Evidence for Excellence in Education

Final Report

Deprivation in Education

National Foundation for Educational Research (NFER)

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Deprivation in Education

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1 Introduction

1.1 Policy background

The interaction between deprivation and education is a critical relationship with profound implications for a country's economic prosperity and the social mobility of its citizens. This is highlighted by the Welsh Government which states that: 'A good education is critical to better life chances and a commitment to achieving this has been an important part of the culture of modern Wales since devolution' (Welsh Government, 2012, p.2). A recent OECD report acknowledged the commitment in Wales to improve its education system:

> *Education is a public priority in Wales. In 2011, after it showed significantly lower than average performance in the Programme for International Student Assessment (PISA), Wales embarked on a large-scale school improvement reform. Its ambition is to develop a high-performing education system characterised by both quality and equity. This is reflected in its key objectives: to improve students' performance in literacy and numeracy, and to reduce the impact of deprivation on student performance*
>
> (OECD, 2014, p.7)

The deprivation-education relationship is a focus of continuing investigation and scrutiny by politicians and policy makers in Wales and other jurisdictions in the UK, which have commissioned reports on the impact that deprivation has on educational outcomes. One of these concluded that: '… deprivation has a negative impact on educational attainment, leaving young people with fewer qualifications and skills which in turn affects future employment' (DCSF, 2009, p.6). Another noted that:

> *There is a strong statistical link between poverty and low educational attainment. In general, learners from poorer families do not achieve as well as their peers … There is no simple explanation for this link between deprivation and underachievement or an easy solution to breaking it.*
>
> (Estyn, 2014, p.2)

There is an uneven spread of deprivation across Wales as evidenced by the Welsh Index of Multiple Deprivation (WIMD) 2011, which is the official measure of relative deprivation for small areas in Wales. WIMD's purpose is to help identify and understand deprivation in Wales in order that funding, policy and programmes can be effectively focussed on the most disadvantaged communities. The WIMD notes that: 'Deprivation is a wider concept than poverty. Poverty is usually considered to be a lack of money, whereas deprivation includes a lack of the opportunities and resources to which we might expect access to in our society …' (Welsh Government, 2011a, p.3). The WIMD provides an index for eight types or domains of deprivation including education and the Welsh Government reports that the most deprived local authorities (LAs) in the education domain are Merthyr Tydfil and Blaenau Gwent, whilst the least deprived local authorities are the Isle of Anglesey, Conwy, Powys and Ceredigion.

The Welsh Government's education policy priorities of reducing the impact of deprivation on educational attainment and improving levels of literacy and numeracy are driving the reform of the education system in Wales. The Improving Schools implementation plan provides a framework for improvement which focuses on learning and teaching in schools; school leadership and its role in improving outcomes; the role of the education system in supporting collective capacity building; and the roles and responsibilities of implementation to be fulfilled by schools, local authorities, regional consortia and the Department for Education and Skills (Welsh Government, 2012). The Literacy and Numeracy Framework, National Literacy Programme and National Numeracy Programme are important interventions for raising standards in literacy and numeracy in Wales.

The Welsh Government has introduced several initiatives to reduce the impact of deprivation including the Families First programme (2010), the Child Poverty Strategy for Wales (2011) and the Tackling Poverty Action Plan (2013). It has also introduced two grants specifically designed to help achieve the three national priorities for schools: improve the standards of literacy, improve the standards of numeracy and reduce the impact of poverty on educational attainment. The School Effectiveness Grant (£28.1 million for 2014-15) is allocated to local authorities for their work with schools, and the Pupil Deprivation Grant (£71.2 million for 2014-15) is delegated to schools in its entirety (Welsh Government, 2013a).

The School Effectiveness Grant, a rolling grant which will continue beyond 2015, requires local authorities to provide match funding which increases the overall value to £36.7 million per annum. The Welsh Government allocates the grant on the basis of number of pupils aged five to 15 years in each authority and the number of these pupils eligible for free school meals (FSM). The funding, which includes support for Welsh-medium activities in Welsh-medium schools, can be used for improvement activities such as providing catch-up learning activities for literacy and numeracy, developing professional learning communities to enable the sharing of good practice in teaching and learning, and supporting the continuing professional development of teachers.

The Pupil Deprivation Grant, which is available until 2015-16, provides resources to support schools raising standards across the whole school and closing the attainment gap. The Welsh Government allocates the grant on the basis of the number of pupils eligible for FSM at each school. The funding can be used for interventions such as supporting the development of disadvantaged pupils through curriculum content and delivery, with a particular focus on literacy and numeracy; putting in place effective pupil tracking systems for attainment and wellbeing; and managing effective support packages for pupils who have additional learning needs or specific learning difficulties.

The challenge to the successful implementation of the education reform agenda in Wales is to engage stakeholders in using initiatives and funding in a targeted and consistent way, beyond short-term horizons, to reduce and eliminate the impact of deprivation on educational outcomes in general, and on literacy and numeracy standards, in particular.

1.2 Research study

The Welsh Government commissioned the National Foundation for Educational Research (NFER) to carry out a research study which replicates the research undertaken for the report on deprivation and education published by the Department for Children, Schools and Families (2009). This study aims to provide:

- an analysis which replicates the data tables presented in the DCSF report with data relevant to Wales and including additional tables and charts that are specific to the Welsh context
- an analysis which includes a regression model examining progression between Key Stage 2 and Key Stage 4
- a descriptive commentary identifying the content of the tables and the differences contained within them.

The Welsh Government provided data from the 2013 Pupil Level Annual Schools Census, (PLASC), along with attainment information, for NFER to analyse. Eligibility for free school meals (FSM) is used as the main measure of pupil deprivation. As the criterion of eligibility for free school meals is parents' receipt of income support, this is a widely used indicator of pupil deprivation, and is collected as part of PLASC.

NFER carried out the research study in May and June 2014.

1.3 Report structure

In this report:

- Chapter 2 presents an analysis of and commentary on the number and location of pupils from deprived backgrounds in Wales.
- Chapter 3 provides an analysis of and commentary on the characteristics of pupils from deprived backgrounds.
- Chapter 4 examines the relationship of deprivation with pupils' attainment overall and in a range of subjects.
- Chapter 5 explores the relationship of deprivation with pupils' trajectories in terms of progress between key stages of the National Curriculum.
- Chapter 6 investigates the interaction of factors such as FSM eligibility, ethnicity and special educational needs affecting pupils' attainment.
- The final chapter presents conclusions based on the results of the research study.

