]. The 10 Statistical Neighbour LAs are: Bracknell Forest, Cambridgeshire, Central Bedfordshire, Hampshire, Hertfordshire, Oxfordshire, Surrey, West Berkshire, Windsor & Maidenhead, Wokingham.

Results

Context - Level of entitlement to FSM

Buckinghamshire has extremely low levels of entitlement to FSM. In primary schools in 2013, 7.3% of students were entitled to a FSM compared to 18.1% nationally, with the authority ranked 3 of 152 LAs. At secondary school in 2013, 5.9% of students were eligible for FSM compared to an England average of 15.1%, making the authority rank 1 of 152 i.e. the lowest proportion of any LA in England. This is a distinctive element of the Buckinghamshire context.

Performance at Key Stage 2

Table 1 and Figure 1 present the data on the percentage of students achieving Level 4 or above in both English and mathematics tests for each year 2010 to 2012, and averaged over the three year period. The main observations are:

- The FSM gap in Bucks is stable over the period 2010-2012. The odds of students not entitled to FSM achieving L4+ are 3.7 times higher than the odds for students on FSM. This is substantially higher than the England average (OR=2.6).

- This high gap is not unique to Buckinghamshire. The OR for the LA Statistical Neighbours (SN) is very similar (OR=3.4). Both though are appreciably higher than the average for the South East (OR=3.1), England (OR=2.6) or particularly for London (OR=2.2).

- This wide Bucks FSM gap is driven both by relatively low performance of pupils on FSM and the relatively high performance of pupil not on FSM, relative to England averages (see Figure 1.1). For students entitled to FSM Bucks results are consistently below the England average over the last three years, though they are around the average for the LA Statistical Neighbours.

- The implication of the above is that focused attention on the performance of FSM pupils during primary school is warranted.

Table 1.1: Achievement of pupil entitled and not entitled to FSM at KS2: 2010-2012

LA	FSM Status	2010	2011	2012	3-year avg.
Buckinghamshire	FSM	52.0	55.0	60.0	55.7
	Not FSM	80.0	82.0	85.0	82.3
	% point gap	28.0	27.0	25.0	26.7
	Odds Ratio	**3.7**	**3.7**	**3.8**	**3.71**
Statistical Neighbours	FSM	52.4	49.3	58.0	53.2
	Not FSM	77.6	77.7	83.0	79.4
	% point gap	25.2	28.4	25.0	26.2
	Odds Ratio	**3.1**	**3.6**	**3.5**	**3.39**
South East	FSM	51.0	52.0	60.0	54.3
	Not FSM	76.0	78.0	82.0	78.7
	% point gap	25.0	26.0	22.0	24.3
	Odds Ratio	**3.0**	**3.3**	**3.0**	**3.10**
London	FSM	64.0	65.0	73.0	67.3
	Not FSM	80.0	81.0	85.0	82.0
	% point gap	16.0	16.0	12.0	14.7
	Odds Ratio	**2.3**	**2.3**	**2.1**	**2.21**
England	FSM	56.0	58.0	66.0	60.0
	Not FSM	77.0	78.0	83.0	79.3
	% point gap	21.0	20.0	17.0	19.3
	Odds Ratio	**2.6**	**2.6**	**2.5**	**2.56**

Note: Outcome is the percentage of students Level 4 or above in both English and mathematics.

Figure 1.1: KS2 achievement of pupil entitled and not entitled to FSM 2010-2012
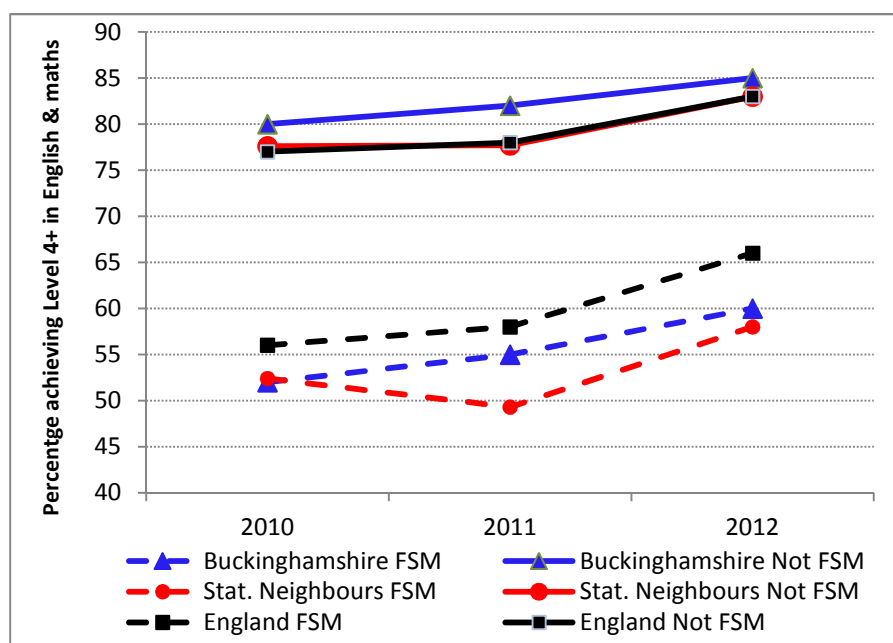
Performance at Key Stage 4

The data are presented in Table 2 & Figure 2.

Table 1.2: Achievement of pupil entitled and not entitled to FSM at KS4: 2007-2012

LA	FSM Status	2007	2008	2009	2010	2011	2012
Buckinghamshire	FSM	24.0	27.7	28.2	29.9	34.1	29.6
	Not FSM	63.0	65.7	68.1	69.1	71.6	72.2
	Odds Ratio	**5.4**	**5.0**	**5.4**	**5.2**	**4.9**	**6.2**
Statistical	FSM	21.8	24.1	25.8	25.3	29.9	28.7
Neighbours	Not FSM	53.9	56.4	57.9	62.3	63.9	63.2
	Odds Ratio	**4.2**	**4.1**	**4.0**	**4.9**	**4.1**	**4.3**
South East	FSM	19.6	21.3	23.8	26.3	28.7	29.9
	Not FSM	51.7	54.1	56.1	60.1	62.4	63.2
	Odds Ratio	**4.4**	**4.4**	**4.1**	**4.2**	**4.1**	**4.0**
London	FSM	31.2	34.5	37.8	43.2	47.3	48.9
	Not FSM	52.6	55.1	58.5	62.3	66.1	66.4
	Odds Ratio	**2.4**	**2.3**	**2.3**	**2.2**	**2.2**	**2.1**
England	FSM	21.5	24.0	26.7	31.4	34.7	36.4
	Not FSM	49.4	51.8	54.5	59.0	62.2	62.8
	Odds Ratio	**3.6**	**3.4**	**3.3**	**3.1**	**3.1**	**2.9**
Three year averages							
Buckinghamshire	FSM	-	-	26.6	28.6	30.7	31.2
	Not FSM	-	-	65.6	67.6	69.6	71.0
	Odds Ratio	-	-	**5.3**	**5.2**	**5.2**	**5.4**
Statistical	FSM	-	-	23.9	25.1	27.0	28.0
Neighbours	Not FSM	-	-	56.1	58.9	61.3	63.1
	Odds Ratio	-	-	**4.1**	**4.3**	**4.3**	**4.4**
England	FSM	-	-	24.1	27.4	30.9	34.2
	Not FSM	-	-	51.9	55.1	58.6	61.3
	Odds Ratio	-	-	**3.4**	**3.3**	**3.2**	**3.1**

Figure 1.2: KS4 achievement of pupil entitled and not entitled to FSM: 2007-2012
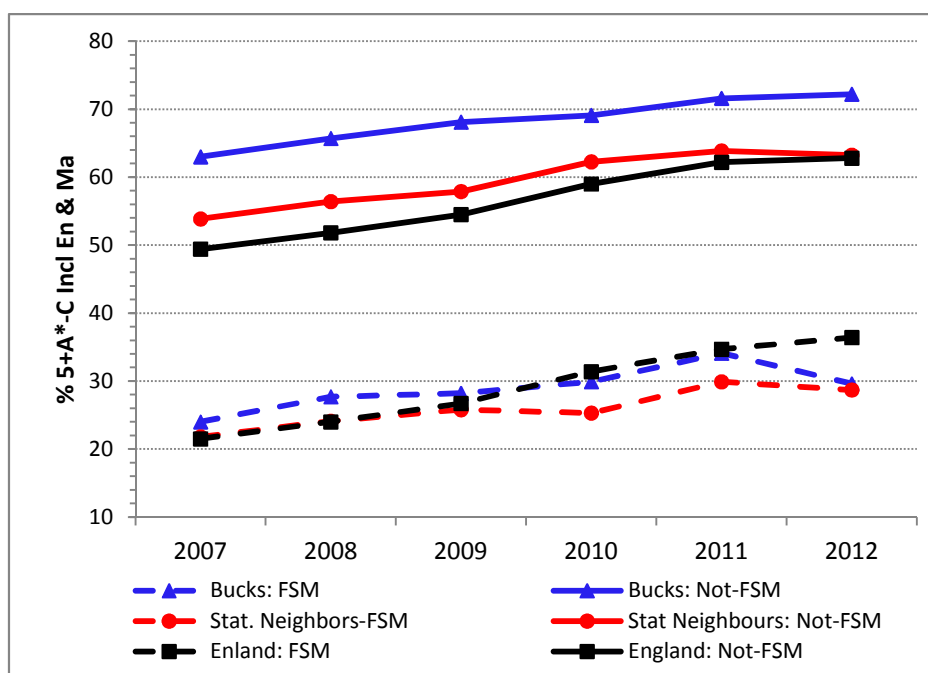
The key points are:

The Bucks FSM gap at KS4 is much larger than at KS2. In the most recent year (2012), students not entitled to FSM were over 6 times more likely to achieve the KS4 success threshold than were students entitled to FSM (the KS2 OR was only 3.7:1).

The Buckinghamshire FSM gap in 2012 was substantially larger than the gap for England (OR=2.9), for the South East (OR=4.0) or for the LA Statistical Neighbours (OR=4.3). Indeed in 2012 Buckinghamshire had the largest gap of all 152 LAs in England at KS4. It is notable that there is a strong 'London effect' (OR=2.1) which heavily influences the England average.

From Figure 1.2 we can see that up until 2012 the above average Bucks FSM gap was mostly driven by the very high achievement of students not entitled to FSM. However there appears to be a decline in the performance of FSM students in Bucks over recent years. FSM pupils achieved above the England average for FSM pupils in 2007 to 2009 but have subsequently fallen below since 2010, with a particularly substantial drop in 2012.

Even though the number of students on FSM at KS4 in 2012 was around 300, which allows for reasonably robust estimates, it is apparent that there is a degree of year to year 'noise' in the data. To establish a more consistent estimate, 3 year rolling averages were calculated for 2007-09, 2008-10, 2009-11 and 2010-12 respectively. These data are present in the lower half of Table 2. On these measures the performance of pupils entitled to FSM in Buckinghamshire is consistently above its SN which is a positive outcome, although for 2010-12 it drops below the England average.

Selective LAs

A distinctive feature of the Buckinghamshire context is it's selective education system. It is therefore appropriate to ask how Bucks compares to other selective LAs. A recent House of Commons report (2013) lists seven LAs as having a fully selective secondary system (Buckinghamshire, Kent, Medway,

Slough, Southend, Torbay and Trafford). However a larger number of selective LAs are identified by Jesson (2000) using the criterion of having 20% or more of Y11 students attending grammar schools (this adds a further six LAs: Bexley, Lincolnshire, Poole, Reading, Sutton & Wirral). Both groupings were used for comparative purposes. The results are shown below.

Table 1.3: FSM gap for selective LAs (5+A*-C incl En & M 2012)

LA	FSM	Not-FSM	Gap	OR
Bucks	29.6	72.2	42.6	6.2
Fully selective LAs (n=7)	32.4	67.4	35.0	4.3
High selection LAs (n=13)	34.4	67.5	33.1	4.0
England	34.2	61.3	27.1	3.1

Note. Data have been weighted by the number of students in each LA to create weighted averages. Data source DFE SFR 04-2013.

The data show that compared to the England average (OR=3.1) selective LAs tend to have a larger FSM gap (OR=4.0), especially the 7 fully selective LAs (OR=4.3). However the Bucks gap is still the largest among selective LAs (OR=6.2). As described earlier, 2012 saw particularly poor results for FSM students in Buckinghamshire, but even if we substitute the Bucks OR for 2011 (OR=4.9, see Table 1.2) this is still above the selective LA average.

Level 2 Qualifications by age 19

LAIT also includes data on the proportion of student (both on FSM and not on FSM at age 16) who subsequently achieve the level 2 threshold[3] by age 19. While we have seen above that Buckinghamshire has a large FSM gap at age 16, by age 19 the FSM gap is the same as the England average, and it has narrowed substantially in recent years. See Figure 1.3 below.

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[3]. *The level 2 threshold is 5 or more GCSEs A*-C grades or equivalent, but with no requirement to include English and mathematics.*

Figure 1.3: Achievement gap between FSM and non-FSM pupils at age 19

Buckinghamshire Local Authority

Change Authority | Change Topic

Inequality gap in the achievement of a Level 2 qualification by the age of 19

Local Authority, Region and England		-	2005	2006	2007	2008	2009	2010	2011	2012
825	Buckinghamshire	-	41.00	36.00	33.00	34.00	23.00	26.00	20.00	17.00
989	South East	-	34.00	34.00	30.00	29.00	27.00	25.00	24.00	21.00
	Statistical Neighbours	-	35.60	33.70	34.10	29.30	28.80	25.10	23.00	22.60
970	England	-	28.00	27.00	26.00	24.00	22.00	20.00	19.00	17.00

Quartile bands

		Trend	Change from previous year	Latest National Rank				Quartile Banding	Up to and including	Up to and including	Up to and including
825	Buckinghamshire	↓	-3.00	48				B	14.00	19.00	22.00

Inequality gap in the achievement of a Level 2 qualification by the age of 19

% gap

Legend: Buckinghamshire — South East — Statistical Neighbours — England

Note: This is the gap in the percentage point attainment gap between individuals who were eligible and claiming FSM at the age of 16 and those not eligible for FSM at age 16 who turned 19 in 2011/12 and passed the level 2 threshold Source: LAIT and DFE (2013).

Analysis of the data for the FSM pupils (not shown) indicates by age 19 the proportion of FSM pupils in Bucks achieving the Level 2 threshold is (72%) and higher than the England average (69%). While the reasons for this change by age 19 are likely to be complex, the results suggest that provision for 16-19 years old in Buckinghamshire is at least as effective as nationally in allowing students who have not been successful by age 16 to achieve this success in the period age 16-age 19.

PART 2: Analyses based on student level data at KS2

Introduction

While the overall Buckinghamshire cohort is large (approx 5,500 pupils in a year group) the sample size in any one year is often too small to support reliable estimation for particular sub-groups and combinations (e.g. by FSM, gender, ethnicity, EAL etc.). This is even more of a problem if we wish to have indicators at the level of individual schools. We therefore take individual student data from the last three years (2010, 2011 and 2012) and combine theses to create a database of over 16,000 students. We use this for two main purposes, to:

- Determine whether the FSM gap is moderated by other pupil background characteristics. For example does the FSM gap, and more particularly the absolute attainment of FSM pupils, vary between boys and girls, different ethnic minority groups, young people with English as an additional language, SEN or by level of prior attainment? If so what are the implications for Buckinghamshire schools?

- Create robust 3-year averages for all schools, particularly primary schools where data from any one year are too small to allow reliable estimates. This will support better estimates of individual schools with the largest FSM gap. We can explore whether any school level characteristics (e.g. the % of FSM pupils in the school or the school type etc.) are associated with the size of the FSM gap. Does this suggest schools where further qualitative investigation might be fruitful, e.g. through interviews with students and staff?

Methodology

Measure of entitlement to FSM

As we saw in Part 1, the proportion of students recorded as entitled to FSM in Buckinghamshire is low, averaging around 350 students in each cohort (or approximately 6.7% of the total cohort). However by aggregating data over three years we achieve a sample of over 1,000 students on FSM, which is sufficiently large to allow for further analyses and breakdowns.

Table 2.1: FSM entitlement by year

			ExamYear			Total
			2010	2011	2012	
FSM	No	Count	5167	5010	4874	15051
		%	93.7%	93.7%	92.6%	93.3%
	Yes	Count	349	336	392	1077
		%	6.3%	6.3%	7.4%	6.7%
Total		Count	5516	5346	5266	16128
		%	100.0%	100.0%	100.0%	100.0%

The DFE has just started to calculate a measure of whether students have ever been entitled to a FSM at any time over the last six years (the EVER6 measure). However while this measure is included in the Bucks data set for 2012 it is not available for 2010 or 2011. To be consistent we have used as

our measure whether the student was entitled to a FSM at the time of the January school census in Year 6, the year they took their KS2 tests. This measure has lower coverage than Ever6. For example while 392 Y6 pupils (7.4%) were entitled to FSM in 2012, these were a sub-set of a larger group of 732 pupils Y6 pupils (13.9%) identified by Ever6. This reflects the national pattern, with the average level of entitlement to FSM in 2013 of 18.3% (DFE, 2013) compared to an estimated 25% or above for the Ever6 measure.

Being currently entitled to FSM in the year of the KS2 tests seems to have a stronger association with low attainment than EVER6, with only 62% of current FSM achieving Level 4+ in English & maths compared to 69% among those not currently entitled but having being entitled at some point in the last six years (84% among those never entitled to FSM). While there may be some benefit going forward to be able to identify the additional pupils included in the EVER6 measure, as these are pupils from whom the school will also receive the Pupil Premium Grant (PPG), current FSM students are the largest and lowest achieving group. The analysis is still helpful in identifying issues for the LA on the measure on which all analysis up till now has been based.

Table 2.2:   KS2 achievement by FSM measure 2012

	English & maths fine-grade			% Level 4+ Re & Ma
	Mean	SD	Count	Mean
Never entitled FSM	4.95	.72	4544	87.2
Ever6 only	4.45	.76	340	69.4
Current FSM in Y6	4.28	.82	392	61.7
Total	4.87	.76	5276	84.1

KS2 outcome measures

In combining data over three years we need to have regard to issues of consistency in the outcome measures at KS2 between 2010-2012. There were significant changes introduced to KS2 testing in 2012. Specifically the writing test was removed and replaced with teacher assessment. We therefore use the following two measures as KS2 outcomes:

(a) Threshold measure

In line with recommendations by the DFE (see DFE SFR 33/2012) we have chosen as the threshold measure a combination of the reading test and the mathematics test which are consistent over the time period. The threshold measure is therefore the % of students achieving level 4 or above in both the reading and the mathematics tests.

(b) Average KS2 fine grade

National Curriculum (NC) levels are blunt instruments with large numbers of students placed in a small number of discrete levels. At KS1 teachers can award sub-divisions within levels (e.g. 2C, 2B and 2A) but there is no such differentiation at KS2 where pupils are simply recorded using the whole level (2, 3, 4, 5, 6). However the DFE calculate English and maths fine grades using the test marks achieved by the pupil to make finer distinctions within the levels based on the marks achieved. Appendix 1 details the DFE methodology for calculating fine grades. The use of the KS2 fine grade in

our analysis allows for a more differentiated measure of a pupils achievement that would be available just using whole levels. The replacement in 2012 of the writing test with writing Teacher Assessment (TA) has not changed the basic DFE methodology. However marks for the writing component were awarded based on the writing TA level (level 3=30 marks, level 4=40 marks and level 5=50 marks) (see DFE, 2012). The Fischer Family Trust (FFT) has undertaken some analysis of the effect of this change to English fine grades (FFT, 2012). They argue that while alternative approaches to calculating fine grades for 2012 are available they make only a small difference and their recommendation is to continue to use the DFE approach to calculate English Fine Grades in 2012 as in 2010 and 2011. We therefore use KS2 fine grade measure as supplied by the Buckinghamshire School Management Support Team.

Results

The FSM gap at KS2

The table below present a breakdown of key achievement measures at KS1 and KS2 and progress measures KS1-KS2 by FSM and Non-FSM students.

Table 2.3: Size of the FSM gap for a range of measures at KS1, KS2 and progress KS1-KS2

<div align="center">Report</div>

FSM status Y6		KS1APS	k2both4	English fine-grained score	Maths fine-grained score	English & maths fine-grained score	2+ levels progress English age 7-11	2+ levels progress Maths age 7-11
0 Not entitled FSM	Mean	16.3261	.84	4.7790	4.8324	4.8085	.62	.61
	N	13527	14072	14051	14083	14017	13609	13649
	Std. Deviation	3.65860	.369	.70926	.80518	.71086	.485	.487
1 Entitled FSM	Mean	13.0466	.59	4.1763	4.1754	4.1787	.62	.61
	N	997	1020	1022	1016	1011	977	978
	Std. Deviation	4.39944	.493	.87845	.88863	.83716	.486	.489
Total	Mean	16.1010	.82	4.7381	4.7882	4.7661	.62	.61
	N	14524	15092	15073	15099	15028	14586	14627
	Std. Deviation	3.80545	.384	.73768	.82757	.73710	.485	.487

As expected from the LA average data presented in Part 1, there are large differences in the achievement of FSM and Non-FSM pupils. 84% of Non-FSM student achieving level 4 in reading and maths compared to 59% of FSM pupils. There is little difference between the FSM gap for the English and maths fine grades, with a consistently wide FSM gap for both. In future we shall therefore only consider the KS2 average fine grade score. The FSM gap for KS2 average fine grade is 0.63 of a level, or a standardised difference of 0.85 SD, a very large gap indeed[4].

This gap does not just appear at the end of KS2, it is already apparent at the end of KS1. There is a difference of 3.28 points at KS1 (age 7), a standardised difference of 0.86 SD. To a large extent then the FSM gap at KS2 is similar in size to the gap already apparent at age 7. It seems positive that in terms of the 2 levels of progress measures for both English and maths, pupils on FSM appear to be making similar progress to those not on FSM, with around 62% making 2+ levels of progress between KS1 and KS2. However we should be cautious in the interpretation of this '2 levels'

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4. Standardised gaps are created by dividing the difference in mean scores between the groups of interest by the average standard deviation (SD) of the outcome measure. It is therefore a means of comparing the relative size of a group difference in a consistent fashion across a range of outcomes which may have different means and SDs.

threshold measure, since a more refined analysis suggests students on FSM are making less progress than their non-FSM peers. This is discussed in the section 'prior attainment' later in the text.

We now move to consider other pupils characteristics that may moderate the FSM gap.

The FSM gap in relation to pupil background

Gender

The FSM gap is somewhat larger among boys than among girls. Table 2.4 shows the percentage achieving Level 4 or above in English and maths, and the figure below plots the average fine grade for boys and girls by FSM status.

Table 2.4 and Figure 2.1: KS2 results by gender and FSM

	FSM status Y6											
	0 Not entitled FSM				1 Entitled FSM				Total			
	English & maths fine-grained score			Level 4+ En & Ma	English & maths fine-grained score			Level 4+ En & Ma	English & maths fine-grained score			Level 4+ En & Ma
	Mean	N	SD	Mean	Mean	N	SD	Mean	Mean	N	SD	Mean
0 Male	4.87	2547	.78	.843	4.21	204	.84	.579	4.82	2751	.80	.824
1 Female	4.96	2327	.67	.877	4.37	188	.80	.658	4.92	2515	.70	.861
Total	4.91	4874	.73	.859	4.28	392	.82	.617	4.87	5266	.76	.841
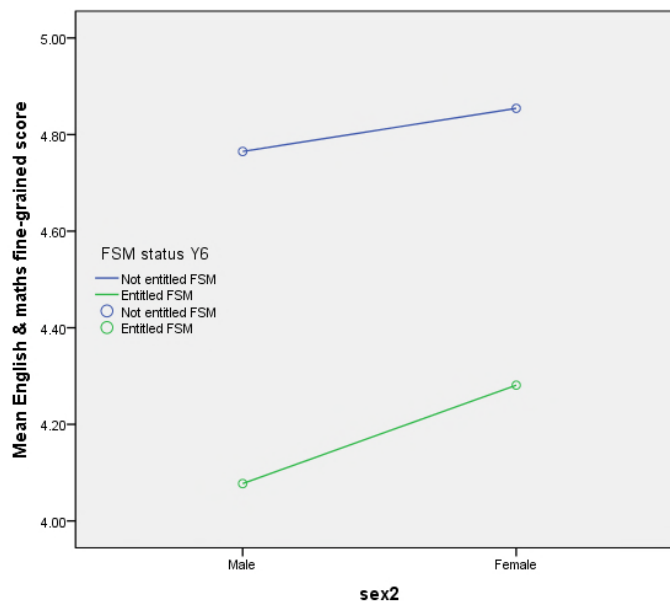
The mean score for boys on FSM seems to be especially low, with (a) a bigger gender gap among those on FSM compared to the gender gap among non-FSM pupils, and (b) a bigger FSM gap among boys compared to the FSM gap among girls. Schools need to be particularly aware of the higher risk of low attainment among FSM boys compared to girls.

Ethnic group

A breakdown of the number of students by each of the 18 ethnic categories used in the school census, separately by FSM status, is given in Table 2.5.

The proportion of ethnic minority student within the LA primary schools is relatively high at 25%, close to the national average for England of 26.6% across both primary and secondary schools (DFE, 2013). Particularly large groups include Pakistani (8.7%), White Other Groups (3.3%), Indian (2.3%), Mixed White and Caribbean (1.7%) and Black students (1.9%). It is notable that the level of entitlement to FSM among several ethnic minority groups varies quite widely from the White British average of 5.3%. Looking at the larger ethnic groups, the level of entitlement to FSM is lower for Indian (2.8%), White Other (3.9%) and Black African (3.9%) students and substantially higher for Pakistani (12.7%), Mixed White & Caribbean (17.6%) and Black Caribbean (24.8%) students.

Table 2.5: Number and proportion of students by ethnic group and FSM status

| | | | FSM status (Y6) | | | |
| | | | Not entitled FSM | | Entitled FSM | |
Ethnic group	Total N	Total %	Count	%	Count	%
0 White British	12110	75.1%	11468	94.7%	642	5.3%
1 White Irish	67	0.4%	65	97.0%	2	3.0%
2 Traveller Irish	24	0.1%	13	54.2%	11	45.8%
3 Traveller Gypsy/Roma	35	0.2%	25	71.4%	10	28.6%
4 White other groups	533	3.3%	512	96.1%	21	3.9%
5 Mixed White & African	75	0.5%	58	77.3%	17	22.7%
6 Mixed White & Caribbean	278	1.7%	229	82.4%	49	17.6%
7 Mixed White & Asian	230	1.4%	204	88.7%	26	11.3%
8 Any other mixed background	206	1.3%	190	92.2%	16	7.8%
9 Indian	363	2.3%	353	97.2%	10	2.8%
10 Pakistani	1408	8.7%	1229	87.3%	179	12.7%
11 Bangladeshi	50	0.3%	41	82.0%	9	18.0%
12 Any other Asian	213	1.3%	197	92.5%	16	7.5%
13 Black African	129	0.8%	124	96.1%	5	3.9%
14 Black Caribbean	153	0.9%	115	75.2%	38	24.8%
15 Black other groups	31	0.2%	25	80.6%	6	19.4%
16 Chinese	44	0.3%	42	95.5%	2	4.5%
17 Any other ethnic group	78	0.5%	70	89.7%	8	10.3%
18 Unclassified/Refused	101	0.6%	91	90.1%	10	9.9%
Total	16128	100.0%	15051	93.3%	1077	6.7%

However some of these groups have very small sample sizes in absolute terms and in the FSM category in particular. A decision was therefore taken to include in further analysis only groups containing at least 100 students. White Irish, Traveller Irish, Gypsy/Roma and Black Other were recoded to the Any Other ethnic group; Mixed White & African were combined with Any Other Mixed Background; Chinese students were added with Any Other Asian (consistent with the change in the 2011 census to group Chinese students with the higher-order Asian grouping rather than as a

separate stand-alone category); and the small number of Bangladeshi students were combined with Pakistani.

The table and figure below show KS2 average fine-grade score for the larger ethnic groups and by FSM status. (NB for readers wanting results for all ethnic groups, a breakdown of KS2 average fine-grade by FSM status for all 18 ethnic groups is given in Appendix 2).

Table 2.6: KS2 average fine grade by major ethnic groups and FSM status

Ethnic group	NOT-FSM			FSM			All students		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
White British	11468	4.85	.69	642	4.18	.84	12110	4.81	.71
White other groups	512	4.81	.74	21	4.56	.50	533	4.80	.73
Mixed White & Caribbean	229	4.61	.69	49	4.18	.60	278	4.53	.70
Mixed White & Asian	204	4.93	.75	26	4.09	.91	230	4.83	.82
Any other mixed background	248	4.92	.65	33	4.32	.78	281	4.84	.69
Indian	353	5.06	.64	10	4.65	.89	363	5.05	.65
Pakistani/Bangladeshi	1270	4.48	.77	188	4.16	.82	1458	4.43	.78
Any other Asian	239	4.77	.85	18	4.87	.77	257	4.78	.85
Black African	124	4.64	.69	5	4.40	.57	129	4.63	.68
Black Caribbean	115	4.33	.79	38	3.95	.80	153	4.23	.81
Any other ethnic group	198	4.64	.79	37	3.75	1.05	235	4.50	.89
Unclassified/Refused	91	4.91	.70	10	4.01	1.01	101	4.83	.77
Total	15051	4.81	.71	1077	4.18	.84	16128	4.77	.74

Figure 2.2: KS2 average fine-grade by major ethnic groups and FSM status
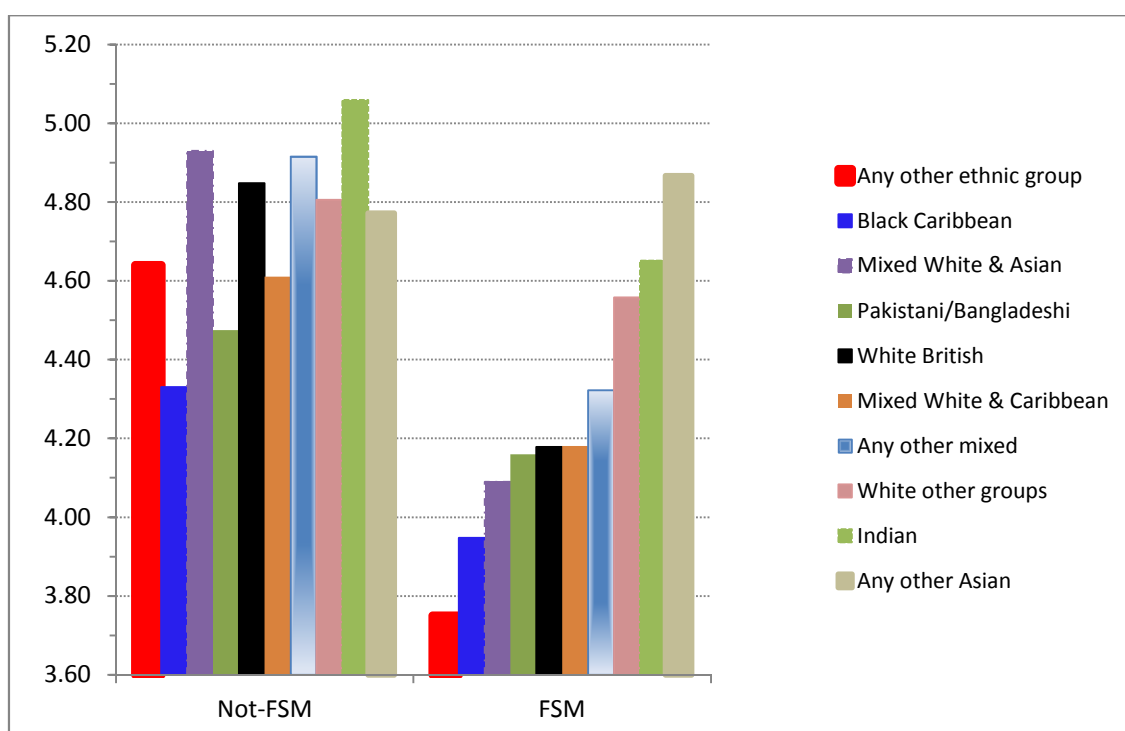
The results indicate that ethnicity is associated with quite substantial variation in achievement within the FSM group. The particularly low achievement of FSM pupils from the Any Other group is driven by the inclusion of the Traveller Irish and Gypsy-Roma within this group, but Black Caribbean pupils also seem to do particularly poorly, and Pakistani and White British FSM pupils have similar low levels of achievement. In contrast FSM pupils from all the other mixed groups, White Other, Indian and Any Other Asian groups all have higher levels of achievement than their White British peers. This suggests it would be valuable for schools to consider what factors might account for the resilience to socio-economic deprivation of these particular ethnic groups in comparison to the White British and Pakistani/Bangladeshi FSM pupils. While the number of Black Caribbean (n=38) and traveller/Roma (n=21) FSM pupils is small, a focus on why these groups underachieve is also warranted.

NB although the focus above has been on pupils entitled to FSM, this should not obscure the fact that there are large ethnic gaps among those students not entitled to FSM, particularly for Black Caribbean, Pakistani/Bangladeshi and Mixed White & Black Caribbean students.

EAL

EAL is highly correlated with ethnicity. For example 89% of Pakistani/Bangladeshi, 77% of Any Other Asian, 62% of Indian, 49% White Other and 43% Black African students are classified as EAL, compared to 0.5% of White British and 2.0% of Black Caribbean students. Whether the EAL Flag is useful, given it says nothing about the student's fluency in English, is debateable.

The results for English and maths are broadly consistent. EAL does not appear to be a strong differentiator of achievement among students entitled to FSM. In fact students recorded as EAL among those entitled to FSM actually score slightly higher than those recorded with a main language of English, despite the assumption that EAL would be a barrier to achievement. EAL is however associated with lower attainment among those not entitled to FSM.

Table 2.7: KS2 outcomes by EAL and FSM

	FSM status Y6											
	0 Not entitled FSM				1 Entitled FSM				Total			
	English & maths fine-grained score			Level 4+ En & Ma	English & maths fine-grained score			Level 4+ En & Ma	English & maths fine-grained score			Level 4+ En & Ma
	Mean	N	SD	Mean	Mean	N	SD	Mean	Mean	N	SD	Mean
0 English	4.84	13064	.69	.852	4.17	854	.84	.583	4.80	13918	.72	.835
1 EAL	4.59	1983	.80	.748	4.23	223	.84	.605	4.55	2206	.81	.734
Total	4.81	15047	.71	.838	4.18	1077	.84	.587	4.77	16124	.74	.821

Figure 2.3: KS2 outcomes by EAL and FSM

KS2 English score

KS2 maths score
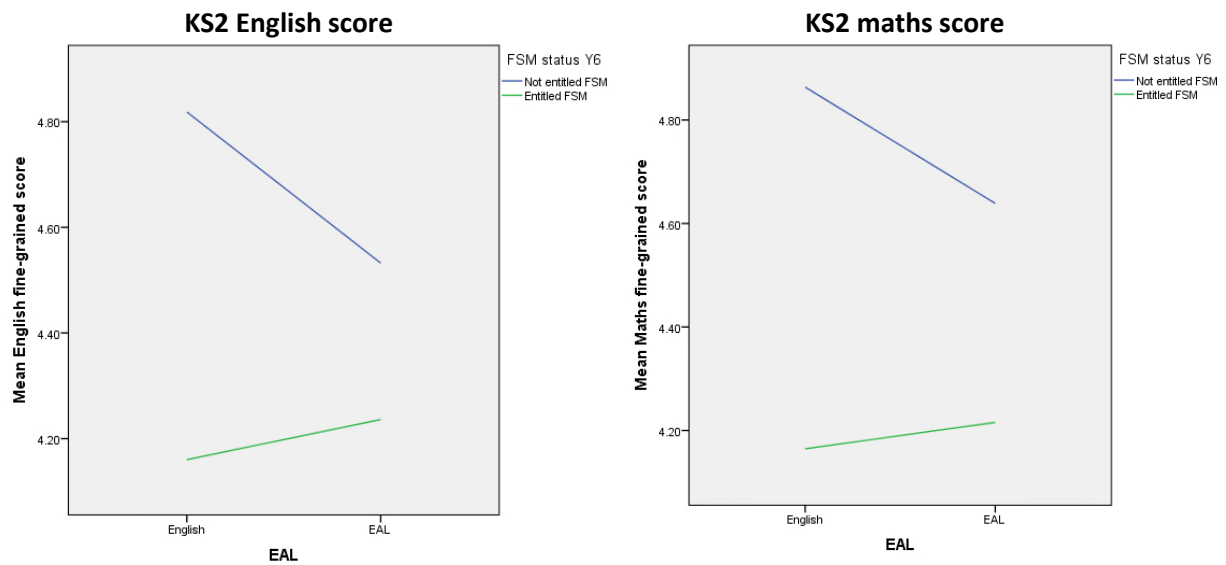
SEN

Pupils entitled to FSM tend to score significantly lower than non-FSM pupils, but the size of the FSM gap does not vary significantly at different levels of identified SEN, as shown in Table 2.8 and Figure 2.4.

Table 2.8 and Figure 2.4: KS2 achievement by level of SEN and FSM status

	FSM status Y6											
	0 Not entitled FSM				1 Entitled FSM				Total			
	English & maths fine-grained score			Level 4+ En & Ma	English & maths fine-grained score			Level 4+ En & Ma	English & maths fine-grained score			Level 4+ En & Ma
	Mean	N	SD	Mean	Mean	N	SD	Mean	Mean	N	SD	Mean
0 No SEN	5.01	12130	.51	.930	4.63	593	.55	.826	4.99	12723	.52	.925
1 School Action	4.21	1611	.60	.563	3.97	207	.65	.434	4.18	1818	.61	.549
2 SAP	3.91	758	.76	.409	3.70	143	.68	.290	3.88	901	.75	.390
3 Statemented	3.31	552	.93	.209	2.96	134	.68	.094	3.24	686	.90	.187
Total	4.81	15051	.71	.838	4.18	1077	.84	.587	4.77	16128	.74	.821
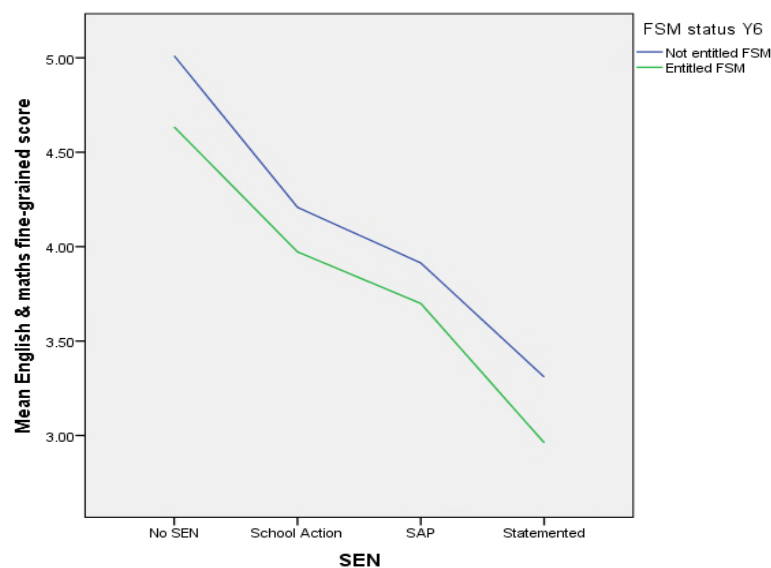
Prior attainment

It seems positive that in terms of the 2 levels of progress measures for both English and maths, pupils on FSM appear to be making similar progress to those not on FSM, with around 62% making 2+ levels of progress between the end of KS1 and the end of KS2. However we should be cautious in the use of this '2 levels' threshold measure. A regression analysis was completed using the more finely differentiated measures of KS1 and KS2 average points score (APS). This revealed that pupils on FSM on average make significantly less progress than non-FSM pupils by about -0.75 of a point score. This may seem like a small number in absolute terms, but given that each NC points score is assumed to represent one term of progress this is not insubstantial effect. We conclude that, using a more differentiated measures than 2 levels of progress, the FSM gap is already large at KS1 and grows further during the course of KS2.