2 Number and location of pupils from deprived backgrounds

Key findings

- In half of the LAs in Wales the percentage of pupils eligible for FSM is within two percentage points of the national average (16.7 per cent). In five LAs the percentage of pupils eligible for FSM is more than 20 per cent. This includes Rhondda Cynon Taff which also accounts for the largest percentage of all FSM pupils nationally in Wales (12.2 per cent). The LAs with the lowest percentage of FSM pupils are Powys, Monmouthshire and Ceredigion respectively.
- Based on 2013 figures, a minority (4.5 per cent) of the pupil cohort in Wales is eligible for FSM, attends a school with a high proportion of FSM pupils and lives in a highly-deprived area.
- The percentage of pupils eligible for FSM is lower among pupils attending Welsh medium schools than among pupils attending English medium schools.
- The percentage of pupils eligible for FSM is similar in primary and secondary schools and slightly lower in middle schools. Almost half of pupils attending special schools are eligible for FSM.
- The percentage of secondary school pupils eligible for FSM is similar in school Bands 1 and 2 but increases through Bands 3 and 4 to Band 5.
- Most primary pupils eligible for FSM attend primary schools where between eight and 35 per cent of pupils are eligible for FSM. The distribution of FSM secondary pupils across school FSM groups is similar, although more of them attend schools with eight to 20 per cent FSM pupils.
- Free school meals rates vary by school type. At primary level, the lowest percentage of FSM pupils attend foundation schools and the highest attend community schools. At secondary level, the lowest percentage of FSM pupils attend voluntary-controlled schools and the highest attend voluntary-aided schools.

2.1 FSM and school characteristics

The percentage of pupils known to be eligible for free school meals (FSM) in 2013 is similar across primary and secondary schools, and slightly lower in middle schools (Figure 2.1). Among pupils attending special schools, the rate of eligibility for FSM is more than double the average among all pupils.

Figure 2.1 Number and percentage of pupils known to be eligible for free school meals (FSM), by school type, 2013[1]

	Primary schools	Secondary schools	Middle schools	Special schools	All pupils
% of pupils	17.0	16.2	14.7	41.4	16.8
N pupils	44353	30508	534	1672	78233
Total pupils	260151	188174	3641	4043	464543[2]

Source: NFER analysis of 2013 PLASC data for Wales (2014) matched to Welsh Schools Address List 2014.

Figure 2.2 Number and percentage of secondary school pupils known to be eligible for free school meals (FSM), by secondary school band, 2013

	Band 1	Band 2	Band 3	Band 4	Band 5
% of pupils eligible for FSM	13.5	13.2	17.6	16.2	23.3
N pupils	2278	7734	8953	7077	4814
Total pupils	16930	58460	50849	43723	20655

Source: NFER analysis of 2013 PLASC data for Wales (2014). N=190617

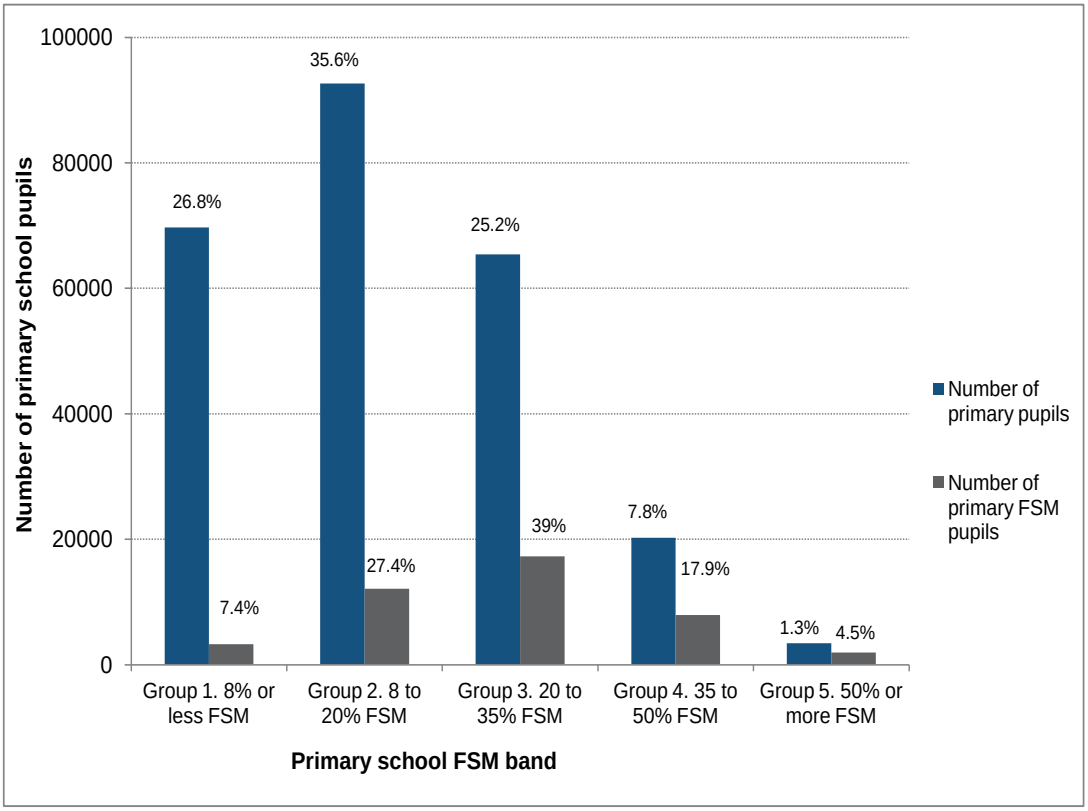
Figure 2.2 shows the percentage of pupils eligible for FSM in each secondary school band. School bands indicate the relative performance of secondary schools in Wales[3]: Band 1 schools are those whose data show good overall performance and progress; Band 5 schools are those where performance and progress are weak relative to other schools (Welsh Government, 2011b).

The percentage of pupils eligible for FSM is very similar in Bands 1 and 2, but increases through Bands 3 and 4 to Band 5 (although it is slightly higher in Band 3 than Band 4). The percentage of pupils eligible for free school meals is highest among pupils in Band 5 schools.

[1] Due to small amounts of missing data, 2013 totals may vary between this and some of the following tables and charts.
[2] This is the number of pupils in the 2013 dataset provided who had valid school IDs, enabling matching to the Welsh schools address list in order to identify their school type.
[3] School banding in Wales uses four groups of data:
- level 2 threshold including English/Welsh (E/W) and mathematics
- capped GCSE points score
- E/W and mathematics average points scores
- attendance

Within each data group, relative performance is measured to take account of a selection of:
- actual performance
- progress over time and,
- performance relative to context and cohort (see Welsh Government 2011b).

Figure 2.3 Distribution of primary schools by proportion of FSM pupils, 2013[4]



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N primary pupils=260151; N FSM primary pupils= 44353[5].