We mentioned above that pupils on FSM made on average -0.75 points less progress age 7-11than non-FSM pupils. However this varied significantly by prior attainment. The FSM gap in progress interacted strongly with prior attainment, the results of this interaction are shown in Table 2.9 (details of the model are given in Appendix 2). For a student with a KS1 average points score equivalent to an average level 1 the FSM progress gap was only 0.31 points, but for a student with an average 2B at KS1 it was 0.88 points and for a student with an average level 3 at KS1 it was 1.5 points.

Table 2.9 and Figure 2.5: FSM gap in progress KS1-KS2 by prior attainment level

KS1 avg. level	KS1 APS	KS2 APS		Gap
		NO-FSM	FSM	
1	9	22.0	21.7	0.31
2C	13	25.9	25.2	0.69
2B	15	27.8	26.9	0.88
2A	17	29.6	28.6	1.07
3	21	33.1	31.6	1.46
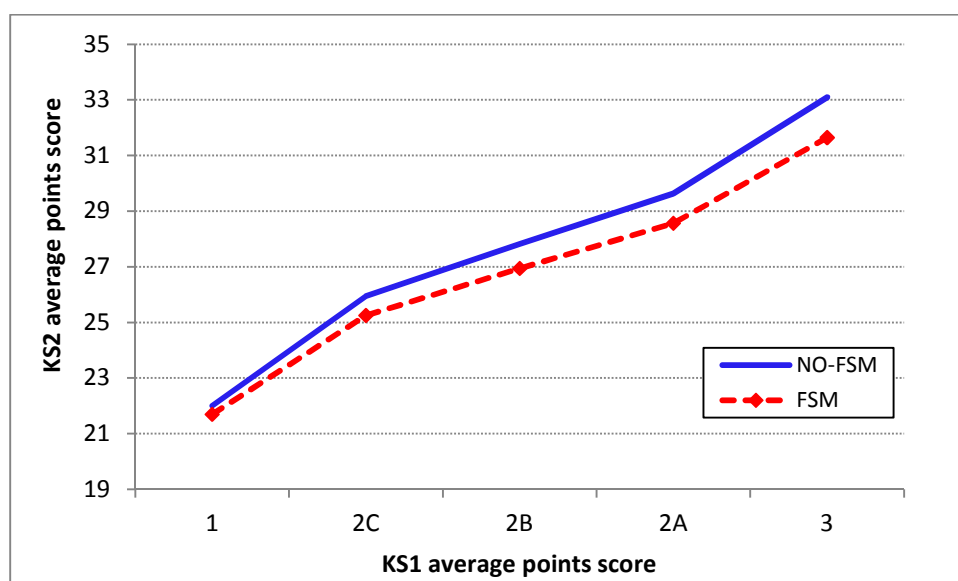
This analysis reveals that it is FSM pupils with higher prior attainment at age 7 that make the least progress between KS1 and KS2. This implies a degree of squandered talent during the course of KS2. Schools need to be especially aware of and monitor the progress of high achieving FSM pupils at KS1 to ensure that any decline in achievement is identified early and remedial action taken.

School level FSM gaps

Introduction

We can use the three year total data to get a better handle on within-school FSM gaps. The questions addressed are: Does the FSM gap vary significantly across schools within the LA? Are there any school characteristics that are correlated with the FSM gap? Do the results suggest schools where further qualitative investigation might be fruitful, e.g. through interviews with students and staff?

In generating three-year averages for primary schools the issue of the 2010 boycott arose. A minority of schools (n=23) had taken part in the boycott of the national KS2 tests in 2010. These schools tested only between 0% to 18% of their eligible pupils in 2010 (all other schools tested at least 95% of the eligible roll). This represented just under 18% of mainstream schools and just under 17% of the 2010 student cohort. For these schools their data was averaged over two rather than three years.

The LA data file indicated 140 primary schools. Of these:

- two schools only opened in Sept 2012 so had no results;
- One school (Hannah Ball) is recruiting from infant upwards and the oldest pupils are currently Y5 so has had no results for Y6;
- Six special schools were not included due to their particular student population.

This gave a total population of 131 primary schools.

Following standard DFE practice school results are not reported where only 5 or fewer students were recorded as entitled to FSM. Even when aggregating data over three years, 79 of the 131 primary schools (61%) had tested only 5 or fewer pupils entitled to FSM. Indeed 19 schools (15%) had not had a single Y6 pupil entitled to FSM during the whole three-year period. The results for the remaining 52 schools are presented in Table 2.10 and in Figure 2.6 & 2.7.

Figure 2.6 shows the FSM gap based on students average KS2 fine grade for English and maths. The red diamond shows the mean score for FSM pupils and the blue square the score for Non-FSM pupils. These are joined by a line which indicates the size of the FSM gap. The overall average score for the school is indicate by the small green line. The graph is sorted by the size of the FSM gap with schools with the smallest FSM gap on the left hand side and the school with the largest gap on the right.

Figure 2.7 presents a similar analysis but based on the % achieving Level 4 or above in both the reading and maths tests.

Table 2.10: KS2 results 2010-2012 combined average (sorted by FSM gap fine-grade)

School	boycott 2010	Y6 roll	%FSM	%EAL	%ethnic	%Girl	%SAP+	School total tested	School fine grade	School L4+	NO-FSM tested	NO-FSM fine grade	NO-FSM L4+	FSM tested	FSM fine grade	FSM L4+	Gap fine grade	Gap L4+
Oakridge	0	129	7.8	91.5	97.7	48.1	2.3	129	4.70	79.1	119	4.68	78.2	10	4.90	90.0	-0.22	-11.8
Lane End Primary	1	44	15.9	2.3	15.9	70.5	15.9	25	4.25	56.0	19	4.21	52.6	6	4.40	66.7	-0.18	-14.0
Grendon Underwood	0	143	4.9	0.7	4.9	54.5	5.6	141	4.79	84.4	134	4.79	84.3	7	4.84	85.7	-0.05	-1.4
Highworth Combined & Nursery	0	169	16.6	45.6	63.9	50.3	9.5	167	4.72	80.2	141	4.71	79.4	26	4.76	84.6	-0.05	-5.2
Holy Trinity CE (Aided)	1	227	4.0	2.7	13.7	44.9	8.4	151	4.85	84.1	144	4.85	84.0	6	4.84	83.3	0.01	0.7
St Mary and All Saints CE	0	87	6.9	11.5	24.1	54.0	8.0	86	5.01	90.7	80	5.01	90.0	6	4.98	100.0	0.03	-10.0
Holtspur	1	78	14.1	10.3	20.5	56.4	12.8	52	4.55	69.2	43	4.56	67.4	9	4.49	77.8	0.07	-10.3
Oak Green	0	138	27.9	52.2	60.9	49.3	17.6	138	4.13	59.4	98	4.16	58.2	38	4.07	63.2	0.09	-5.0
Buckingham Primary	0	239	4.2	5.9	9.6	45.2	5.4	233	5.00	92.7	224	5.01	92.4	9	4.92	100.0	0.09	-7.6
Broughton Junior	0	150	5.3	18.0	26.7	50.0	8.0	150	4.64	82.7	142	4.65	82.4	8	4.55	87.5	0.10	-5.1
Thomas Hickman	0	161	21.1	28.0	40.4	52.8	10.6	160	4.34	61.3	127	4.36	62.2	33	4.26	57.6	0.10	4.6
The Iver Village Junior	0	124	13.7	19.4	29.8	52.4	4.8	122	4.52	69.7	105	4.54	70.5	17	4.42	64.7	0.11	5.8
Waterside Combined	0	45	15.6	13.3	33.3	48.9	20.0	45	4.51	71.1	38	4.53	71.1	7	4.40	71.4	0.13	-0.4
Beechview	0	147	21.8	30.6	51.7	46.3	7.5	147	4.31	65.3	115	4.35	68.7	32	4.18	53.1	0.17	15.6
Woodside Junior	0	82	13.4	14.6	23.2	52.4	8.5	82	4.84	81.7	71	4.86	81.7	11	4.68	81.8	0.18	-0.1
Tilehouse Combined	1	54	13.0	20.4	48.1	55.6	11.1	40	4.44	65.0	34	4.47	64.7	6	4.28	66.7	0.18	-2.0
Carrington Junior	0	168	8.3	7.1	21.4	45.8	10.1	160	4.60	76.3	147	4.62	77.6	13	4.43	61.5	0.19	16.0
Brookmead	0	142	7.7	0.0	6.3	48.6	9.2	142	4.87	85.2	131	4.89	84.7	11	4.70	90.9	0.19	-6.2
Castlefield	0	126	23.8	79.4	87.3	46.8	14.3	126	4.51	75.4	96	4.56	77.1	30	4.37	70.0	0.19	7.1
Kings Wood Combined	1	140	25.7	55.7	75.0	44.3	27.9	96	4.41	59.4	74	4.46	63.5	22	4.25	45.5	0.22	18.1
Turnfurlong Junior	0	262	2.7	16.8	29.4	48.5	5.3	258	4.82	83.3	252	4.83	83.7	6	4.61	66.7	0.22	17.1
Great Missenden CE	0	216	3.7	3.7	13.9	48.6	6.9	216	5.04	94.0	208	5.05	94.7	8	4.82	75.0	0.23	19.7
St Mary's Farnham Royal CE	0	133	12.9	28.8	52.6	51.1	3.0	133	4.51	66.9	115	4.55	67.8	17	4.32	64.7	0.23	3.1
Bearbrook Combined	0	159	17.0	27.0	39.6	47.2	17.6	157	4.34	63.1	130	4.38	63.1	27	4.13	63.0	0.25	0.1
Haydon Abbey	0	145	26.4	32.6	46.9	45.5	16.7	144	4.31	56.3	105	4.39	60.0	38	4.13	47.4	0.27	12.6
Chepping View Primary Academy	0	177	12.4	63.8	72.9	44.6	6.8	176	4.92	93.8	154	4.95	94.8	22	4.67	86.4	0.28	8.4
St Peter's CE	0	65	29.7	12.5	32.3	46.2	18.8	65	4.82	92.3	45	4.92	95.6	19	4.60	84.2	0.32	11.3
The Meadows	0	47	13.0	4.3	27.7	48.9	26.1	47	4.31	63.8	40	4.39	67.5	6	4.04	50.0	0.35	17.5
Ash Hill Primary	0	71	39.4	18.3	38.0	45.1	15.5	71	4.19	62.0	43	4.33	69.8	28	3.97	50.0	0.36	19.8
Hamilton Primary Academy	0	267	7.1	49.6	74.2	46.8	6.8	265	4.60	75.5	245	4.63	76.3	19	4.26	68.4	0.37	7.9
Little Spring	0	67	16.4	20.9	28.4	56.7	13.4	66	4.29	63.6	55	4.36	63.6	11	3.97	63.6	0.38	0.0
Overstone Combined	0	86	11.6	1.2	5.8	40.7	4.7	86	4.89	90.7	76	4.94	93.4	10	4.55	70.0	0.38	23.4
The Disraeli School/Centre	0	174	23.7	37.0	60.9	45.4	13.3	172	4.36	65.7	130	4.46	72.3	41	4.06	46.3	0.41	26.0

School	boycott 2010	Y6 roll	%FSM	%EAL	%ethnic	%Girl	%SAP+	School total tested	School fine grade	School L4+	NO-FSM tested	NO-FSM fine grade	NO-FSM L4+	FSM tested	FSM fine grade	FSM L4+	Gap fine grade	Gap L4+
Booker Hill	0	81	32.1	40.7	63.0	50.6	11.1	80	4.54	81.3	55	4.68	83.6	25	4.25	76.0	0.43	7.6
Brushwood Junior	0	143	6.3	21.8	29.4	46.2	11.3	141	4.85	90.1	131	4.88	90.8	9	4.44	77.8	0.44	13.1
Thomas Harding Junior	0	171	16.4	28.7	46.8	55.6	11.7	171	4.76	87.1	143	4.83	90.9	28	4.38	67.9	0.45	23.1
Ashmead Combined	0	206	19.9	23.3	33.5	42.2	14.1	206	4.45	74.3	165	4.55	78.2	41	4.05	58.5	0.50	19.6
Chalfont St Giles Junior	0	175	4.0	2.9	8.6	48.0	4.6	174	4.74	81.0	167	4.76	82.0	7	4.24	57.1	0.52	24.9
Millbrook Combined	0	101	23.8	60.4	79.2	45.5	5.9	101	4.23	59.4	77	4.35	66.2	24	3.81	37.5	0.54	28.7
Elmhurst	0	93	17.2	75.3	82.8	49.5	28.0	93	4.16	50.5	77	4.25	57.1	16	3.68	18.8	0.57	38.4
William Harding Combined	0	269	4.1	9.0	22.3	42.8	18.3	269	4.56	77.3	257	4.58	78.2	11	4.00	54.5	0.58	23.7
Holmer Green Junior	0	178	5.1	7.3	12.4	46.6	7.3	178	4.83	87.6	169	4.86	88.2	9	4.27	77.8	0.59	10.4
Princes Risborough Primary	0	95	10.5	3.2	14.7	37.9	26.3	94	4.62	74.5	85	4.69	77.6	9	4.03	44.4	0.65	33.2
Stokenchurch Primary	0	225	4.4	3.6	7.6	47.1	5.3	224	4.82	89.7	214	4.86	91.1	10	4.14	60.0	0.71	31.1
Aston Clinton	0	117	5.1	1.7	4.3	51.3	12.0	117	4.87	81.2	111	4.91	82.0	6	4.16	66.7	0.75	15.3
Bell Lane Combined	0	47	25.5	8.5	12.8	51.1	38.3	45	3.93	44.4	35	4.10	54.3	10	3.32	10.0	0.77	44.3
Winslow CE Combined	0	228	6.1	0.9	10.1	47.4	9.6	228	4.78	79.4	214	4.83	81.8	14	4.03	42.9	0.79	38.9
Wendover CE Junior	0	260	4.7	2.3	9.6	45.8	10.9	260	4.82	83.5	246	4.86	85.8	12	4.05	33.3	0.80	52.4
St Michael's Catholic	0	173	4.6	23.7	46.2	46.2	9.8	172	4.64	80.8	164	4.68	82.3	8	3.82	50.0	0.86	32.3
High Wycombe CE Combined	0	88	8.0	15.9	45.5	45.5	4.5	88	4.77	84.1	81	4.84	87.7	7	3.98	42.9	0.86	44.8
Grenville Combined	0	70	12.9	10.0	12.9	45.7	11.4	70	4.42	62.9	61	4.56	70.5	9	3.47	11.1	1.10	59.4
Iver Heath Junior	1	142	7.0	8.5	16.9	43.7	9.2	88	4.48	75.0	81	4.60	80.2	7	3.06	14.3	1.54	66.0

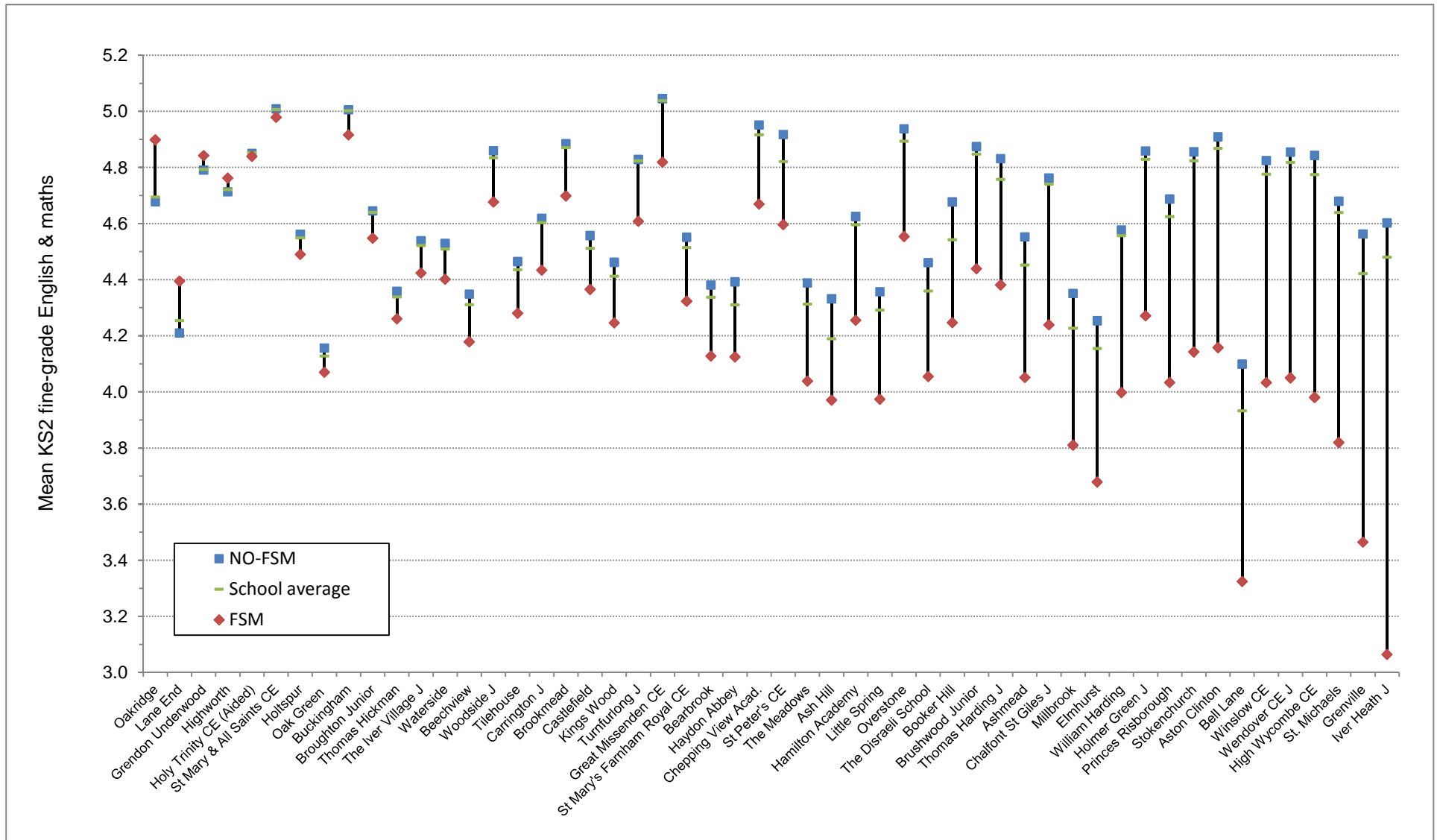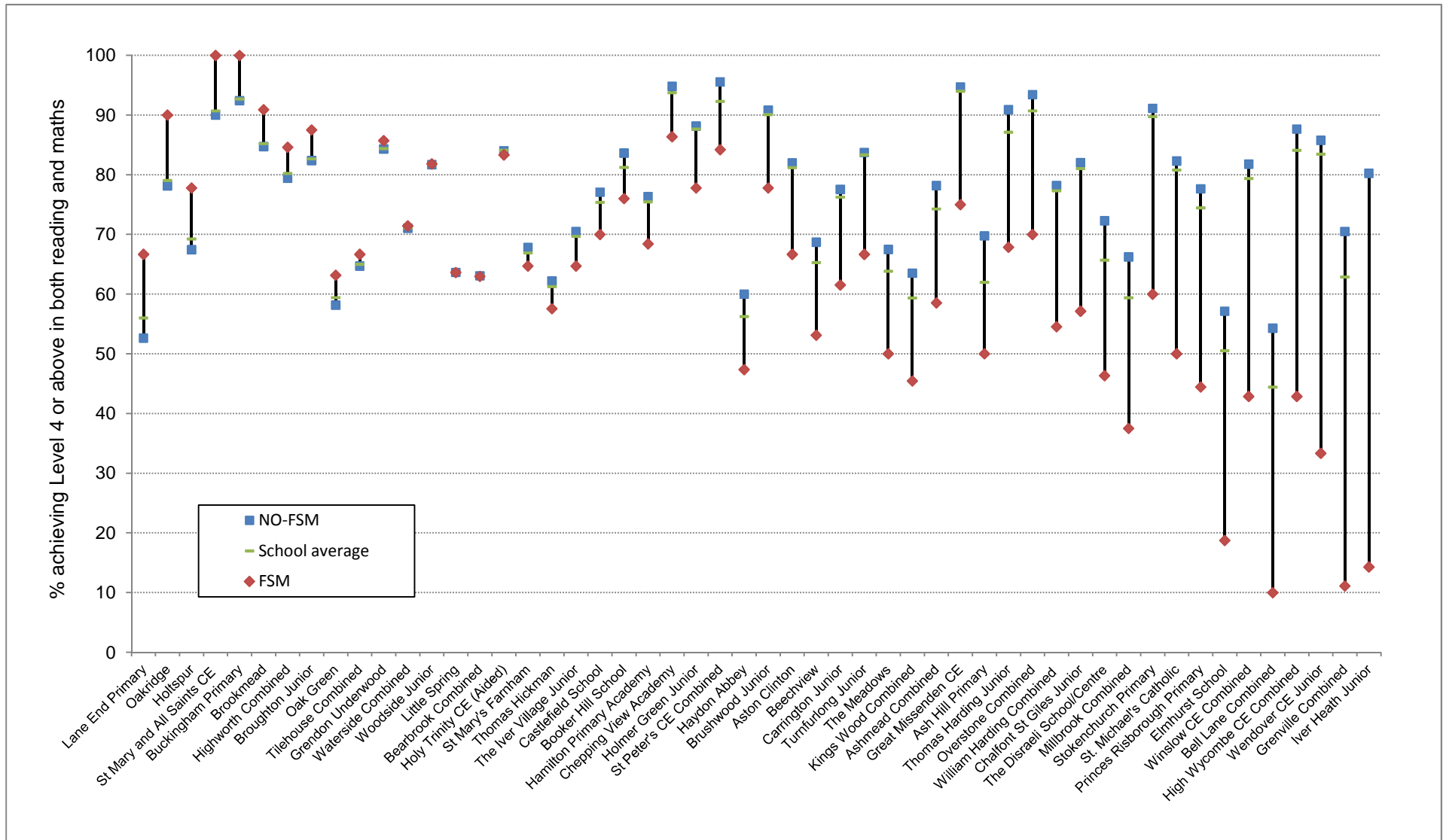**Figure 2.6: FSM gap for KS2 average fine grade**

Figure 2.7: FSM gap in the % of students achieving Level 4 or above in the reading and the maths tests

Given the small sample size in many schools, the level 4+ threshold measure is more likely to be variable and effected by the movement of a small number of students across the threshold. Therefore the analysis of KS2 average fine grade is to be preferred. Nevertheless at the school level the two sets of data correlate r=0.90, so the rank order of the schools will be very similar whichever outcome is used.

- There are only four schools where the KS2 fine grade for FSM students exceeds that of non-FSM pupils. However these schools may be particularly worthy of further investigation by LA School Improvement staff.

- The schools with the largest FSM gaps tend to be those where students on FSM have particularly low levels of achievement.

The impact of school composition

In this section we consider whether, over and above the characteristics of the individual student, the composition of the school has any additional association with student achievement or progress. In particular we ask:

- School level poverty - Does the composition of the school, particularly the percentage of students entitled to FSM, have an impact on overall student attainment/progress?

- Relative poverty - The question here is whether school %FSM has a differential effect on FSM compared to non-FSM students. Does being on FSM in a relatively advantaged school (low % FSM) have a more negative impact on achievement/progress than being on FSM in a school where there is a greater concentration of poverty (high % FSM)?

To achieve this we construct a multi-level regression model with students (level 1) grouped within schools (level 2) to appropriately reflect the multi-level nature of the data. Special schools are excluded because of their unique characteristics, but all 131 mainstream primary schools are included. We initially construct a model including student characteristics (FSM, Gender, Ethnic group, EAL, SEN and KS1 score if a progress model). We then run a further model that adds school composition variables, specifically the % students entitled to FSM, % girls, % ethnic minority, % EAL, % SAP+ and school size (total roll).

School composition variables

Six school composition variables were tested. The table below shows the mean and SD and the min. and max. values across all schools.

Table 2.11: Distribution of school composition variables across all 131 mainstream primary schools

	N	Mean	SD	Min.	Max.
School size (roll)	131	121.7	63.1	17	337
% FSM	131	6.8	8.1	0.0	39.4
% Ethnic minority	131	23.3	19.6	0.0	97.7
%EAL	131	12.3	17.0	0.0	91.5
% Girls	131	49.3	6.0	23.5	70.5
% SAP+	131	9.2	6.3	1.1	38.3

The distribution were however strongly skewed. For examples the histogram below shows the number of schools by % FSM. A high number of schools (51) has <2.5% of students entitled to FSM and a small number of schools (15) had no pupils entitled to FSM.

Figure 2.8: Distribution of school %FSM
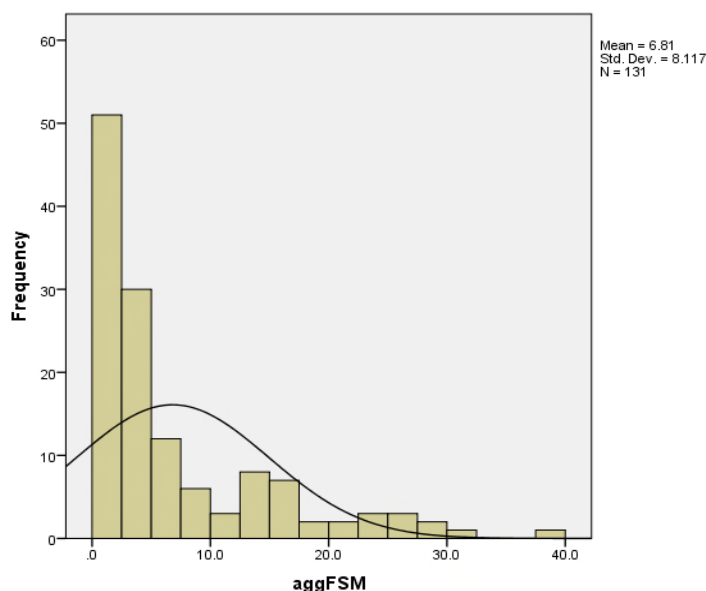
In subsequent analyses of the effect of school %FSM we therefore select and test values reflecting the percentile distribution as shown below. If we ordered all 131 schools by their %FSM, then the school at the 50th centile (median) would be in the middle of the distribution with 3.8% FSM. the schools at the 25th percentile (lower quartile) had 1.2% FSM and the schools at the 75th percentile (upper quartile) had 9.8% FSM.

Percentile	5th	10th	25th	50th	75th	90th	95th
%FSM	0.0	0.0	1.2	3.8	9.8	19.5	25.6

School composition and achievement

There was only one school composition variable that had statistically significant association with KS2 achievement and that was the % of pupils in the school entitled to a FSM. For each percentage point increase in %FSM, KS2 fine grade score declined by -0.11 (p=.000). Therefore the proportion of disadvantaged pupils in a school has an additional effect, over and above the effect of accounting for

the FSM status of the individual students. So in answer to our first question, a high level of disadvantage among the school cohort has a depressing effect on achievement. This is congruent with national research (e.g. Strand, 1999, 2010, 2014).

However in answer to our second question, there was a significant interaction between an individual students' FSM status and the school %FSM. Table 2.12 and Figure 2.9 show the FSM by %FSM interaction derived from the analysis.

Table 2.12 and Figure 2.9: KS2 fine grades by FSM and school %FSM

	School %FSM: Percentile (bold) and values					
	10	**25**	**50**	**75**	**90**	**95**
Student FSM	0.1	1.2	3.8	9.8	19.5	25.6
NOT FSM	3.57	3.55	3.52	3.45	3.34	3.26
FSM	3.31	3.30	3.28	3.24	3.17	3.13
FSM Gap	-0.26	-0.25	-0.24	-0.21	-0.16	-0.13
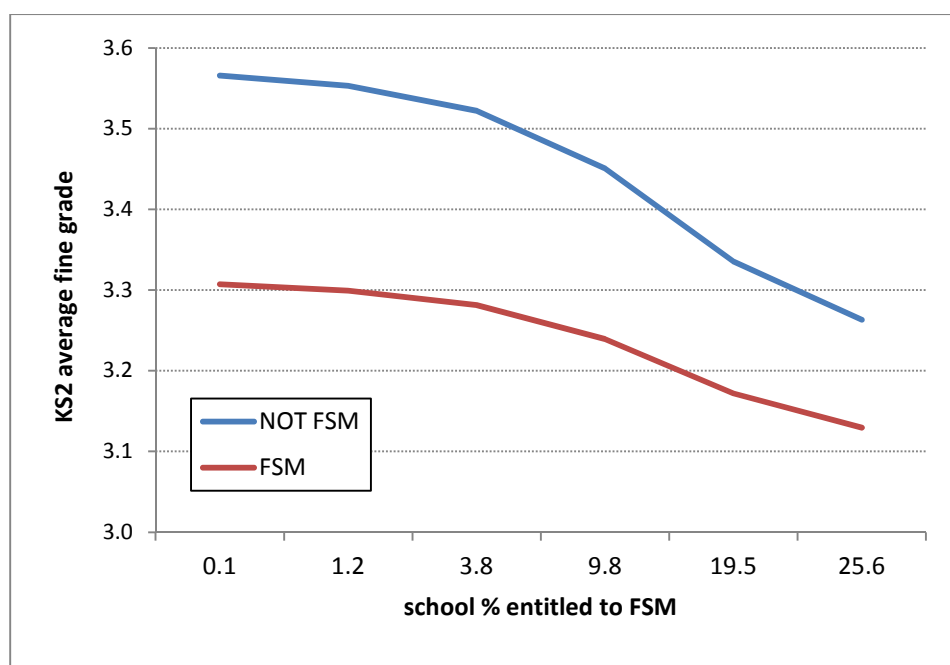
The decline in achievement associated with higher %FSM is true for FSM students as well as non-FSM students. However the FSM gap is appreciably larger in less disadvantaged schools. Thus in schools with <1% entitled to FSM the gap is -0.26 of a KS2 fine grade, double the size of the -0.13 gap in a school with 25% FSM. This gap can be interpreted in a number of ways. However one interpretation is that this represents the contrast of being poor in a relatively affluent setting. If the line in the above figure for FSM students mirrored the line for non-FSM pupils, then we would be seeing significantly higher achievement by FSM pupils in the low %FSM schools.

A recent report based on school visits by DFE standards advisers (DFE, 2010) argues that FSM students in low disadvantage schools are actually doubly disadvantaged. "*They experience all the difficulties associated with their comparative poverty and they find themselves in a significant minority, having to live in the midst of a community and school population who are more affluent, perhaps significantly more affluent, than they are*" (DFE, 2010, p4). The report also suggests that "*in*

schools with comparatively low %FSM their needs are less likely to be specifically identified and met"
(Op Cit). A similar argument has been made by HMCI Sir Michael Wilshaw in his recent OFSTED
Annual Report (OFSTED, 2013). However the current analysis is the first to my knowledge to
empirical identify this issue with quantitative data.

School composition and student progress

Even more stark results are apparent when looking at pupil progress age 7-11. The school %FSM
does not have any relation to overall pupil progress age 7-11, nor do any of the other school
composition variables assessed. However again there was a significant interaction between an
individual students' FSM status and the school %FSM, this time on student progress age 7-11. Table
2.13 and Figure 2.9 below show the FSM by %FSM interaction derived from the analysis (the full
regression model is contained in Appendix 5).

The absolute size of the associations with progress are much smaller than the associations with
attainment, because much of the difference in achievement at age 11 has been accounted for by
pre-existing differences at age 7. However statistically significant effects emerge. The overall effect
of %FSM is not significant, but the interaction between %FSM and individual student's FSM status is
highly significant. Students entitled to FSM in high deprivation schools actually make slightly more
progress age 7-11 than FSM students in low deprivation schools. The opposite effect is seen for non-
FSM pupils. Thus high deprivation schools seems more effective in terms of equalising outcomes for
disadvantaged and non-disadvantaged groups as indicated by FSM.

Again there are different possible explanations for this finding, but it appears to indicate that pupils
on FSM in low deprivation schools make particularly poor progress age 7-11, not only relative to
non-FSM students in these schools but also in relation to pupils on FSM in more disadvantaged
schools. As argued above this lends some empirical weight to HMCI Michael Wilshaw's contention
(OFSTED, 2013) that that there are particular challenges for pupils on FSM when they are isolated in
schools where they are very much a minority.

**Table 2.13: Association between the school %FSM and the progress of FSM and non-FSM
students**

	School %FSM: Percentiles (bold) and values					
	10	**25**	**50**	**75**	**90**	**95**
Student FSM	0.1	1.2	3.8	9.8	19.5	25.6
NOT FSM	3.50	3.50	3.49	3.48	3.46	3.45
FSM	3.39	3.39	3.39	3.40	3.41	3.42
FSM Gap	-0.11	-0.11	-0.10	-0.08	-0.05	-0.03

Figure 2.9: Association between the school %FSM and the progress of FSM and non-FSM students
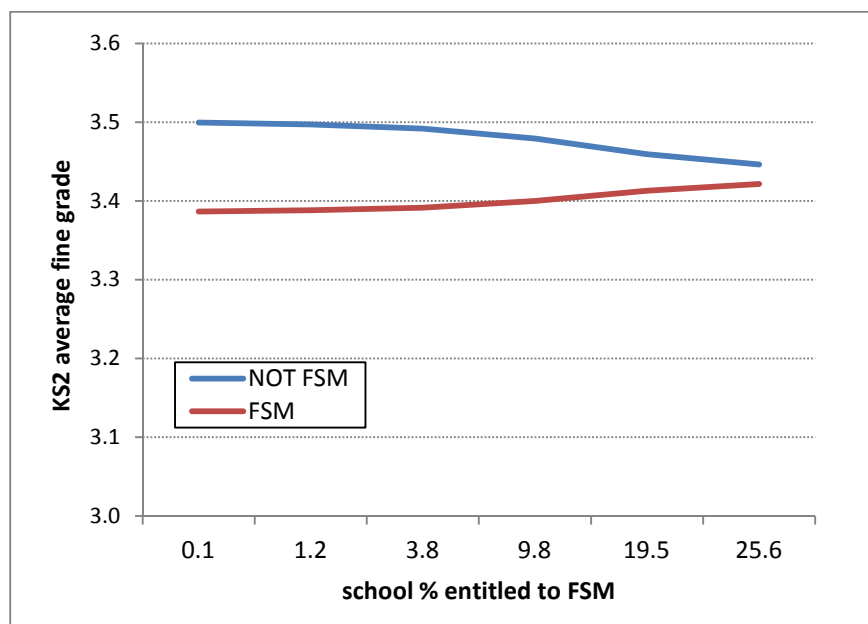
Note: the model controls for prior attainment at age 7 as well as FSM, gender, ethnicity, EAL and level of SEN.

Implications

Action targeted at raising the achievement of students on FSM in the schools with the highest % of students on FSM will reach the greatest number of FSM students across the authority. The table below shows that the 32 schools with the highest %FSM (9.9% or above) educate 654 students on FSM, or nearly two-thirds (64%) of all FSM students.

Table 2.14: Number of FSM students in schools with different %FSM

School %FSM quartile band	No.of schools	No. of students				
		Not-FSM	%	FSM	%	Total
Q1 (FSM 0%-1.2%)	34	4020	27.0%	18	1.8%	4038
Q2 (FSM 1.3%-3.8%)	32	3859	25.9%	93	9.2%	3952
Q3 (FSM 3.9%-9.8%)	33	4312	28.9%	251	24.7%	4563
Q4 (FSM 9.9%-100%)	32	2706	18.2%	654	64.4%	3360
Total	131	14897	100%	1016	100%	15913

However these are not necessarily the schools with the largest FSM gaps, nor are they the schools where FSM pupils necessarily make the least progress. While only one-third (34%) of FSM students are attending the 65 schools with 1.3% - 9.8% of FSM pupils, working with the schools with large FSM gaps in this group (using the data presented in Table 2.10 and Figure 2.6) may also have a significant impact.

PART 3: Analyses based on student level data at GCSE

Methodology

Measure of entitlement to FSM

As with primary schools we have taken student level data over the three years 2010-2012 to create a file with three year's of GCSE results. In 2010 and 2011 the data includes whether each student was entitled to FSM in the January Y11 census, the average is 5.0%. As we saw in Part 1, this is extremely low relative to national averages. However in 2012 the data indicates whether each Y11 student had ever been entitled to FSM over the preceding six years (Ever6). This gives the substantially higher figure of 13.0% for 2012. The Bucks data team inform us that from 2012 the DFE (i) no longer produce just the Y11 entitlement to FSM, and (ii) do not calculate Ever6 for previous cohorts. Therefore a consistent figure over time cannot be calculated. However since the move from FSM to Ever6 in 2012 applies consistently to all schools it should not particularly prejudice one school over another. Averaging over the three cohorts there are over 1,000 students (7.6%) flagged as FSM/Ever6.

Table 3.1: FSM Indicator for Y11 Cohort 2010-2012

			2010	2011	2012	Total
FSM	No	N	5456	5256	4787	15499
		%	95.0%	95.0%	87.0%	92.4%
	Yes	N	286	279	716	1281
		%	5.0%	5.0%	13.0%	7.6%
Total		N	5516	5742	5535	16780
		%	100%	100%	100%	100%

Note: 2010 & 2011 data indicate entitlement to a FSM as recorded in January Y11. The 2012 data indicates students entitled to a FSM in Y11 or at any time in the previous six years (Ever6).

GCSE outcome measures

Unlike at KS2, there have been no substantial changes in achievement measures at Y11. We use the following two measures of examination outcomes:

- Best 8 Capped Points Score (CPS): The student's score in their Best 8 GCSEs or equivalent. This is a continuous and differentiated measure that given appropriate weight across a range of examinations.
- 5 or more GCSE passes at A*-C or equivalent including English and mathematics. This is a binary threshold measure and is therefore limited but included for information.

Results

The FSM gap at GCSE

The table below present a breakdown of key achievement measures at KS2 and KS4 for FSM and Non-FSM students. Of the 16,780 students in the data file, 341 (2.0%) were attending special schools. These students were excluded from the file because of their unique status, for example special schools are not included in standard value added models. This gives a total sample of 16,439 pupils in mainstream secondary schools.

Table 3.2: Size of the FSM gap for a range of measures at KS2, KS4 and progress KS2-KS4

FSM		K2 average point score (APS)	GCSE total point score (TPS)	Best 8 Capped Points Score (CPS)	5+A*-C incl. En&Ma	2+ levels progress English 11-16	2+ levels progress maths 11-16
Not entitled FSM	Mean	**29.3**	**498.7**	**368.6**	**72.6%**	**79.6%**	**80.7%**
	N	14258	15251	15243	15265	14826	14855
	SD	3.9	139.0	75.4	0.4	0.4	0.4
Entitled FSM	Mean	**25.8**	**399.5**	**304.1**	**36.9%**	**54.1%**	**57.6%**
	N	1135	1172	1171	1174	1117	1116
	SD	4.8	163.9	92.2	0.5	0.5	0.5
All students	Mean	**29.0**	**491.6**	**364.0**	**70.1%**	**77.8%**	**79.1%**
	N	15393	16423	16414	16439	15943	15971
	SD	4.1	143.3	78.5	0.46	0.42	0.41
Effect Size		*0.87*	*0.69*	*0.82*	*0.78*	*0.61*	*0.57*

<u>*Note*</u>*: Excludes 341 students from special schools.*

As expected, there are large differences in the achievement of FSM and Non-FSM pupils. For example 72.6% of Non-FSM students achieved 5+A*-C compared to 36.9% of FSM pupils. The FSM gap for Best 8 Capped Points score is 0.82 SD, a very large gap indeed. It also appears that students on FSM make less progress than those not on FSM, with 54% and 58% of FSM students making 2 levels or more progress in English and mathematics respectively, compared to 80% and 81% of Non-FSM students.