Figure 2.3 shows the distribution of all primary school pupils and FSM primary pupils across school FSM groups. These school FSM groups divide schools based on the percentage of their pupils who are eligible for FSM. Pupils are grouped according to the school they attend so, for example, pupils who attend a school where five per cent of pupils are eligible for FSM would fall into Group 1. The groups are defined as follows:

Group 1 Eight per cent or less FSM

Group 2 Between eight and 20 per cent FSM

Group 3 Between 20 and 35 per cent FSM

Group 4 Between 35 and 50 per cent FSM

Group 5 More than 50 per cent FSM.

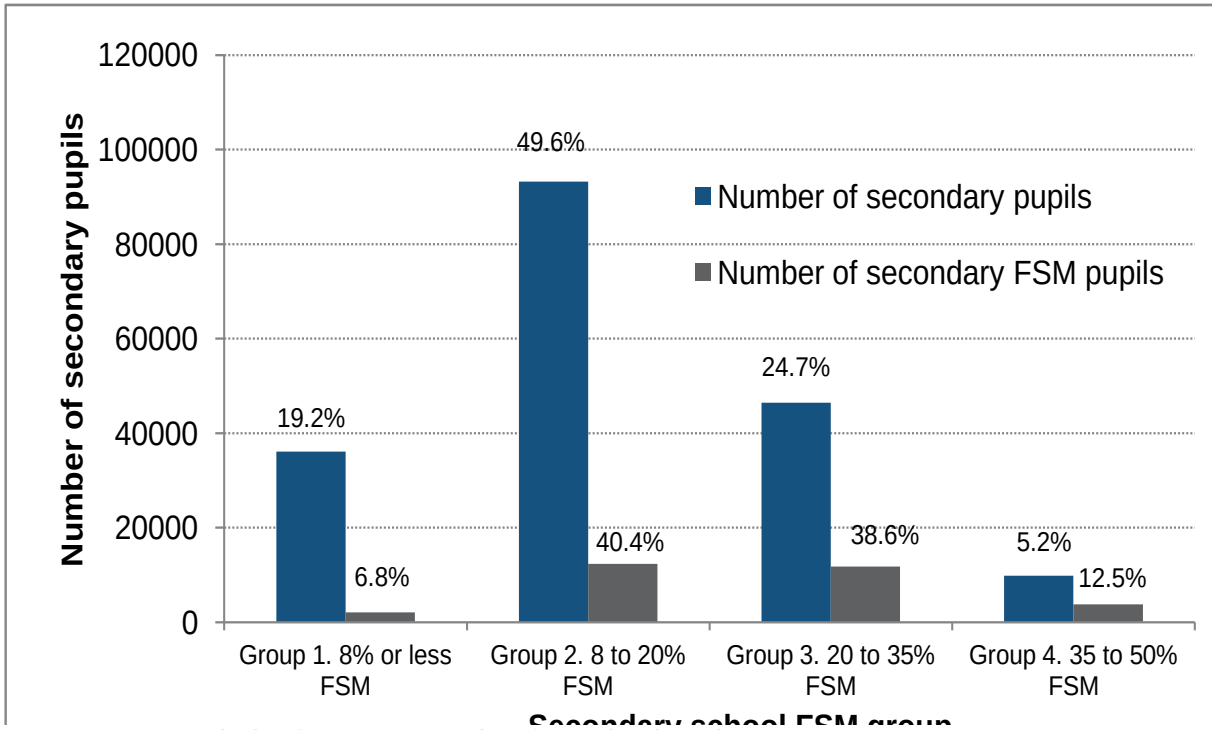
The majority of primary pupils overall go to schools where between eight and 35 per cent of pupils are eligible for FSM (Groups 1 to 3). Pupils eligible for FSM tend to go to schools in Groups 2 to 4 – they are more likely than pupils overall to be in Group 3 or 4 schools (20 to

[4] Due to around three per cent missing data percentages do not add up to 100.
[5] These Ns reflect the number of pupils who had valid school IDs so that FSM information at the school level could be calculated.

50 per cent FSM). However, small numbers of primary pupils, both FSM and overall, attend schools with more than 50 per cent of pupils eligible for FSM (Group 5).

In secondary schools (Figure 2.4), the picture is similar in that the majority of pupils overall are in Group 1 to 3 schools, although higher proportion are in Group 2 schools. At secondary, there are no pupils, overall or FSM, in Group 5 schools.

Figure 2.4 Distribution of secondary schools by proportion of FSM pupils, 2013[6]



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N secondary pupils=188174; N FSM secondary pupils= 30508[7]

[6] Due to around two per cent missing data percentages do not add up to 100.

[7] These Ns reflect the number of pupils who had valid school IDs so that FSM information at the school level could be calculated.

2.2 FSM and region

Figure 2.5 Number, percentage and proportion of FSM pupils by Local Authority area, 2013