It is somewhat surprising that 97.1% of students are recorded for the progress measures even though only 93.6% have a KS2 average points score. However the 97.1% coverage is commensurate with the 97.4% coverage for progress in English recorded in the 2012 performance tables. We assume that the actual KS2 score is missing in the data file for a small number (578 or 3.6%) of students, possibly because they do not have the test marks needed to calculate the fine-grade performance score.

We now move to consider other pupils characteristics that may moderate the FSM gap.

The FSM gap in relation to pupil background

A multi-level regression model for pupil achievement at age 16 was computed including FSM, gender, SEN, ethnicity and EAL. The FSM term was interacted with each of the other terms to see whether the FSM gap varied in relation to gender, SEN, ethnicity and EAL. A similar model was completed with the addition of KS2 prior achievement to look at effects on progress age 11-16.

Gender and SEN

In relation to achievement at age 16 there was no significant interaction between FSM and gender or between FSM and SEN. Thus the FSM gap was equally large for boys and for girls, and for pupils at all levels of SEN. The same was true for progress age 11-16.

Ethnic group

There was a significant interaction between FSM and ethnicity. A breakdown of the number of students in each of the 18 ethnic categories used in the school census, separately by FSM status, is given in Appendix 4, along with a further table giving the mean CPS and % 5+ A*-C incl. English & maths outcomes. The proportion of ethnic minority student within the LA secondary schools is 22.8%, close to the England combined average for primary and secondary schools of 26.6% (DFE, 2013). Particularly large groups include Pakistani/Bangladeshi (7.0%), Indian (2.8%), White Other Groups (2.3%), Mixed White and Caribbean (1.8%) and Black Caribbean (1.1%).

It is notable that the level of entitlement to FSM among several ethnic minority groups varies quite widely from the White British average of 5.6%. Looking at the larger ethnic groups, the level of entitlement to FSM is lower for Indian students (2.8%), but substantially higher for Pakistani (26.4%), Mixed White & Caribbean (21.7%) and Black Caribbean (17.2%) students.

However some of these groups have very small sample sizes in absolute terms and in the FSM category in particular. Therefore Figure 3.1 below shows the mean CPS only for those ethnic groups containing at least 100 students in total and with at least 10 students entitled to FSM.

Figure 3.1: Mean GCSE CPS by major ethnic groups and FSM status
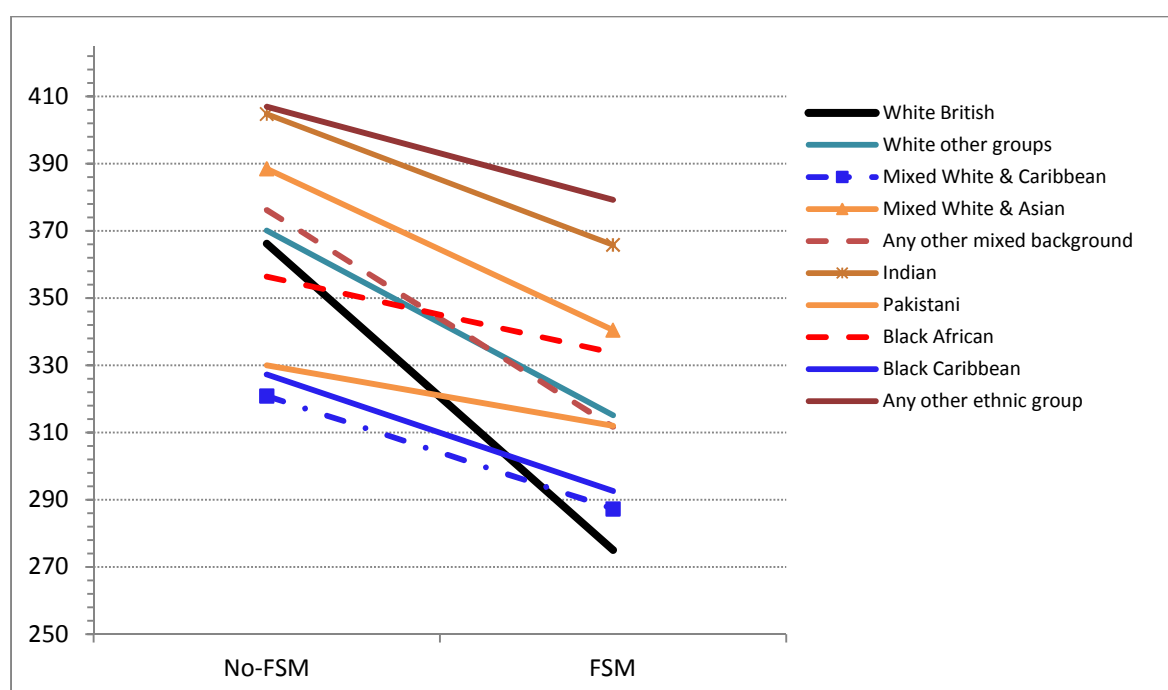
The results indicate that ethnicity is associated with quite substantial variation in achievement within the FSM group. The particularly low achievement of White British FSM students is clear, with Black Caribbean and Mixed White and Caribbean FSM students doing equally poorly. However pupils

on FSM from the other ethnic groups appear to achieve more highly. This suggests it would be valuable for schools to consider what factors might account for the resilience to socio-economic deprivation of these particular ethnic groups in comparison to the White British, Black Caribbean and Mixed White & Black Caribbean FSM students. NB although the focus above is on pupils entitled to FSM, this should not obscure the fact that there is significant underachievement relative to White British students by Black Caribbean, Pakistani/Bangladeshi and Mixed White & Caribbean students among those not entitled to FSM. Similar results were apparent in terms of student progress age 11-16.

EAL

Somewhat paradoxically, given the general assumption that EAL would be a barrier to achievement, EAL is not associated with lower achievement at age 16 relative to mono-lingual English speakers. There is a significant interaction between EAL and FSM. Among those not entitled to FSM there is no difference in achievement between EAL and mono-lingual English speakers, but for students on FSM those recorded as EAL score significantly *higher* than mono-lingual English speakers.

It is likely that EAL is acting as a flag for ethnic minorities other than Black Caribbean and Mixed White & Black Caribbean. For example 82% of Pakistani/Bangladeshi, 75% of Any Other Asian, 50% of Indian, 50% of Black African and 45% White Other students are classified as EAL, compared to 1.0% of Mixed White and Black Caribbean, 0.6% of Black Caribbean and 0.3% of White British students. We conclude the results say nothing about the effect of fluency in English, which is not what is measured by the EAL variable, but reflect the fact that EAL is acting as a flag for ethnic minorities other than Black Caribbean and Mixed White & Black Caribbean.

Table 3.3 and Figure 3.2: Age 16 achievement by FSM and EAL

		FSM (FSM 2010-2011; Ever6 2012)											
		0 Not entitled FSM				1 Entitled FSM				Total			
		Best8 Capped Points Score (CPS)			5+A*-C incl. En&Ma	Best8 Capped Points Score (CPS)			5+A*-C incl. En&Ma	Best8 Capped Points Score (CPS)			5+A*-C incl. En&Ma
		Mean	N	SD	Mean	Mean	N	SD	Mean	Mean	N	SD	Mean
EAL	0 English	367	13974	79	.727	282	954	104	.322	361	14928	84	.701
	1 EAL	353	1493	89	.612	316	325	94	.388	347	1818	91	.572
	Total	365	15467	80	.716	291	1279	102	.339	360	16746	85	.687
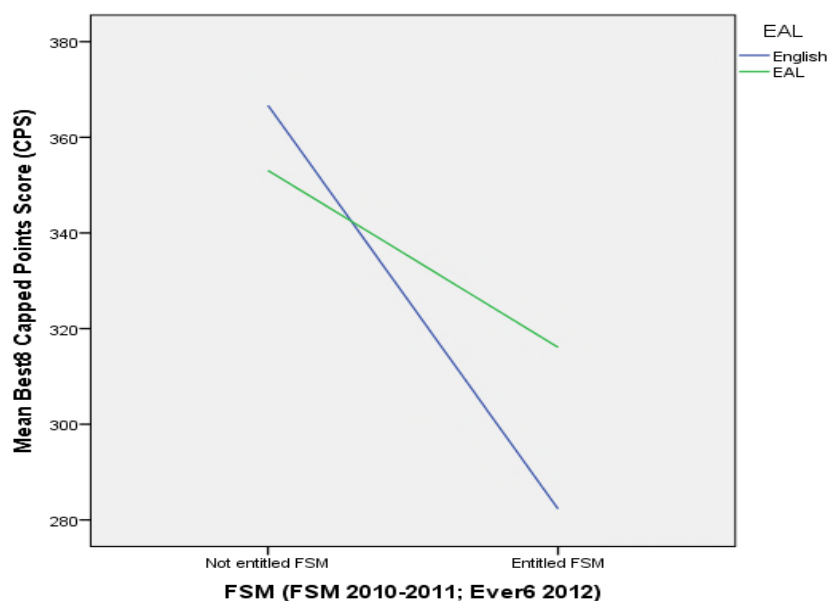
Prior attainment

We saw in Part 2 that in terms of the 2 levels of progress measures for both English and maths, pupils on FSM are making less progress to those not on FSM with 50% and 53% making 2+ levels of progress age 11-16 in English and maths compared to 76% and 78% respectively of Non-FSM students. This was confirmed in a regression analysis predicting CPS using the more finely differentiated measures of KS2 average fine-grade points score.

However the analysis also revealed a significant interaction between KS2 prior attainment and GCSE CPS. The results are presented below.

Table 3.4 and Figure 3.3: FSM Gap in progress age 11-16 by prior attainment level

FSM status	KS2 average points score		
	-1SD	Mean	+1SD
Not-FSM	331.5	373.2	415.0
FSM	310.5	346.2	381.8
Gap	20.9	27.0	33.1
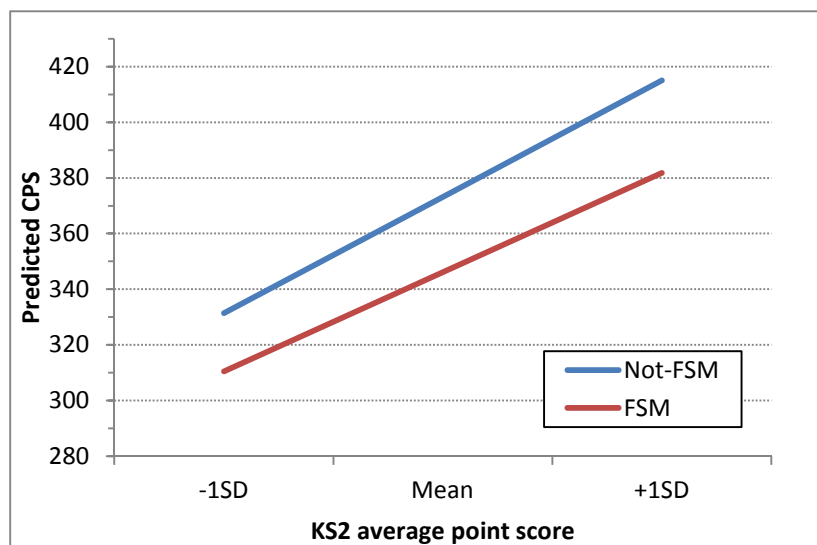
At the mean KS2 score (mean=29.0, SD= 4.1) students on FSM scored around 27 points less than would be predicted based on their KS2 score (this result controls for all other pupil background characteristics included in the model, including prior attainment, so is smaller than the 64 point gap in 'raw' CPS). Given each GCSE grade equates to 6 points, this is equivalent to achieving just over half a grade lower in each of their 8 GCSEs. However for those with a KS2 score 1SD above the mean the gap increases to 33 points (two-thirds of a grade less in each of their 8 GCSEs) while for those with KS2 score 1SD below the mean it reduces to 21 points (one-third of a grade less in each of their 8 GCSEs).

The overall conclusion is that the FSM gap is already large at the end of KS2 and grows further during the course of secondary school, particularly for those FSM students with high prior attainment. Schools need to be especially aware of and monitor the progress of high achieving FSM pupils at KS2 to ensure that any decline in achievement is identified early and remedial action taken.

School level variables

School type

The LA has 34 mainstream secondary schools, consisting of 21 upper schools (all co-educational) and 13 grammar schools (five co-educational, four boys only and four girls only). The data on FSM is presented in the Table 3.5.

The distribution of FSM pupils is very uneven across school type with pupils on FSM accounting for 10.6% of students within upper schools but just 1.8% of students within Grammar schools. Grammar schools account for 40% of the mainstream secondary school pupils in the LA, but fewer than 10% of the total number of FSM students.

Table 3.5: **Proportion and achievement of FSM/Non-FSM pupils in mainstream secondary schools**

FSM status	Upper schools	Grammar schools	All students
FSM	1058	116	1174
Non-FSM	8951	6314	15265
Total students	10009	6430	16439
%FSM by school type	10.6%	1.8%	7.1%
% of all LA students in each school type	60.9%	39.1%	
% of all FSM students	90.1%	9.9%	
% 2 levels progress English - FSM	50%	92%	54%
% 2 levels progress English - Not-FSM	67%	97%	80%
% 2 levels progress Maths - FSM	53%	96%	58%
% 2 levels progress Maths - Not-FSM	68%	98%	81%

Note: the nine special schools are not included in this analysis.

In relation to making 2+ levels of progress age 11-16, students on FSM in grammar schools achieve very well, as shown in the table above. However this represents only 116 of the 1174 FSM students in the LA, just under one-tenth of all FSM students.

School % FSM

Given the confounding of selective status and %FSM, an analysis across all schools including aggregate measures such as %FSM or %girls is problematic. There are too few grammar schools to allow a school by school analysis, but we can complete an analysis of the role of aggregate variables such as %FSM among the 21 upper schools. In addition to the student level measures already described, the school % FSM was added to the multi-level model[5]. The results are presented below.

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[5] . *At the school level there was a high correlation between the % FSM students and the % of ethnic minority students, r=0.80. This presented problems of multi-collinearity, particularly given there are only 21 schools in the analysis. However %FSM had a stronger relationship with achievement than % ethnic minority, so %FSM was the variable retained in the model.*

Table 3.6 and Figure 3.4: Predicted mean CPS at age 16 by pupil FSM and school %FSM combination at three level of KS2 prior attainment

Student FSM & school %FSM combination	KS2 prior achievement		
	Low	Mean	High
No FSM - Low %FSM	300.9	339.9	379.0
No FSM - Mean %FSM	300.7	339.7	378.8
No FSM - High %FSM	300.5	339.6	378.6
FSM - Low %FSM	282.6	314.0	345.4
FSM - Mean %FSM	288.1	319.4	350.8
FSM - High %FSM	293.5	324.9	356.2
FSM gap -Low %FSM	18.2	25.9	33.5
FSM gap -Mean %FSM	12.6	20.3	28.0
FSM gap -High %FSM	7.0	14.7	22.4

Note: KS2 prior achievement is measured at -1SD, mean and +1SD above the mean KS2 average points score (mean=27.1, SD=3.91). School %FSM is measured at -1SD, mean and +1SD above the mean school %FSM (mean=11.5%, SD=8.3%). Analysis based on 9,556 students from the 21 upper schools. Results are evaluated in a multi-level regression model and are net of additional controls for student gender, ethnicity, EAL and SEN.
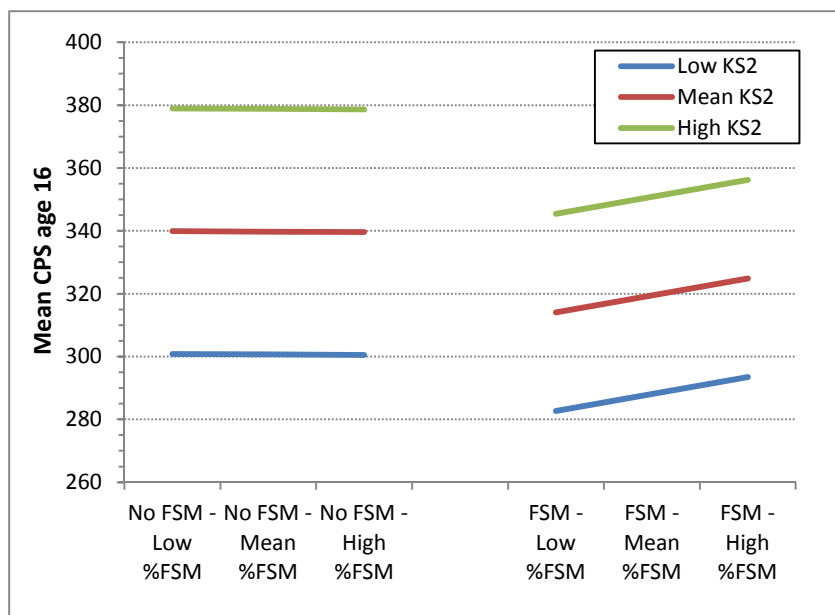
As we saw previously the FSM gap is largest for pupils with high prior achievement at age 11 and smallest for those with low prior achievement. For example when evaluated at the mean %FSM, the FSM gap for low prior achievement is 12.6 points but this more than doubles for students with high prior achievement (28 points). (NB The difference from the figure reported in Table 3.4 arises because this analysis is just for the upper schools rather than all schools). In addition we also see that the school %FSM has little association with the progress of students not entitled to FSM, who overall represent the vast majority (almost 90%), but has a significant association with the progress of students entitled to FSM who make particularly poor progress in low % FSM schools but better progress in high %FSM schools. Evaluated at the mean KS2 prior achievement score, the FSM gap is

26 points in low %FSM schools (3.2%) compared to only 15 points in high %FSM schools (19.8%). Overall the results mirror those reported for primary schools.

School by school results

We use the three year total data to get more robust estimates of within-school FSM gaps than would be available for any single cohort. However even for secondary schools, which are far larger than primary schools, the publication threshold of at least six pupils entitled to FSM was not met for six Grammar schools. In these schools over the entire three year period, even given the use of the more inclusive Ever6 measure in 2012, there were less than 6 students entitled to FSM. Hence the data below shows the results for seven of the 13 grammar schools and all 21 upper schools.

Conclusions

the main conclusions and recommendations from the analysis are presented in the executive summary.

Table 3.7: GCSE results 2010-2012 combined (sorted by mean CPS gap)

school name	SchSel	SchSex	Y11 roll	%FSM	%EAL	%Eth-min	%girl	%SAP	school tested	school %5AC	School CPS	NoFSM tested	NoFSM cps	NoFSM 5AC	FSM tested	FSM CPS	FSM 5AC	Gap 5AC	Gap CPS
Buckingham	Upper	Mixed	495	6.1	2.0	6.9	48.5	7.3	495	53.3	361.3	465	361.2	53.5	30	363.3	50.0	3.5	-2.0
Sir Henry Floyd Grammar	Grammar	Mixed	462	2.8	8.4	23.4	45.0	1.9	462	98.7	405.7	449	405.6	98.7	13	406.8	100.0	-1.3	-1.2
John Hampden Grammar	Grammar	Boys	460	2.0	5.2	19.6	0.0	2.4	460	97.2	402.8	451	403.0	97.1	9	394.7	100.0	-2.9	8.3
Burnham Grammar	Grammar	Mixed	367	4.9	24.3	43.9	44.7	1.1	367	97.8	401.3	349	402.0	98.0	18	388.4	94.4	3.5	13.5
Wycombe Grammar Girls	Grammar	Girls	541	3.7	11.5	27.0	100.0	1.5	541	99.6	429.6	521	430.2	99.6	20	414.5	100.0	-0.4	15.7
Holmer Green Senior	Upper	Mixed	448	4.9	8.3	19.6	48.0	12.1	445	57.6	340.9	426	341.7	58.9	22	325.7	31.8	27.1	16.0
Sir William Ramsay	Upper	Mixed	476	14.3	16.0	33.8	48.7	5.7	476	54.0	338.4	408	340.7	56.4	68	324.7	39.7	16.7	16.1
Cressex Community	Upper	Mixed	266	34.2	74.1	84.2	54.5	14.7	263	31.6	289.1	175	295.0	36.6	91	277.9	22.0	14.6	17.1
Royal Latin	Grammar	Mixed	525	2.7	6.3	15.6	50.5	1.7	525	98.9	428.0	511	428.5	99.0	14	410.7	92.9	6.2	17.8
Royal Grammar	Grammar	Boys	594	1.7	11.2	29.3	0.0	0.5	593	99.2	423.6	584	423.9	99.1	10	404.6	100.0	-0.9	19.3
Waddesdon CE	Upper	Mixed	441	4.5	1.4	5.4	47.4	8.8	441	70.3	360.0	421	360.9	71.0	20	341.6	55.0	16.0	19.3
Aylesbury Grammar Boys	Grammar	Boys	546	2.0	7.5	16.8	0.0	1.3	546	98.7	420.5	535	420.9	99.1	11	400.1	81.8	17.2	20.7
Highcrest Academy	Upper	Mixed	382	30.4	33.5	52.9	48.4	18.6	382	46.6	343.8	266	350.3	51.9	116	328.8	34.5	17.4	21.5
Beaconsfield	Upper	Mixed	422	8.3	7.1	18.7	60.0	9.7	422	46.4	330.9	387	333.2	48.3	35	305.7	25.7	22.6	27.4
Great Marlow	Upper	Mixed	620	12.6	12.1	22.3	49.4	5.2	618	58.1	325.2	542	328.7	60.5	78	300.9	41.0	19.5	27.8
Amersham	Upper	Mixed	338	9.2	10.1	19.2	50.3	8.6	338	61.5	337.4	307	340.1	63.5	31	310.5	41.9	21.6	29.6
Chiltern Hills Acad	Upper	Mixed	371	10.8	18.7	25.1	44.5	9.7	371	46.1	300.6	331	303.9	48.9	40	273.1	22.5	26.4	30.9
John Colet	Upper	Mixed	518	3.1	6.8	12.5	49.0	5.6	517	55.8	327.3	502	328.4	56.8	16	291.8	25.0	31.8	36.7
Princes Risborough	Upper	Mixed	474	8.0	5.5	13.1	48.3	19.4	474	47.5	315.3	436	318.4	49.1	38	279.9	28.9	20.1	38.6
Wye Valley	Upper	Mixed	388	12.1	4.4	21.9	44.1	14.2	386	46.4	317.7	341	322.6	48.7	47	281.9	29.8	18.9	40.7
Cottesloe	Upper	Mixed	577	4.5	2.6	7.5	49.6	5.0	576	51.0	318.6	551	320.5	52.3	26	276.7	23.1	29.2	43.9
St Michael's Catholic	Upper	Mixed	342	2.6	20.2	40.9	50.6	4.4	342	61.1	340.5	333	341.6	61.9	9	297.7	33.3	28.5	44.0
Aylesbury Vale Acad	Upper	Mixed	410	18.5	29.5	39.3	47.1	8.0	407	29.8	310.7	334	319.0	32.6	76	273.7	17.1	15.5	45.4
Burnham Park E-ACT Acad	Upper	Mixed	369	18.2	8.9	25.5	47.7	8.7	367	40.7	300.1	302	308.5	43.7	67	262.6	26.9	16.8	45.9
Chalfonts Comm. College	Upper	Mixed	864	8.4	3.2	15.3	52.0	15.9	863	62.6	334.6	791	338.5	65.0	73	292.2	37.0	28.0	46.3
Mandeville Sports College	Upper	Mixed	556	14.7	10.1	25.2	49.6	12.1	554	34.4	316.9	474	324.1	36.7	82	274.9	20.7	16.0	49.2
Misbourne	Upper	Mixed	592	4.6	4.2	13.9	50.8	7.9	591	56.9	336.9	565	339.2	58.1	27	289.5	33.3	24.7	49.7
Grange	Upper	Mixed	660	10.0	21.3	31.4	46.4	11.8	657	50.2	300.7	594	306.6	53.0	66	247.6	24.2	28.8	59.1

Figure 3.5: GCSE results 2010-2012 combined (sorted by mean CPS gap)
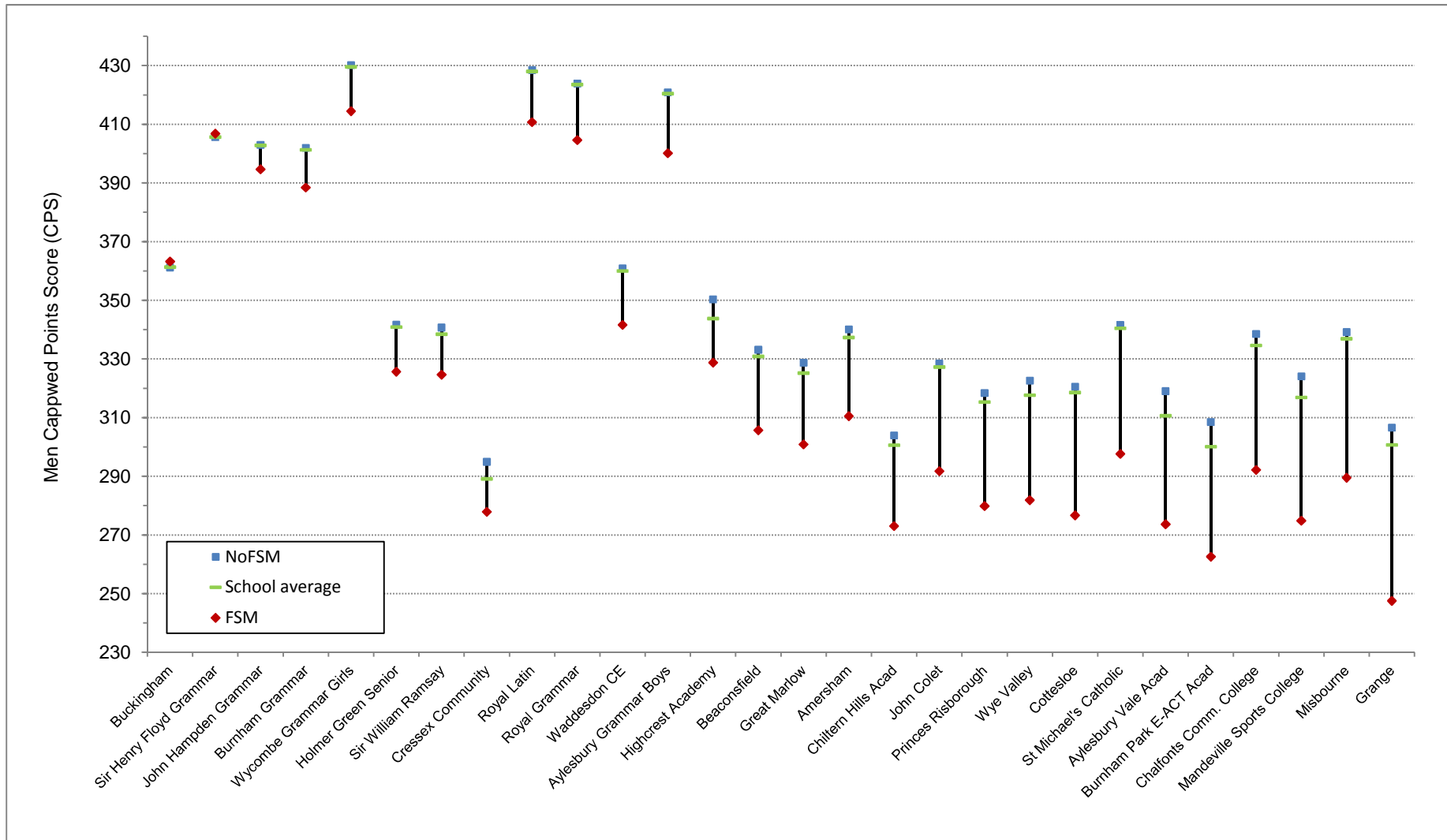
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Appendix 1: Calculating KS2 Fine Grades

NC levels are blunt instruments placing students in a small number of discrete levels. At KS1 teachers can award sub-divisions within levels (e.g. 2C, 2B and 2A) but there is no such differentiation at KS2 where pupils are simply recorded using the whole level (with the vast majority at 3, 4 or 5). However the DFE calculate KS2 English and maths fine grades using the test marks achieved by the pupil to make finer distinctions within the levels based on the marks achieved. The DFE has a formula to calculate the fine grade which is:

$$\text{Fine Grade} = \text{Level} + \frac{\text{mark - level min.}}{\text{level max. - level min.} + 1}$$

A couple of examples may clarify.

2012 English fine grade scores

	Pupil A	Pupil B	Pupil C	Pupil D
English level	4	4	5	5
Reading mark	26	35	40	47
Writing mark	30	40	40	47
Total marks	56	75	80	94
Mark range for the level	53-78	53-78	79-100	79-100
Fine Grade	4.12	4.85	5.05	5.68

Pupil A is at the lower end of the Level 4 mark range (56 marks) and therefore achieves a fine grade score of 4.12. However Pupil B is near the top end of the Level 4 mark range (75 marks) and therefore has a fine grade of 4.85. The same applies to Pupils C and D but for the level 5 range. The use of the KS2 fine grade in our analysis allows for a more differentiated measure of a pupils achievement that would be available just using whole levels.

The replacement in 2012 of the writing test with writing TA has not changed the basic DFE methodology. However marks for the writing component were awarded based on the writing TA level (level 3=30 marks, level 4=40 marks and level 5=50 marks, see DFE, 2012, p24-25). The Fischer Family Trust (FFT) has undertaken some analysis of the effect of this change of English fine grades (FFT, 2012). They argue that while alternative approaches to calculating fine grades for 2012 are available they make only a small difference and their recommendation is to continue to use the DFE approach to calculate English Fine Grades in 2012 as in 2010 and 2011. We therefore use KS2 fine grained measures as supplied to us by the Buckinghamshire School Management Support Team.

Appendix 2: Multiple regression of KS1 APS against KS2 APS.

(a). Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.276	.232		52.879	0.000
	KS1 APS	1.148	.031	.986	36.647	.000
	kS1 APS squared	-.007	.001	-.187	-7.103	.000
	FSM status (Y6)	.548	.291	.031	1.883	.060
	FSM*KS1 interaction	-.095	.021	-.075	-4.622	.000

a. Dependent Variable: KS2 APS.

Appendix 3: Average KS2 fine grade by ethnic group and FSM status.

	English & maths fine-grained score								
	FSM status Y6								
	0 Not entitled FSM			1 Entitled FSM			Total		
	Count	Mean	SD	Count	Mean	SD	Count	Mean	SD
0 White British	11468	4.85	.69	642	4.18	.84	12110	4.81	.71
1 White Irish	65	5.07	.50	2	4.13	.	67	5.06	.51
2 Traveller Irish	13	3.76	.90	11	3.23	.69	24	3.50	.83
3 Traveller Gypsy/Roma	25	3.73	.75	10	3.37	.97	35	3.62	.81
4 White other groups	512	4.81	.74	21	4.56	.50	533	4.80	.73
5 Mixed White & African	58	4.82	.67	17	4.38	.69	75	4.71	.70
6 Mixed White & Caribbean	229	4.61	.69	49	4.18	.60	278	4.53	.70
7 Mixed White & Asian	204	4.93	.75	26	4.09	.91	230	4.83	.82
8 Any other mixed background	190	4.95	.64	16	4.26	.90	206	4.89	.69
9 Indian	353	5.06	.64	10	4.65	.89	363	5.05	.65
10 Pakistani	1229	4.47	.77	179	4.14	.82	1408	4.43	.79
11 Bangladeshi	41	4.75	.61	9	4.55	.65	50	4.72	.61
12 Any other Asian	197	4.75	.86	16	4.81	.80	213	4.76	.85
13 Black African	124	4.64	.69	5	4.40	.57	129	4.63	.68
14 Black Caribbean	115	4.33	.79	38	3.95	.80	153	4.23	.81
15 Black other groups	25	4.46	.66	6	4.01	1.18	31	4.37	.78
16 Chinese	42	4.86	.83	2	5.28	.38	44	4.88	.82
17 Any other ethnic group	70	4.74	.69	8	4.53	1.08	78	4.72	.73
18 Unclassified/Refused	91	4.91	.70	10	4.01	1.01	101	4.83	.77

EAL by ethnic group

		EAL					
		0 English		1 EAL		Total	
		Count	%	Count	%	Count	%
ethnic2	0 White British	12054	99.5%	55	0.5%	12109	100.0%
	1 White Irish	66	98.5%	1	1.5%	67	100.0%
	2 Traveller Irish	24	100.0%	0	0.0%	24	100.0%
	3 Traveller Gypsy/Roma	34	97.1%	1	2.9%	35	100.0%
	4 White other groups	270	50.7%	263	49.3%	533	100.0%
	5 Mixed White & African	68	90.7%	7	9.3%	75	100.0%
	6 Mixed White & Caribbean	277	99.6%	1	0.4%	278	100.0%
	7 Mixed White & Asian	215	93.9%	14	6.1%	229	100.0%
	8 Any other mixed background	187	90.8%	19	9.2%	206	100.0%
	9 Indian	139	38.3%	224	61.7%	363	100.0%
	10 Pakistani	149	10.6%	1259	89.4%	1408	100.0%
	11 Bangladeshi	8	16.0%	42	84.0%	50	100.0%
	12 Any other Asian	49	23.0%	164	77.0%	213	100.0%
	13 Black African	73	56.6%	56	43.4%	129	100.0%
	14 Black Caribbean	150	98.0%	3	2.0%	153	100.0%
	15 Black other groups	28	90.3%	3	9.7%	31	100.0%
	16 Chinese	10	22.7%	34	77.3%	44	100.0%
	17 Any other ethnic group	34	44.2%	43	55.8%	77	100.0%
	18 Unclassified/Refused	83	83.0%	17	17.0%	100	100.0%
	Total	13918	86.3%	2206	13.7%	16124	100.0%

Appendix 4: GCSE results by ethnic group and FSM status.

| | FSM (FSM 2010-2011; Ever6 2012) | | | | | |
| | 0 Not entitled FSM | | 1 Entitled FSM | | Total | |
	Count	%	Count	%	Count	%
0 White British	12223	94%	728	5.6%	12951	100.0%
1 White Irish	44	92%	4	8.3%	48	100.0%
2 Traveller Irish	3	43%	4	57.1%	7	100.0%
3 Traveller Gypsy/Roma	7	50%	7	50.0%	14	100.0%
4 White other groups	364	94%	22	5.7%	386	100.0%
5 Mixed White & African	53	93%	4	7.0%	57	100.0%
6 Mixed White & Caribbean	238	78%	66	21.7%	304	100.0%
7 Mixed White & Asian	187	94%	13	6.5%	200	100.0%
8 Any other mixed background	183	87%	27	12.9%	210	100.0%
9 Indian	452	97%	13	2.8%	465	100.0%
10 Pakistani	824	74%	295	26.4%	1119	100.0%
11 Bangladeshi	33	75%	11	25.0%	44	100.0%
12 Any other Asian	186	95%	9	4.6%	195	100.0%
13 Black African	133	90%	15	10.1%	148	100.0%
14 Black Caribbean	149	83%	31	17.2%	180	100.0%
15 Black other groups	32	78%	9	22.0%	41	100.0%
16 Chinese	106	98%	2	1.9%	108	100.0%
17 Any other ethnic group	94	90%	10	9.6%	104	100.0%
18 Unclassified/Refused	188	94%	11	5.5%	199	100.0%
Total	15499	92%	1281	7.6%	16780	100.0%

		FSM (FSM 2010-2011; Ever6 2012)										
		0 Not entitled FSM				1 Entitled FSM				Total		
		Best8 Capped Points Score (CPS)			5+A*-C incl. En&Ma	Best8 Capped Points Score (CPS)			5+A*-C incl. En&Ma	Best8 Capped Points Score (CPS)			5+A*-C incl. En&Ma
		Mean	N	SD	Mean	Mean	N	SD	Mean	Mean	N	SD	Mean
ethnic2	0 White British	366	12223	79	.726	275	728	105	.305	361	12951	83	.702
	1 White Irish	393	44	76	.886	275	4	203	.250	385	48	90	.833
	2 Traveller Irish	269	3	11	.000	205	4	92	.000	232	7	74	.000
	3 Traveller Gypsy/Roma	198	7	135	.000	284	7	68	.000	245	14	109	.000
	4 White other groups	370	364	77	.684	315	22	113	.409	367	386	81	.668
	5 Mixed White & African	357	53	80	.755	335	4	37	.750	355	57	78	.754
	6 Mixed White & Caribbean	321	238	91	.475	287	66	94	.288	314	304	92	.434
	7 Mixed White & Asian	388	187	73	.786	340	13	112	.692	385	200	76	.780
	8 Any other mixed background	376	183	75	.770	312	27	95	.407	368	210	81	.724
	9 Indian	405	452	61	.894	366	13	59	.692	404	465	61	.888
	10 Pakistani	330	824	87	.512	312	295	91	.356	325	1119	89	.471
	11 Bangladeshi	371	33	78	.818	331	11	115	.545	361	44	89	.750
	12 Any other Asian	377	186	83	.769	380	9	87	.778	378	195	83	.769
	13 Black African	356	133	76	.722	334	15	87	.600	354	148	77	.709
	14 Black Caribbean	327	149	70	.544	293	31	88	.290	321	180	75	.500
	15 Black other groups	338	32	103	.656	275	9	146	.111	326	41	114	.537
	16 Chinese	419	106	57	.811	365	2	81	.500	418	108	58	.806
	17 Any other ethnic group	407	94	73	.872	379	10	47	.600	404	104	71	.846
	18 Unclassified/Refused	353	188	108	.681	300	11	98	.545	350	199	108	.673
	Total	365	15499	81	.715	291	1281	102	.338	360	16780	85	.687

Appendix 5: multi-level regression model for progress age 11-16 for upper schools only.

Parameter	Estimate	SE	df	t	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Intercept	69.27	8.30	57.1	8.3	.000	52.64	85.90
FSM (vs. No-FSM)	25.12	12.08	9476.9	2.1	.038	1.43	48.80
White Other	18.70	4.84	9477.0	3.9	.000	9.22	28.18
Mixed White & Black Carib.	-5.73	3.65	9477.0	-1.6	.117	-12.89	1.43
Mixed White & Asian	13.20	6.34	9474.5	2.1	.037	0.77	25.63
Any other mixed background	5.35	4.85	9475.6	1.1	.270	-4.16	14.86
Indian	30.46	6.28	9476.3	4.8	.000	18.14	42.77
Pakistani/Bangladeshi	14.91	3.79	9482.5	3.9	.000	7.49	22.34
Any Other Asian	23.95	6.77	9476.5	3.5	.000	10.68	37.21
Black African	22.44	7.19	9480.8	3.1	.002	8.35	36.53
Black Caribbean	8.09	4.70	9482.3	1.7	.085	-1.12	17.31
Any other ethnic group	5.27	6.42	9476.4	0.8	.411	-7.31	17.86
Unclassified/Refused	-16.06	6.18	9475.9	-2.6	.009	-28.19	-3.94
Base= White British	0[b]	0.00					
Boys (vs. Girls)	-14.11	1.16	9474.8	-12.2	.000	-16.38	-11.84
SEN School Action	-21.32	1.97	9480.3	-10.8	.000	-25.19	-17.46
SEN Schol Action Plus	-59.62	2.33	9480.7	-25.6	.000	-64.18	-55.05
SEN Statemented	-8.09	3.73	9479.2	-2.2	.030	-15.40	-0.77
base = no SEN	0[b]	0.00					
EAL	9.59	3.62	9481.1	2.7	.008	2.50	16.68
Ks2 Average Point score (APS)	9.99	0.19	9482.3	53.5	.000	9.62	10.35
School %FSM	-0.02	0.46	20.0	0.0	.965	-0.97	0.93
FSM * KS2 APS	-1.96	0.42	9474.2	-4.6	.000	-2.79	-1.13
FSM * school %FSM	0.67	0.23	9491.6	3.0	.003	0.23	1.12

a. Dependent Variable: Best8 Capped Points Score (CPS).
b. As well as FSM, KS2 average point score and school %FSM the multi-level also includes controls for gender, ethnicity, EAL and SEN.