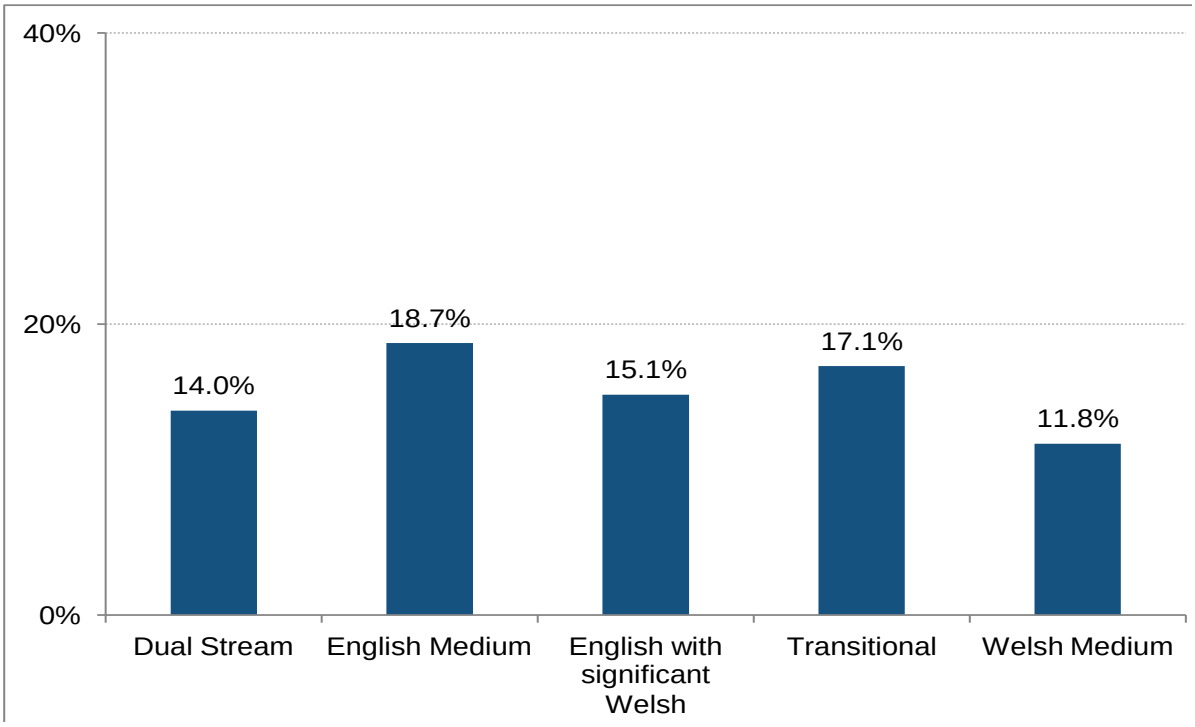
LEA	Total pupils in this LEA	N FSM	% FSM	Proportion of all FSM pupils accounted for by this LEA
Anglesey	9547	1627	17.0	2.1
Blaenau Gwent	9774	2419	24.7	3.1
Bridgend	22453	4543	20.2	5.8
Caerphilly	28706	5841	20.3	7.5
Cardiff	51330	9416	18.3	12
Carmarthenshire	27046	4143	15.3	5.3
Ceredigion	9532	1041	10.9	1.3
Conwyn	16055	2442	15.2	3.1
Denbighshire	15619	2501	16.0	3.2
Flintshire	23733	2630	11.1	3.4
Gwynedd	17141	2013	11.7	2.6
Merthyr Tydfil	9186	2091	22.8	2.7
Monmouthshire	11665	1226	10.5	1.6
Neath Port Talbot	20511	3779	18.4	4.8
Newport	24428	4569	18.7	5.8
Pembrokeshire	18163	2808	15.5	3.6
Powys	18935	1888	10.0	2.4
Rhondda Cynon Taff	39059	9521	24.4	12.2
Swansea	35106	5760	16.4	7.4
Torfaen	15484	2505	16.2	3.2
Vale of Glamorgan	21880	2596	11.9	3.3
Wrexham	19190	2874	15.0	3.7
Totals	464543	78233		100.0%

Source: NFER analysis of 2013 PLASC data for Wales (2014)

The LA with the highest proportion of its pupils eligible for FSM is Blaenau Gwent, closely followed by Rhondda Cynon Taff. Pupils in this LA also account for 12.2 per cent of all pupils eligible for FSM in Wales. In contrast, while a fairly high percentage of pupils in Merthyr Tydfil are eligible for FSM (22.8 per cent), FSM pupils in this LA only account for 2.7 per cent of all FSM pupils in Wales, due to the smaller size of this LA. In around half of the LAs the percentage of pupils eligible for FSM is similar to the national average (16.7 per cent), however in Powys, Ceredigion and Monmouthshire the percentage is comparatively low.

2.3 FSM and Welsh language education

Figure 2.6 Percentage of FSM pupils by school language medium, primary schools, 2013



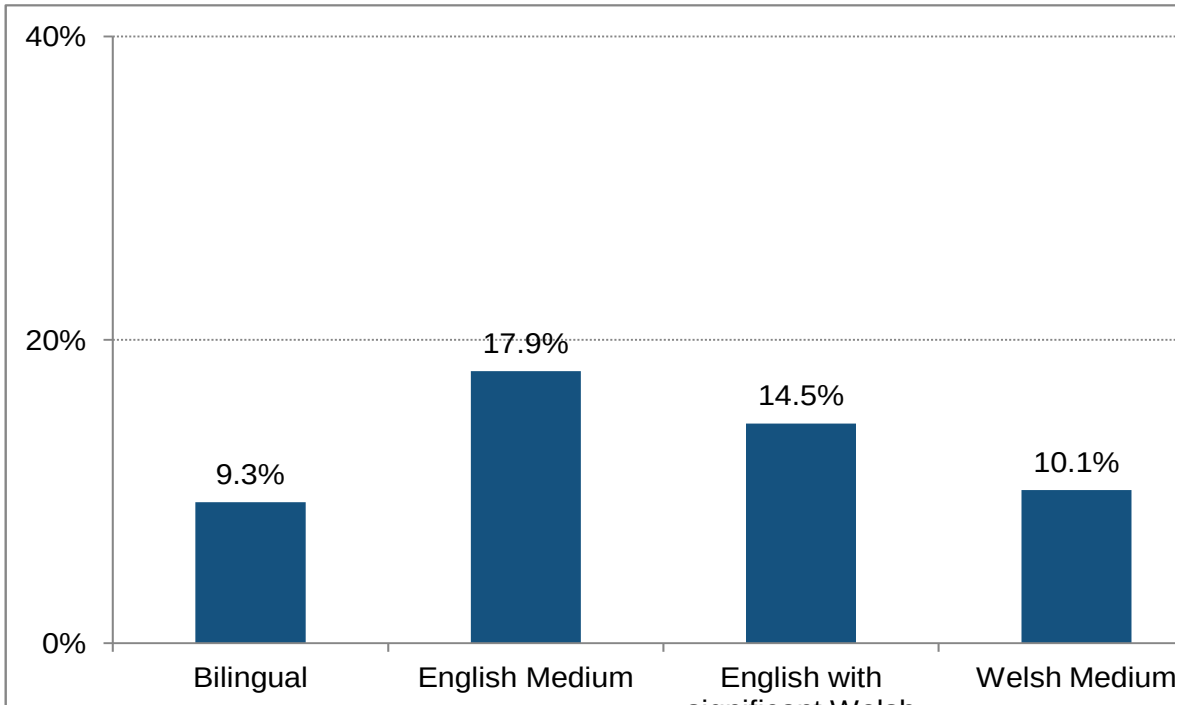
Source: NFER analysis of 2013 PLASC data for Wales (2014) matched with the Welsh schools address list 2014. N= 260151[8].

Category	N schools	N pupils
Dual Stream[9]	41	8509
English Medium	875	192266
English with significant Welsh	34	5149
Transitional	6	964
Welsh Medium	400	53263

Figure 2.6 shows the percentage of pupils attending each type of primary school who are eligible for FSM. The table above is provided for context. The proportion of pupils eligible for FSM is higher among pupils attending English-medium primary schools (18.7 per cent) than among those attending Welsh-medium primary schools (11.8 per cent). The lowest FSM rate overall among primary pupils is also among those attending Welsh medium primary schools.

[8] This is the number of primary pupils who had valid school IDs that could be successfully matched to the Welsh schools address list in order to identify their school language medium.
[9] For definitions of the categories of Welsh language provision in primary and secondary schools please see: http://wales.gov.uk/dcells/publications/publications/guidanceandinformation/pre2009/defining-schools-welsh-medi2.pdf?lang=en

Figure 2.7 Percentage of FSM pupils by school language medium, secondary schools, 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014) matched with the Welsh schools address list 2014.