Appendix 6: Additional analyses of 2013 results

This appendix reports analyses of the 2013 amended results for KS2 and KS4 which were not released by the DFE until February 2014. Specifically the appendix:

(a)   examine the LA trend over time to include 2013, evaluating whether the LA results have improved over time and how they have changed relative to national, statistical neighbour (SN) and regional comparators;

(b)   identifies whether changes in performance at KS2 and KS4, but particularly the improved performance of FSM students at KS2, has been consistent in relation to other measures of pupil background, or whether some groups identified in the report as of particular concern (e.g. more able at KS1, boys, schools with low %FSM etc.) have closed the gap to a greater extent;

(c)   Highlights that three-year rolling averages for all schools are now calculated by the DFE and presents the data for disadvantaged vs. Non-disadvantaged students at secondary schools based on these three-year averages.

1. Trends compared to other LAs and comparators

Key Stage 2

The threshold statistic used as the benchmark for reporting results nationally changed in 2013. As a consequence of the KS2 writing test being replaced by teacher assessment, from 2013 the DFE no longer calculate an overall level for English. Instead the threshold is now whether a student achieves level 4 or above in all three of the separate elements of: reading test, writing teacher assessment and the mathematics test (RWM). Table A1 presents the results on the new measure, and Figure A1 present data both on the old measure and the new measure, including an overlap year (2012).

t is clear that in 2012 - both on the old measure of L4+ English & maths and the new measure of L4+ RWM - the Bucks FSM average was sitting just above the SN average and quite substantially below the England average. However in 2013 the proportion of FSM students achieving the threshold rose to 61%, above the national average (60%) and well above the SN average (54%). In terms of ranking, with 1 being the highest level of achievement, Bucks LA moved from rank 116/150 in 2012 to rank 61/150[6] in 2013. As a result of this improvement the gap between FSM and Non-FSM students reduced significantly (the OR decreased from 3.6:1 to 2.9:1).

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[6]. *There are 152 Local Authorities in England but the Isles of Scilly and City of London are excluded since they have only a handful of schools.*

Figure A1: Percentage of students achieving KS2 threshold for FSM and Not-FSM students 2010-2013
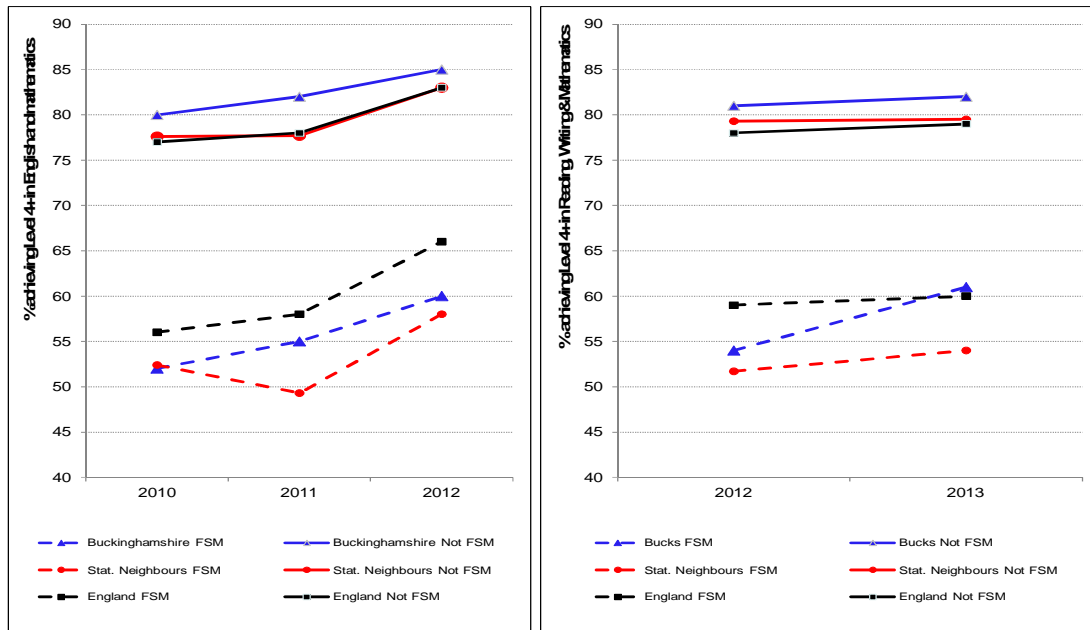
Table A1: Percentage of students achieving Level 4+ in Reading, Writing and Maths for FSM and Not-FSM students 2012-2013

LA	FSM Status	2012	2013
Bucks	FSM	54.0	61.0
	Not FSM	81.0	82.0
	% point gap	27.0	21.0
	Odds Ratio	**3.6**	**2.9**
Statistical Neighbours	FSM	51.7	54.0
	Not FSM	79.3	79.5
	% point gap	27.6	25.5
	Odds Ratio	**3.6**	**3.3**
South East	FSM	53.0	55.0
	Not FSM	78.0	79.0
	% point gap	25.0	24.0
	Odds Ratio	**3.1**	**3.1**
London	FSM	67.0	69.0
	Not FSM	81.0	82.0
	% point gap	14.0	13.0
	Odds Ratio	**2.1**	**2.0**
England	FSM	59.0	60.0
	Not FSM	78.0	79.0
	% point gap	19.0	19.0
	Odds Ratio	**2.5**	**2.5**

We should be cautious in reading too much into one year's data, particularly with threshold measures which can vary quite widely year to year, nevertheless this is a positive trend.

Key Stage 4

The results are not so positive for KS4 (see Figure A2/Table A2). The results for students entitled to FSM have improved from 29.6% to 34.3%, but are still well below the England average (50.8%). The OR in 2013 (5.4) is in fact the same as for 2007, indicating that despite increases in overall achievement, the gap between FSM and Non-FSM students in the odds of achieving 5+A*-C grades has not changed at all over the period.

Figure A2: Percentage of students achieving 5+A*-C grades including English and maths by entitlement to FSM: 2007-2013
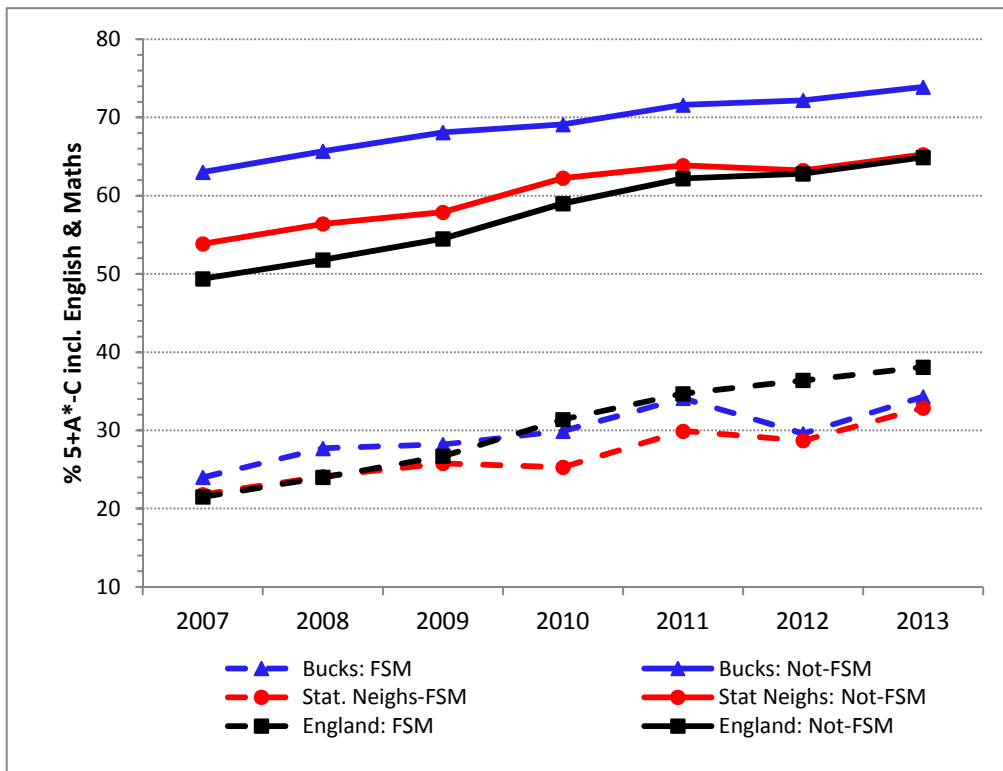
Table A2: Percentage of students achieving 5+A*-C grades including English and maths by entitlement to FSM: 2007-2013

LA	FSM Status	2007	2008	2009	2010	2011	2012	2013
Buckinghamshire	FSM	24.0	27.7	28.2	29.9	34.1	29.6	34.3
	Not FSM	63.0	65.7	68.1	69.1	71.6	72.2	73.9
	Odds Ratio	**5.4**	**5.0**	**5.4**	**5.2**	**4.9**	**6.2**	**5.4**
Statistical Neighbours	FSM	21.8	24.1	25.8	25.3	29.9	28.7	32.9
	Not FSM	53.9	56.4	57.9	62.3	63.9	63.2	65.3
	Odds Ratio	**4.2**	**4.1**	**4.0**	**4.9**	**4.1**	**4.3**	**3.8**
South East	FSM	19.6	21.3	23.8	26.3	28.7	29.9	34.3
	Not FSM	51.7	54.1	56.1	60.1	62.4	63.2	65.6
	Odds Ratio	**4.4**	**4.4**	**4.1**	**4.2**	**4.1**	**4.0**	**3.7**
London	FSM	31.2	34.5	37.8	43.2	47.3	48.9	50.8
	Not FSM	52.6	55.1	58.5	62.3	66.1	66.4	69.4
	Odds Ratio	**2.4**	**2.3**	**2.3**	**2.2**	**2.2**	**2.1**	**2.2**
England	FSM	21.5	24.0	26.7	31.4	34.7	36.4	38.1
	Not FSM	49.4	51.8	54.5	59.0	62.2	62.8	64.9
	Odds Ratio	**3.6**	**3.4**	**3.3**	**3.1**	**3.1**	**2.9**	**3.0**

2.   Has the improvement in the achievement of FSM students in 2013 been greater for any particular groups, e.g. the more able, boys etc.

Key stage 2

To address this question the following were completed: created a reading fine-grade for 2012; merged the 2012 and 2013 datasets; created an average KS2 fine grade based on reading and mathematics tests, and an indicator for students who achieved Level 4 or above in both the reading and mathematics tests.

Table A3 shows the average fine grade score and the percentage of students achieving level 4 or above in both the reading and mathematics tests for each year. What is notable is that the KS2 average grade for students not on FSM has remained stable while the KS2 fine grade score for students on FSM has increased substantially from 4.32 to 4.41, or in terms of the proportion achieving level 4+ from 61.7% to 67.5%.

Table A3: Reading and maths test results 2012 and 2013 by FSM status

	Not entitled FSM				Entitled FSM				Total			
	Reading & maths fine-grade			Level 4+ both	Reading & maths fine-grade			Level 4+ both	Reading & maths fine-grade			Level 4+ both
Year	Mean	N	SD	%	Mean	N	SD	%	Mean	N	SD	%
2012	4.94	4874	.73	85.9%	4.32	392	.85	61.7%	4.90	5266	.76	84.1%
2013	4.94	4844	.75	86.0%	4.41	382	.85	67.5%	4.90	5226	.77	84.6%
Total	4.94	9718	.74	86.0%	4.36	774	.85	64.5%	4.90	10492	.76	84.4%

To what extent is this improvement in achievement by FSM pupils consistent for all groups of students entitled to FSM? Table A4 presents the 2012 and 2013 results for pupils entitled to FSM broken down by other pupil background factors. Overall the improvement on this measure for FSM pupils was 6.2 percentage points[7].

There were quite substantial differences in the rate of improvement in relation to ethnicity and EAL. For example, White British FSM students hardly improved at all (66.1% to 66.3%). However the success rate for Pakistani/Bangladeshi FSM students increased from 54.3% to 74.0%. There were large increases for the Black Caribbean and Mixed White & Black Caribbean, although these groups are much smaller.

The proportion achieving L4+ among EAL students on FSM increased by 12.9% compared to 4.2% for those with English as their first language.

Improvements were roughly equal for boys and girls. The changes in relation to SEN were diverse, with a drop for those on SA, no change for SAP and an increase for statemented students.

Table A4: Percentage of pupils entitled to FSM achieving Level 4 or above in reading and mathematics 2012-2013

		2012		2013		Change
Variable	Value	N	%	N	%	
EAL	0 English First Language	295	65.1%	281	69.3%	4.2%
	1 EAL	78	61.5%	82	74.4%	12.9%
sex2	0 Male	190	61.2%	177	67.0%	5.9%
	1 Female	183	67.6%	186	73.8%	6.2%
SEN	0 No SEN	225	79.9%	243	86.3%	6.4%
	1 School Action	75	56.0%	61	45.8%	-10.2%
	2 SAP	46	31.1%	44	31.8%	0.7%
	3 Statemented	27	11.5%	15	26.7%	15.1%
ethnic (larger groups)	0 White British	223	66.1%	210	66.3%	0.3%
	6 Mixed White & Caribbean	20	60.0%	21	75.0%	15.0%
	10 Pakistani/Bangladeshi	70	54.3%	77	74.0%	19.7%
	14 Black Caribbean	13	46.2%	7	100.0%	53.8%
All		**373**	**64.3%**	**363**	**70.5%**	**6.2%**

Note. Numbers are slightly lower than in Table A3 because students with missing values on any of the other pupil background measures are excluded.

To evaluate whether there were changes in relation to age 7 prior attainment a contextual value added model for KS2 average fine-grade was calculated by including KS1 average points score, gender, ethnic group, FSM, EAL and SEN and the school composition measure of %FSM as well as a range of interaction terms.

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[7]. *This is slightly different from the 5.8% that would be calculated from Table A3 because students missing on other background characteristics (gender, EAL, SEN and ethnicity) are not included in Table A4.*

The results of the model based on the combined 2012 and 2013 data are presented below. These essentially confirm the results in the main report, for example that:

- the FSM gap is larger for students with higher attainment at age 7
- the FSM gap tends to be larger for schools with low disadvantage than for those with higher concentrations of disadvantaged students (%FSM)
- FSM students achieve particularly poorly when they are very much a minority in the school.

Table A5: Multiple regression model for KS2 average fine grade based on combined 2012 and 2013 dataset

Variable	Value	Coeff.	SE	p
Intercept		2.707	.033	
FSM	Entitled FSM	0.046	.069	0.502
	Not entitled FSM	-		
Ethnic	White Other	0.144	.027	0.000
Group	Mixed White & Black Caribbean	-0.069	.031	0.026
	Mixed White & Asian	0.005	.032	0.886
	Any other mixed	0.099	.030	0.001
	Indian	0.085	.032	0.007
	Pakistani/Bangladeshi	-0.064	.025	0.010
	Any other Asian	0.074	.036	0.041
	Black African	-0.038	.049	0.436
	Black Caribbean	-0.256	.042	0.000
	Any Other ethnic group	0.007	.038	0.848
	Unclassified	0.006	.050	0.906
	White British	-		
Gender	Girl	-0.122	.008	0.000
	Boy	-		
SEN	Schol Action	-0.194	.015	0.000
	School Action Plus	-0.310	.020	0.000
	Statemented	-0.417	.028	0.000
	None	-		
EAL	EAL	0.050	.022	0.022
	English	-		
School %FSM	%FSM	-0.003	.001	0.024
	%FSM * Entitled FSM	0.005	.002	0.006
Age 7 score	KS1 points score	0.145	.002	0.000
	KS1 points score * FSM	-0.013	.004	0.002

Notes: *'-' = reference category; SE= standard error; p= probability value. Outcome measure is KS2average fine grade (based on reading and mathematics tests)*

Figure A3: Interaction between FSM status and KS1 points score

	KS1 average points score					
Student FSM	**1**	**2C**	**2B**	**2A**	**3**	**Diff**
NOT FSM	4.01	4.59	4.88	5.17	5.75	1.74
FSM	3.95	4.48	4.74	5.00	5.53	1.59
Gap	-0.07	-0.12	-0.14	-0.17	-0.22	-0.15
Gap in SD units	-0.09	-0.16	-0.19	-0.22	-0.29	-0.20
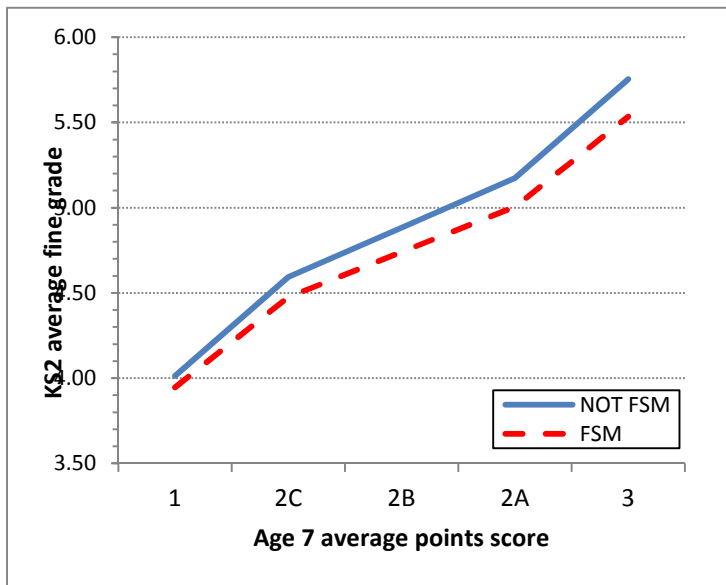
Figure A4: Interaction between FSM status and school deprivation (%FSM)

	School %FSM: Percentile (bold) and values					
	10	**25**	**50**	**75**	**90**	**95**
Student FSM	0.0	1.8	4.3	9.4	21.2	25.0
NOT FSM	4.88	4.88	4.87	4.85	4.81	4.80
FSM	4.74	4.74	4.75	4.75	4.77	4.78
FSM Gap	-0.14	-0.13	-0.12	-0.10	-0.04	-0.02

Evaluated at the average KS1 score and holding all other variables constant.
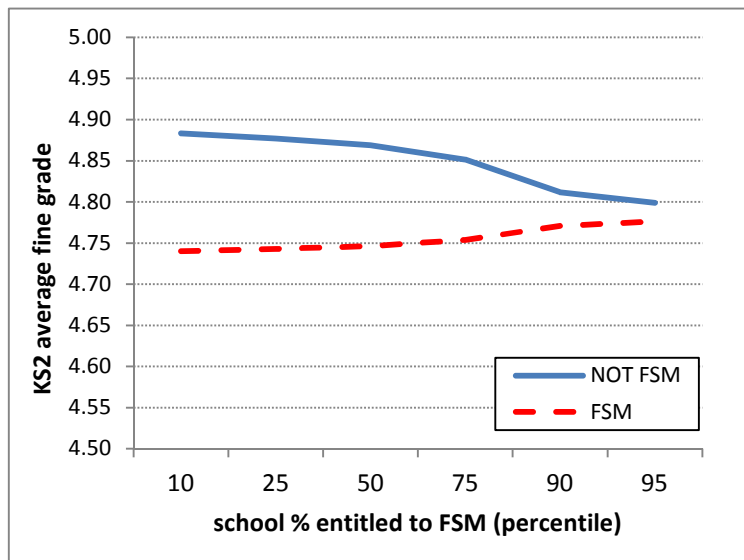
To address the question of whether the interaction between FSM and KS1 prior achievement had changed between 2012 and 2013 the above model was run separately for the 2012 and 2013 datasets. The results are presented below.