N= 188174.

Category	N schools	N pupils
Bilingual[10]	22	15494
English Medium	151	143809
English with significant Welsh	9	8717
Welsh Medium	30	20154

The situation is similar in secondary schools in that a higher proportion of pupils attending English-medium secondary schools are eligible for FSM (17.9 per cent), compared with those attending Welsh-medium schools (10.1 per cent). The lowest FSM rate is among pupils attending bilingual secondary schools. However, it should be borne in mind that the majority of secondary school pupils attend English-medium schools.

[10] This combines the four different categories of bilingual secondary school, as outlined in the document linked to in footnote 5.

2.4 School governance

Figure 2.8 Percentage of FSM pupils by school governance position and school phase, 2013

School governance	N pupils	Primary	Secondary
Community	394056	17.8	16.4
Foundation	12182	7.6	12.9
Voluntary Aided	40709	12.9	17.1
Voluntary Controlled	12113	11.2	11.5
Overall	459060	17.0	16.2

Source: NFER analysis of 2013 PLASC data for Wales (2014). N primary=264185; N secondary=191220.

Free school meal eligibility rates vary by school governance type, with a notably higher percentage among pupils in community schools and a relatively low percentage among those in foundation schools at primary level. The highest percentage at secondary level is among pupils in voluntary aided schools.

2.5 Combined measures of deprivation

Figure 2.9 Segmentation of pupils by individual, school and local area deprivation, 2013[11]

	Attributes			
Segment	FSM	In a deprived school	In a deprived area	% of total cohort
1				63.7
2	✓			8.0
3			✓	16.6
4	✓		✓	7.2
5	✓	✓	✓	4.5

Source: NFER analysis of 2013 PLASC data for Wales (2014)

N=464543.

'In a deprived school' = in a school where more than 30 per cent of pupils are eligible for FSM.

'In a deprived area' = living in one of the 30 per cent most deprived areas in Wales defined by the Welsh Index of Multiple Deprivation.

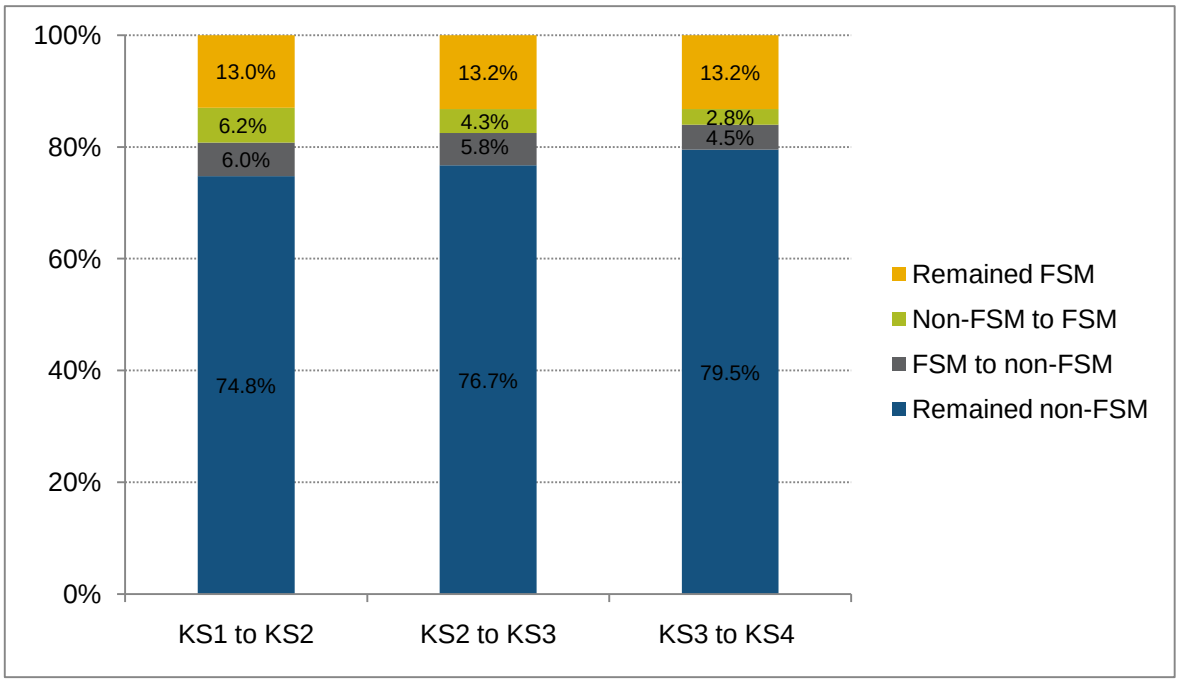
[11] These segments were derived through cluster analysis. Cluster analysis is a statistical technique used to group individuals into homogeneous sub-groups based on responses to variables (in this case whether they are eligible for FSM, in a deprived school, and/or live in one of the 30 per cent most deprived areas in Wales). All pupils in the analysis belong to one of the five segments based on the combination of attributes they possess.

Figure 2.9 takes the whole 2013 cohort (all year groups) to show the proportion of pupils falling into different and combined measures of deprivation. For example, 4.5 per cent of the total cohort is eligible for FSM, attend a school with a high proportion of FSM pupils and live in a highly deprived area as measured by the Welsh Index of Multiple Deprivation. 16.6 per cent of pupils live in the 30 per cent most deprived areas but are not in deprived schools or eligible for FSM.

2.6 Changes in FSM eligibility

Figure 2.10 shows the changes, if any, in pupils' FSM status as they move between key stages. The chart shows the change between a pupil's previous key stage and the stage they were assessed at in 2013 and so represents the transition for the 2013 cohort at each key stage.

Figure 2.10 Change in pupils' FSM eligibility in the transition between key stages, to 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N KS2= 30888, N KS3=33187, N KS4=35154.

The majority of pupils remained non-FSM from their previous key stage to their 2013 key stage. Around 13 per cent of pupils in each cohort continued to be eligible for free school meals between their previous key stage and their 2013 key stage. The largest percentages of pupils moved from non-FSM to FSM and vice versa were in the transition from Key Stage 1 to Key Stage 2 (around six per cent for each transition). At the other transitions, a slightly higher percentage of pupils changed from FSM to non-FSM (5.8 per cent and 4.5 per cent respectively) than vice versa.

Changes in eligibility for FSM may or may not indicate a drastic change in the individual pupil's circumstances, as pupils who are just outside the eligibility criteria for FSM may still experience relative deprivation.

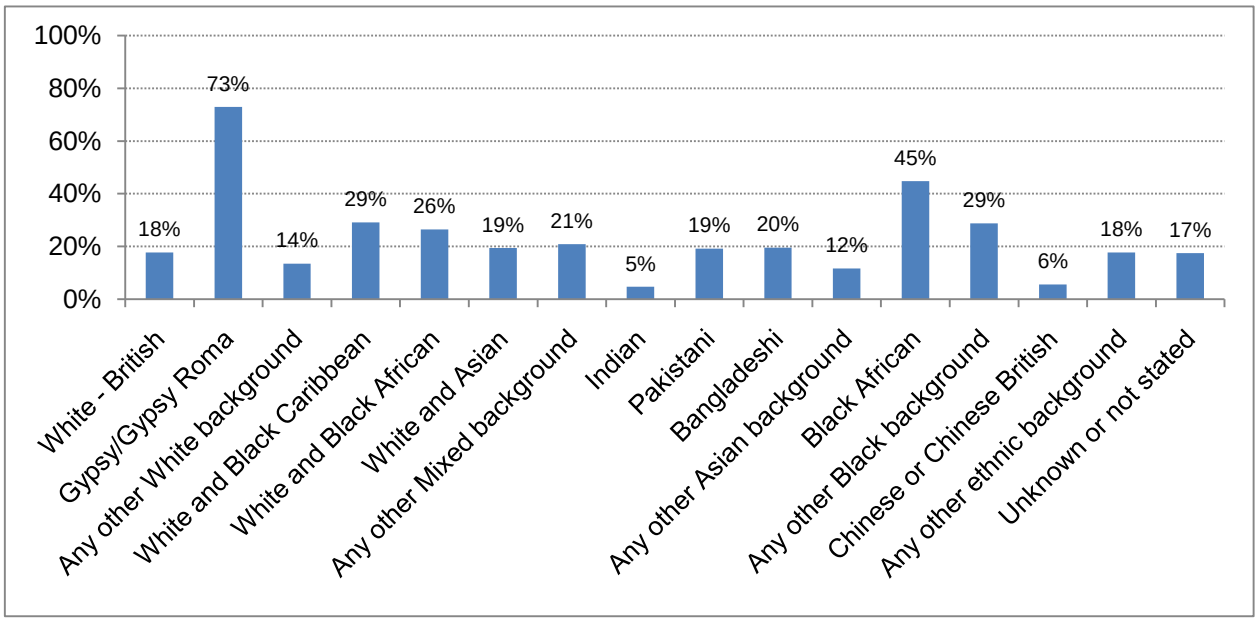
3 Characteristics of pupils from deprived backgrounds

Key findings

- White British pupils eligible for FSM are more concentrated than non-FSM pupils in the more deprived areas of Wales.
- The ethnic groups with the highest percentage of pupils eligible for FSM are Gypsy/Gypsy Roma and Black African. However these groups are relatively small.
- A relatively high proportion of Bangladeshi, Black African and pupils from Other Black backgrounds live in the 30 per cent most deprived areas regardless of their FSM status.
- Pupils with special educational needs (SEN) in mainstream education are disproportionately eligible for FSM. Pupils with a statement of SEN are more than twice as likely to be eligible for FSM compared with pupils with no SEN.
- The relationship between SEN and eligibility for FSM varies by type of SEN. Eligibility for FSM is particularly high for pupils with behavioural, emotional and social difficulties; moderate learning difficulties; and severe learning difficulties.
- Pupils eligible for FSM have a slightly higher rate of mobility (number of times they have moved school) than non-FSM pupils.
- Pupils eligible for FSM are more likely to be absent from school than non-FSM pupils. In secondary schools the absence rate of FSM pupils is around double that of non-FSM pupils between Years 8 and 11.
- The highest school absence rate is among pupils who are identified with SEN, eligible for FSM and mobile.
- Just over two-fifths of all pupils have one or more of four attributes: FSM, SEN, persistent absentee and living in a deprived area.

3.1 Ethnicity

Figure 3.1 Percentage of FSM pupils by ethnic group, 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014)

N=132262[12]

Figure 3.2 Pupil ethnic group, 2013

Group	N pupils	% pupils
White – British	121162	91.5
Traveller	94	0.1
Gypsy/Gypsy Roma	155	0.1
Any other White background	2285	1.7
White and Black Caribbean	709	0.5
White and Black African	321	0.2
White and Asian	657	0.5
Any other Mixed background	1205	0.9
Indian	504	0.4
Pakistani	859	0.6
Bangladeshi	915	0.7
Any other Asian background	266	0.2
Black Caribbean	70	0.1
Black African	727	0.5
Any other Black background	132	0.1
Chinese or Chinese British	214	0.2
Any other ethnic background	1216	0.9
Unknown or not stated	935	0.7
Total	**132427**	**100**

[12] Ethnicity data was only available for pupils who took Foundation Stage Profile/Key Stage 1/Key Stage 2/Key Stage 3/Key Stage 4 in 2013 and had ethnicity data provided with these assessments. Groups where the total N is less than 100 (Traveller, Black Caribbean – see Figure 3.2) have been excluded from Figures 3.1, 3.3 and 3.4.