The interaction between KS1 score and FSM was present and statistically significant in both years, but was much smaller in 2013 than in 2012. For example in 2012 FSM students with prior attainment of level 3 achieved -0.27 fine grades lower than a similar student not on FSM, while in 2013 a FSM pupil who had achieved level 3 at KS1 scored only -0.15 KS2 fine grades lower than a similar Non-FSM student. Looking at the change column we can see that the largest improvements are for FSM pupils with prior attainment equivalent to an average of level 2B, 2A and 3 respectively. The relationships are shown in Figure A5.

Table A6/Figure A5: Interaction between FSM and KS1 prior attainment and association with KS2 average fine grade score 2012 vs. 2013

| | 2012 | | | 2013 | | | Change | |
KS1 aps	NOT FSM	FSM	Gap	NOT FSM	FSM	Gap	Not FSM	FSM
1	4.03	3.97	-0.06	3.98	3.91	-0.07	-0.06	-0.07
2C	4.60	4.47	-0.13	4.58	4.48	-0.10	-0.03	0.01
2B	4.89	4.72	-0.17	4.87	4.77	-0.11	-0.01	0.05
2A	5.17	4.97	-0.20	5.17	5.05	-0.12	0.00	0.08
3	5.74	5.46	-0.27	5.77	5.62	-0.15	0.03	0.16
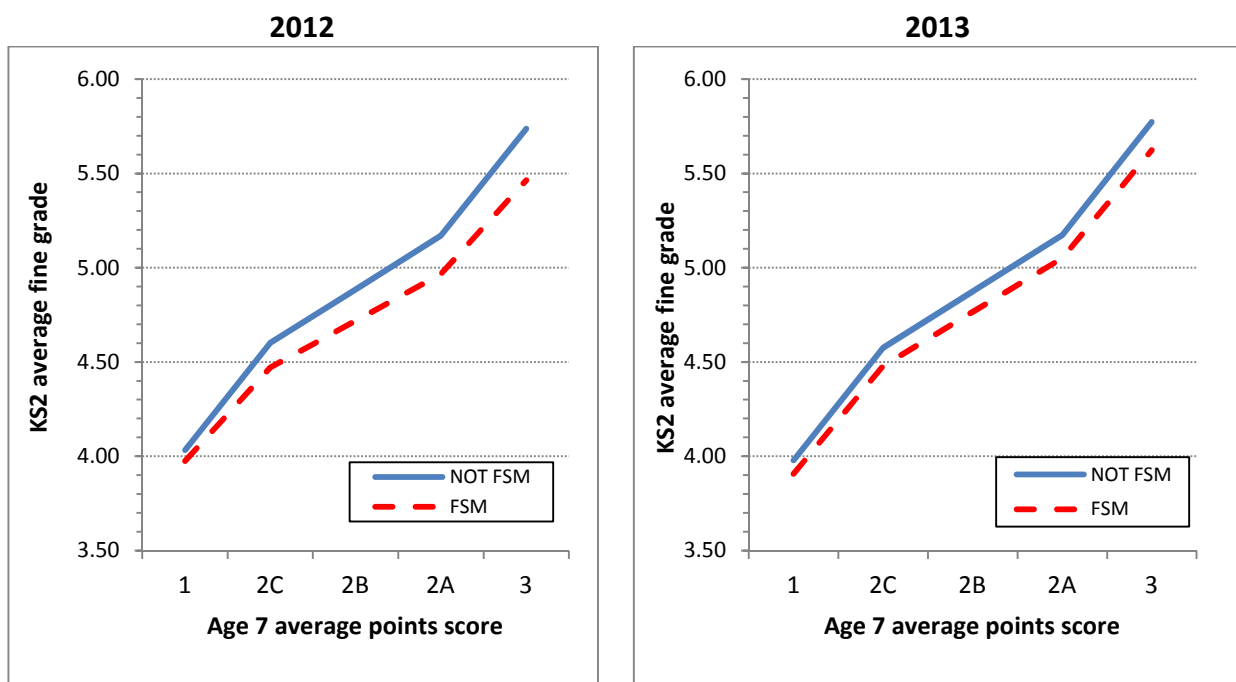
Key Stage 4

The national comparative data from LAIT analysed in section 1 makes comparisons between LAs based on student's current FSM status in the year of the examination. However in the KS4 student level data feeds from Bucks LA in 2012 and 2013 current FSM status was not included, only the EVER6 measure (whether the student had been entitled to FSM at anytime in the last 6 years). Therefore in making comparisons of the change from 2012 to 2013 in relation to student background variables it is necessary to calculate the relevant averages based on EVER6.

Table A7 present the Best 8 points score and % of students achieving 5+A*-C grades including English and maths by EVER6 status in 2012 and 2013. The improvement among pupils on EVER6 (5.6 % points) was over three times greater than the improvement for pupils never entitled to FSM (1.5 % points). The Best 8 point score for EVER6 students increased by 4.2 points and the %5AC increased from 35.5% to 41.0%.

Table A7: Best 8 points score and percentage achieving 5+A*-C grades including English and maths by EVER6 status in 2012 and 2013.

	Not entitled FSM				Entitled FSM				Total			
	Best8 points score			%5EM	Best8 points score			%5EM	Best8 points score			%5EM
Year	Mean	N	SD	%	Mean	N	SD	%	Mean	N	SD	%
2012	374.1	4787	73.3	74.7%	297.1	716	102.3	35.5%	364.2	5503	81.8	69.6%
2013	375.4	4775	73.1	76.2%	301.3	787	100.3	41.0%	364.9	5562	81.7	71.2%
Change	1.2			1.5%	4.2			5.6%	0.7			1.6%

School type

The average change 2012 to 2013 is consistent for both grammar and upper schools (an average increase of 1.6 points in Best 8 score).

Table A8: Best 8 points score and percentage achieving 5+A*-C grades including English and maths by School type 2012 and 2013.

	2012				2013				Change	
Schtype	Mean Best8 score	SD	%5+ A*-C incEM	N	Mean Best8 score	SD	%5+ A*-C incEM	N	Best8	%5EM
Grammar	422.3	36.6	98.4%	2138	423.9	38.7	98.5%	2135	1.6	0.1%
Upper	332.9	73.4	53.0%	3257	334.4	71.1	56.2%	3307	1.5	3.1%
Special	118.6	67.7	12.7%	91	116.1	60.3	12.3%	100	-2.5	-0.4%

Pupil background

Table A8 breaks down the change in results by student background variables.

- There was a substantial improvement in results for boys, up by 8.1 % points to 36.3%, compared to an increase of just 1.7 % points for girls to 45.8%.
- The change for individual ethnic groups are volatile because of the small sample sizes, but Pakistani/Bangladeshi are a large group of students (n=181 in 2013) and the increase of 9.5% (to 44.8%) is greater than the overall increase.
- Looking across a wide range of ethnic groups using the EAL measure, there is greater change for EAL students (increase of 9.0 % points) than for English first language speakers (increase of 4.7 % points).
- The results in relation to SEN show no consistent pattern.

Table A9: Change 2012 vs. 2013 in percentage achieving 5+A*-C grades including English and maths for EVER6 pupils

		2012		2013		Change
Variable	Value	N	%	N	%	
EAL	English First Language	537	34.3%	593	39.0%	4.7%
	EAL	179	39.1%	189	48.1%	9.0%
sex2	Male	387	28.2%	394	36.3%	8.1%
	Female	329	44.1%	393	45.8%	1.7%
SEN	No SEN	457	50.1%	546	54.4%	4.3%
	School Action	89	10.1%	91	15.4%	5.3%
	SAP	95	12.6%	74	8.1%	-4.5%
	Statemented	75	5.3%	76	7.9%	2.6%
ethnic Group (where n>10)	White other groups	15	46.7%	13	76.9%	30.3%
	Mixed White & Caribbean	33	27.3%	34	20.6%	-6.7%
	Any other mixed	13	46.2%	13	38.5%	-7.7%
	Pakistani/Bangladeshi	169	35.5%	181	44.8%	9.2%
	Black Caribbean	18	44.4%	18	50.0%	5.6%
	Any other ethnic group	18	27.8%	18	38.9%	11.1%
	White British	414	31.6%	453	38.4%	6.8%
All		**716**	**35.5%**	**787**	**41.0%**	**5.6%**

Prior attainment

In relation to KS2 prior achievement, for 2010-12 the FSM gap was larger for more able students (those scoring 1SD above the mean at KS2) than for less able students (those scoring 1SD below the mean at KS2). For 2013 this trend was not apparent, indeed it was even slightly reversed, with a bigger FSM gap at low KS2 prior achievement. The reason for this change is not clear. It does not arise from the move from FSM to EVER6, since an analysis of the 2012 data alone, which like the 2013 data was also based just on EVER6, showed the larger FSM gap at high KS2. Figure A6 contrasts the data from 2012 and 2013 separately.

Figure A6: KS2 prior achievement and the FSM gap 2012 vs. 2013
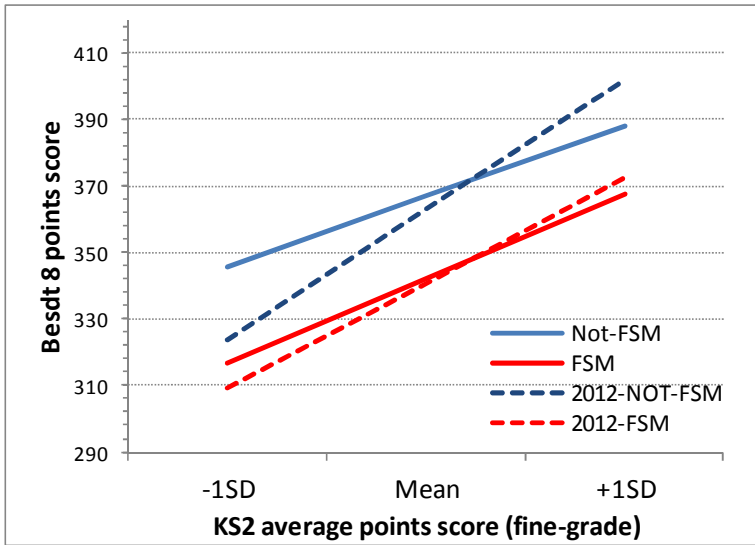
Overall it seems that the improvement in 2013 has been particularly strong for students with low prior attainment, but that this has been balanced by a slight decrease in scores for those with the highest prior attainment. These effects are rather more pronounced among the non-disadvantaged students.

In summary, even when looking at data drawn from across the whole LA it seems there can be relatively large year to year variation in the relationship between prior attainment and KS4 outcomes. The question of the relationship between prior attainment and outcomes should be looked at again when the 2014 data become available. In the meantime it may be better not to infer any overall LA pattern, but simply to ask schools to consider how FSM students of both high and low prior attainment are progressing in their schools.

Progress measures

Lastly the trends in the proportion of disadvantaged students making expected progress over the last three years show a positive trend for the LA. The data are presented in Table A10. In relation to expected progress in mathematics, the LA has consistently been above the national average. In relation to expected progress in English the LA has moved from below the England average in 2011 and 2012 to above the England average in 2013.

Table A10: Proportion of disadvantaged students making expected progress 11-16 in English and maths 2011-2013

| | % making expected progress in English | | | | % making expected progress in maths | | | |
| | | Disadvantaged pupils | | | | Disadvantaged pupils | | |
	All pupils	2013	2012	2011	All pupils	2013	2012	2011
Local Authority	78.1%	58.3%	48.9%	52.0%	81.0%	58.1%	55.5%	52.5%
England - state funded	70.4%	56.5%	53.8%	56.1%	70.7%	54.1%	51.5%	46.0%

3. Three year school averages 2011-2013

The original report I submitted was the first to calculate three year averages (2010-2012) for the achievement of FSM students for each Buckinghamshire school, particularly important in the case of primary schools where the number of students in a single year group is low. However in January 2014 the DFE published for the first time three-year averages, including for 'Closing the Gap' measures, in the annual school performance tables.

http://www.education.gov.uk/cgi-bin/schools/performance/group.pl?qtype=LA&superview=sec&view=aat&set=4&sort=&ord=&tab=114&no=825&pg=1

These give the three-year averages for disadvantaged and non-disadvantaged students on both achievement and progress measures for both primary and secondary schools. Disadvantaged pupils are those who have been entitled to FSM at any point in the last six years (EVER6) and children looked after (CLA).

The data in the performances tables can be downloaded and extracted to create reports so I have not recalculated three-year school averages for 2011-2013. I attach below the three year averages on 'closing the gap' measures for secondary schools extracted from the performance tables. The Buckinghamshire LA statistics team will be able to produce the equivalent data for primary schools.

Table A11: Three year averages for disadvantaged vs. Other students - Buckinghamshire 2011-2013

URN	Schname	Type	Adm	Age-range	All	FSM	%FSM	5EM	2Lev Eng	2Lev Math	5EM	2Lev Eng	2Lev Math	FSM vs. Not-FSM	FSM vs. Nat.	Not-FSM vs. Nat.	FSM vs. Nat	Not-FSM Vs. Nat.	FSM vs. Nat	Not-FSM Vs. Nat.
					3-Year Roll			Disadvantaged			Not disadvantaged			Gaps 5EM			Gap 2Lev En		Gap 2Lev Ma	
135879	The Aylesbury Vale Academy	AC	COMP	5-19	389	123	31.6%	26%	43%	51%	39%	53%	70%	-13	-12.7	-27.2	-12.9	-21.9	0.5	-3.9
137864	Burnham Park E-ACT Academy	AC	COMP	11-19	113	40	35.4%	25%	68%	29%	68%	91%	75%	-44	-13.7	2.2	12.1	15.8	-21.8	1.4
137280	Chiltern Hills Academy	AC	COMP	11-18	233	58	24.9%	24%	48%	53%	58%	71%	69%	-34	-14.6	-8.6	-7.2	-4.1	1.9	-5.1
137343	Amersham School	ACC	MOD	11-18	356	59	16.6%	44%	63%	67%	68%	76%	80%	-24	5.4	2.1	7.7	1.1	16.0	6.0
136884	Aylesbury Grammar School	ACC	SEL	11-18	560	14	2.5%	86%	85%	93%	99%	96%	98%	-13	47.0	32.6	29.1	21.2	42.2	24.3
136846	Aylesbury High School	ACC	SEL	11-18	542	11	2.0%	91%	91%	91%	100%	98%	99%	-9	52.2	33.3	35.4	23.4	40.2	24.7
137564	Burnham Grammar School	ACC	SEL	11-18	367	25	6.8%	96%	76%	92%	98%	87%	91%	-2	57.3	31.7	20.5	11.8	41.0	17.4
137215	The Chalfonts Community College	ACC	MOD	11-18	862	123	14.3%	43%	57%	68%	69%	76%	84%	-26	4.4	2.8	1.3	1.0	17.6	9.8
137091	Chesham Grammar School	ACC	SEL	11-18	542	14	2.6%	93%	86%	93%	98%	96%	98%	-5	54.2	32.0	30.2	20.9	42.2	24.3
136419	Dr Challoner's Grammar School	ACC	SEL	11-18	544	12	2.2%	100%	100%	100%	100%	98%	100%	0	61.3	33.3	44.5	22.4	49.3	25.8
137219	Dr Challoner's High School	ACC	SEL	11-18	453	4	0.9%	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP
136964	Great Marlow School	ACC	MOD	11-18	615	121	19.7%	45%	63%	67%	69%	80%	84%	-24	6.8	3.1	7.2	5.0	16.0	10.5
136858	Highcrest Academy	ACC	MOD	11-18	374	158	42.2%	34%	61%	67%	52%	68%	78%	-18	-4.5	-14.0	5.5	-6.9	16.0	4.0
138058	Holmer Green Senior School	ACC	MOD	11-18	447	54	12.1%	35%	53%	43%	58%	69%	66%	-23	-3.5	-8.3	-2.7	-5.7	-7.6	-7.7
137261	John Colet School	ACC	MOD	11-18	515	27	5.2%	37%	54%	65%	57%	63%	74%	-20	-1.7	-9.1	-1.7	-12.0	14.7	0.0
136771	John Hampden Grammar School	ACC	SEL	11-18	460	22	4.8%	100%	100%	95%	97%	90%	94%	3	61.3	31.2	44.5	15.4	44.8	20.2
137372	Princes Risborough	ACC	MOD	11-18	487	66	13.6%	29%	44%	52%	56%	64%	67%	-27	-9.9	-10.7	-11.7	-11.2	1.7	-6.7
136484	The Royal Grammar School, HW	ACC	SEL	11-18	583	14	2.4%	100%	100%	100%	99%	97%	99%	1	61.3	32.8	44.5	21.7	49.3	25.3
137344	Royal Latin School	ACC	SEL	11-18	521	25	4.8%	96%	96%	96%	99%	98%	99%	-3	57.3	32.3	40.5	22.5	45.3	25.2
136845	Sir Henry Floyd Grammar School	ACC	SEL	11-18	463	29	6.3%	97%	96%	93%	97%	96%	97%	0	57.9	30.7	40.9	21.2	42.4	23.2
136781	Sir William Borlase's Grammar School	ACC	SEL	11-18	396	3	0.8%	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP
137256	Sir William Ramsay School	ACC	MOD	11-18	481	117	24.3%	46%	69%	62%	65%	79%	75%	-18	7.5	-1.7	13.8	3.7	11.0	1.3
137355	Waddesdon CE School	ACC	MOD	11-18	437	34	7.8%	50%	74%	74%	73%	82%	82%	-23	11.3	6.4	18.0	6.5	22.8	7.6
136723	Wycombe High School	ACC	SEL	11-18	544	41	7.5%	95%	98%	93%	100%	99%	100%	-5	56.4	33.5	42.1	24.3	42.0	25.6
110505	The Beaconsfield School	CY	MOD	11-18	431	64	14.8%	36%	43%	56%	53%	63%	64%	-17	-2.8	-13.4	-12.6	-12.5	4.9	-9.9
110484	Buckingham School	CY	MOD	11-18	447	66	14.8%	36%	51%	57%	56%	67%	72%	-20	-2.3	-9.9	-4.7	-7.9	6.2	-1.8
110497	The Mandeville School	CY	MOD	11-18	528	144	27.3%	24%	39%	37%	40%	53%	49%	-16	-14.4	-25.9	-16.2	-21.9	-14.0	-25.4
110490	The Misbourne School	CY	MOD	11-18	558	48	8.6%	40%	50%	51%	62%	66%	71%	-22	0.9	-4.7	-5.5	-8.8	0.4	-2.9
110508	The Wye Valley School	CY	MOD	11-18	368	84	22.8%	31%	50%	49%	49%	56%	66%	-18	-7.7	-17.0	-5.5	-18.8	-1.9	-8.2
110528	Beaconsfield High School	FD	SEL	11-18	449	5	1.1%	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP	SUPP
110533	The Cottesloe School	FD	MOD	11-18	567	62	10.9%	34%	49%	46%	56%	68%	64%	-23	-4.8	-9.9	-6.3	-6.9	-4.8	-9.9
110500	Cressex Community School	FD	MOD	11-18	237	158	66.7%	30%	52%	71%	39%	60%	81%	-9	-8.3	-27.1	-3.8	-14.8	20.6	7.4
110488	The Grange School	FD	MOD	11-18	655	104	15.9%	26%	51%	45%	58%	73%	75%	-32	-12.7	-7.9	-5.0	-2.5	-5.2	1.1
110516	St Michael's Catholic School	VA	MOD	3-18	342	33	9.6%	30%	48%	45%	61%	75%	83%	-31	-8.4	-4.8	-7.0	-0.5	-5.5	8.7
	LA Average				16575	2215	13.4%	37.5%	53.3%	55.5%	75.3%	80.3%	82.9%	-37.8	-1.2	9.0	-2.2	5.2	4.8	8.9
	National (State maintained)						25.7%	38.7%	55.5%	50.7%	66.3%	75.1%	74.0%	-27.6						