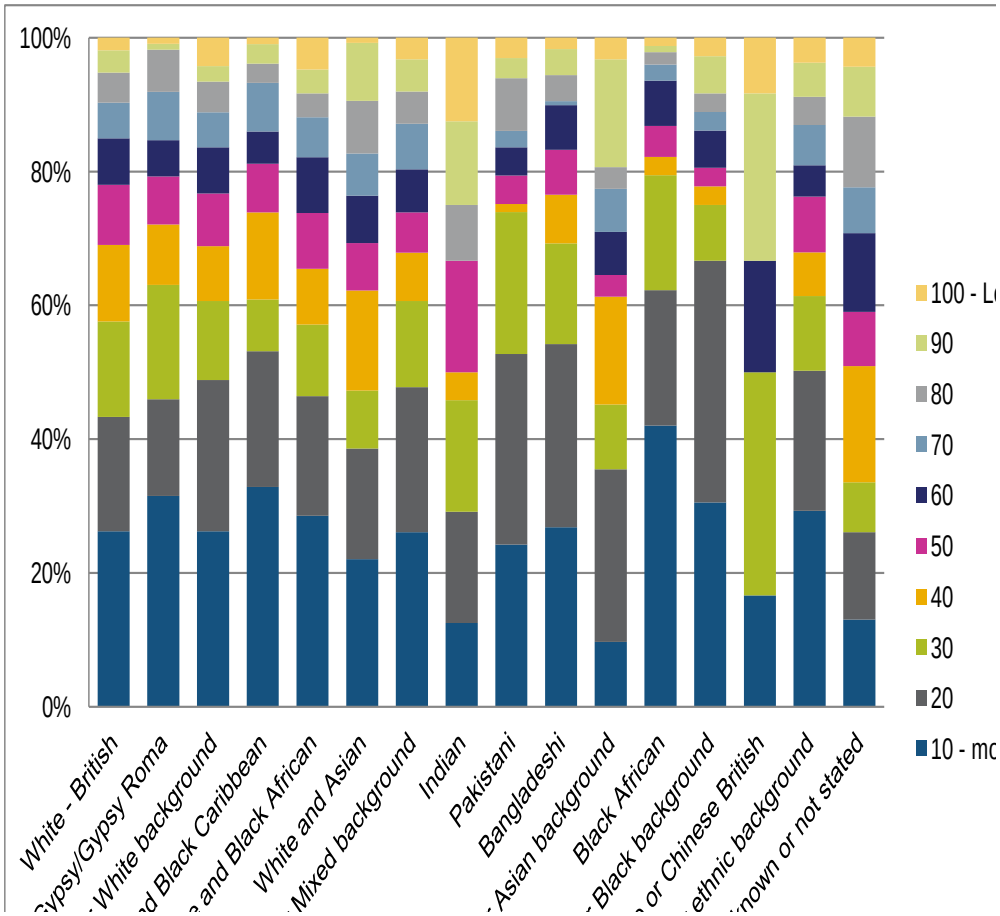
The percentage of pupils eligible for free school meals is particularly high among Gypsy/Gypsy Roma pupils (73 per cent) and Black African pupils (45 per cent) (Figure 3.1). However, it should be noted that the total number of pupils in these groups is relatively small (see Figure 3.2).

Figures 3.3 and 3.4 allow us to compare the deprivation of the areas in which pupils of different ethnic groups live, according to whether they are eligible for FSM. The figures should be interpreted with caution due to the small number of pupils recorded in many of these ethnic groups in Wales.

The figures show, for example, that a relatively high proportion of Bangladeshi, Black African and pupils from Other Black backgrounds live in the 30 per cent most deprived areas, regardless of their FSM status. This indicates that, although these pupils are not eligible for FSM, they may be exposed to deprivation at the local area level.

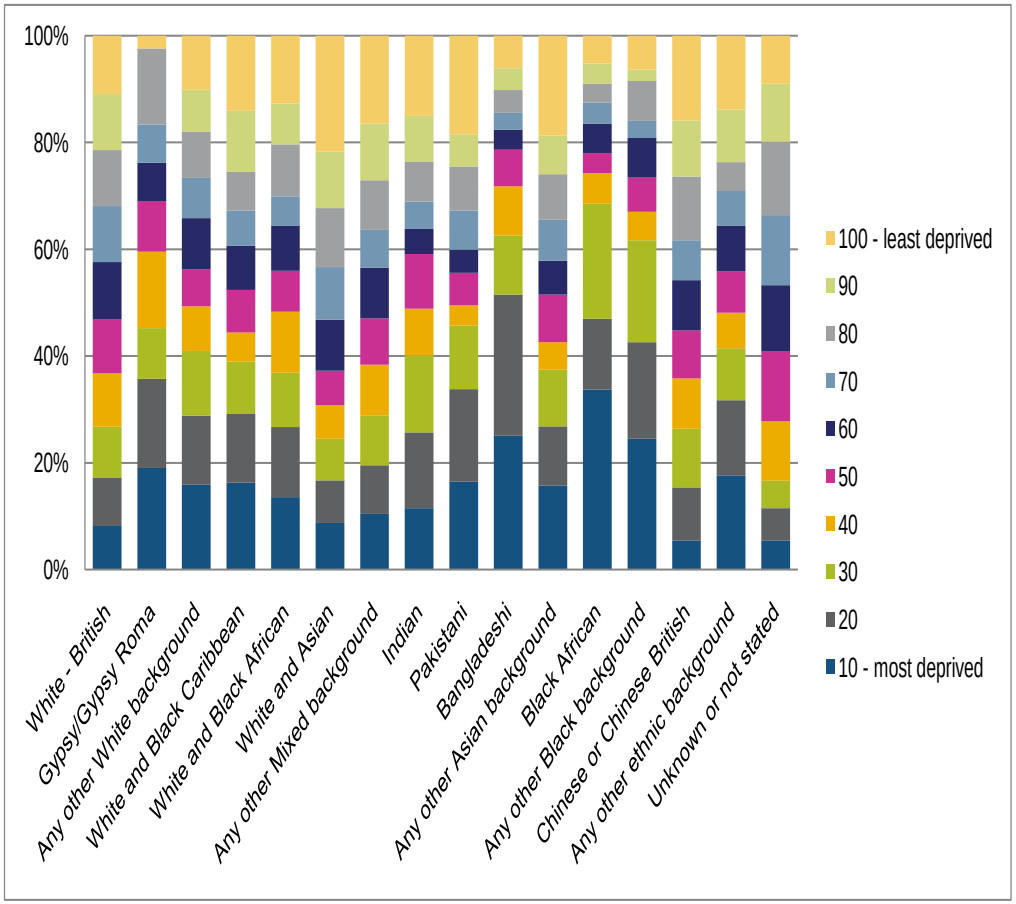
Pupils eligible for FSM from White British, White other and Mixed backgrounds, on the other hand, are more likely to live in the 30 per cent most deprived areas than their non-FSM counterparts. This indicates that, among these groups, pupils eligible for free school meals are more concentrated in more deprived areas and that non-FSM pupils are more evenly spread across areas with different levels of deprivation.

Figure 3.3 WIMD deciles by ethnic group, pupils eligible for FSM, 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014) N=23673

Figure 3.4 WIMD decile by ethnic group, pupils not eligible for FSM, 2013

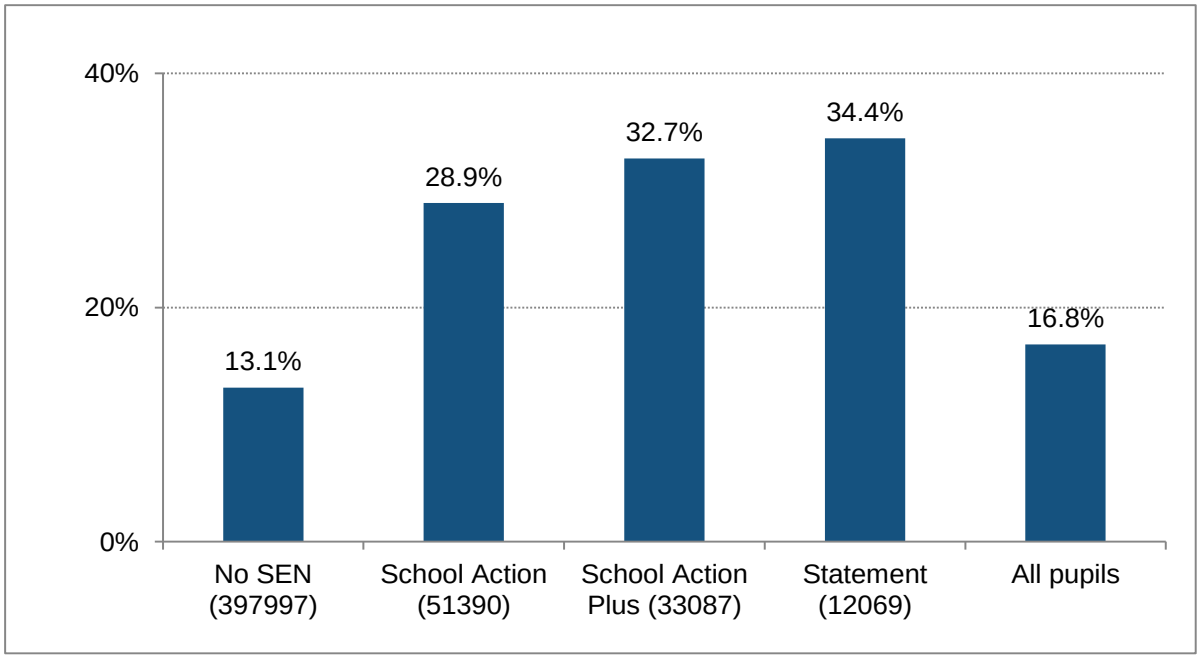


Source: NFER analysis of 2013 PLASC data for Wales (2014). N=107804

3.2 Special educational needs

Pupils with special educational needs (SEN) in mainstream education are disproportionately eligible for FSM. As Figure 3.5 shows, pupils with a statement of SEN are more than twice as likely (34.4 per cent) to be eligible for FSM compared with pupils with no SEN (13.1 per cent), while 32.7 per cent of pupils categorised as School Action Plus are eligible for FSM.

Figure 3.5 Percentage of pupils eligible for FSM by SEN provision, 2013

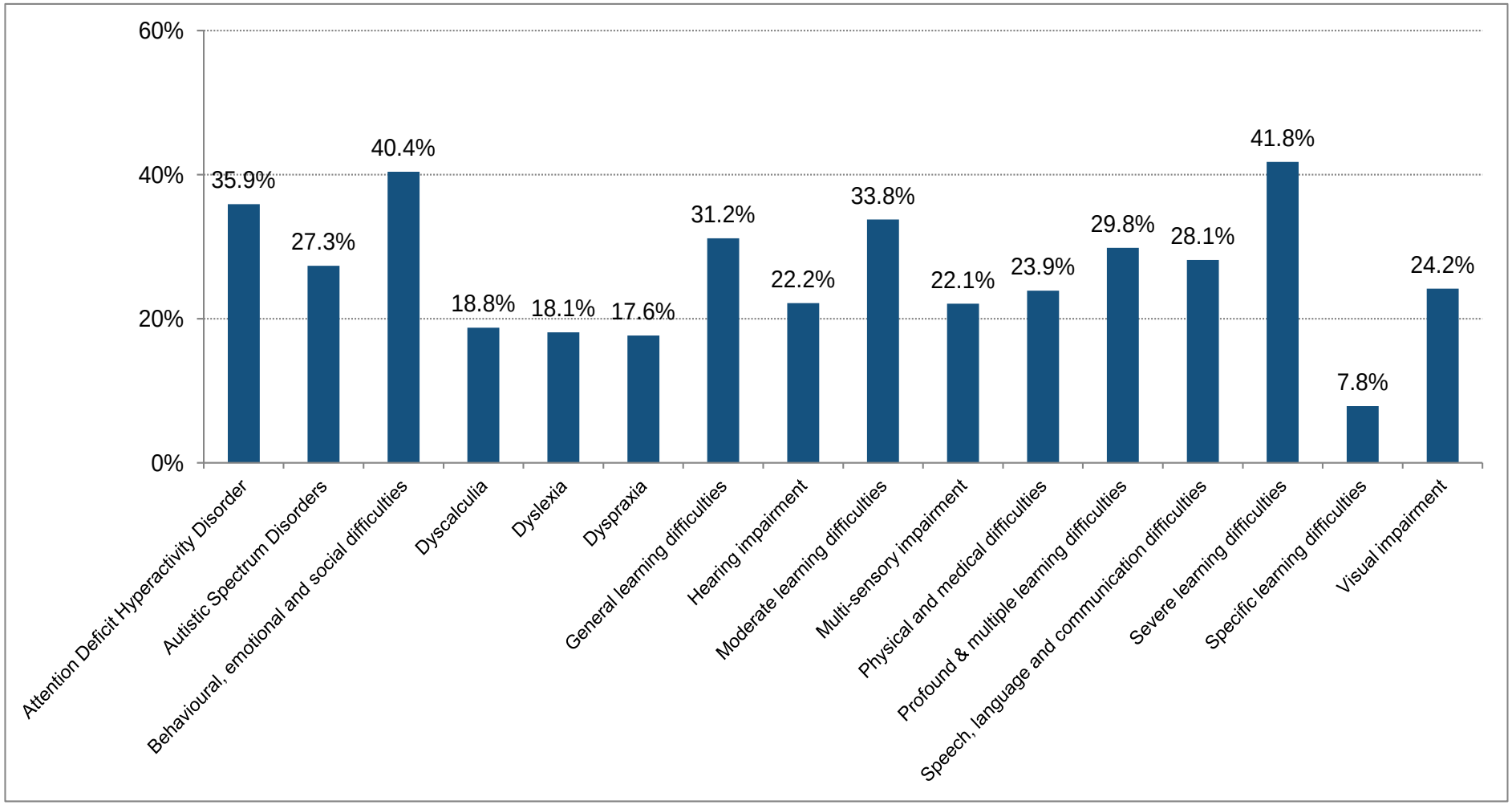


Source: NFER analysis of 2013 PLASC data for Wales (2014)

N= 464543.

The relationship between SEN and eligibility for FSM varies by the *type* of SEN. Figure 3.6 shows the variation in proportion of FSM by primary SEN type and Figure 3.7 shows this split by SEN provision. For example, 37 per cent of pupils with a SEN statement who have ADHD are eligible for FSM; for School Action/School Action Plus the equivalent figure is 36 per cent. Eligibility for FSM is particularly high for three types of SEN: behavioural, emotional and social difficulty (BESD); moderate learning difficulty (MLD) and severe learning difficulty (SLD). Among pupils with a SEN statement almost half who are classified as having BESD or MLD are eligible for FSM.

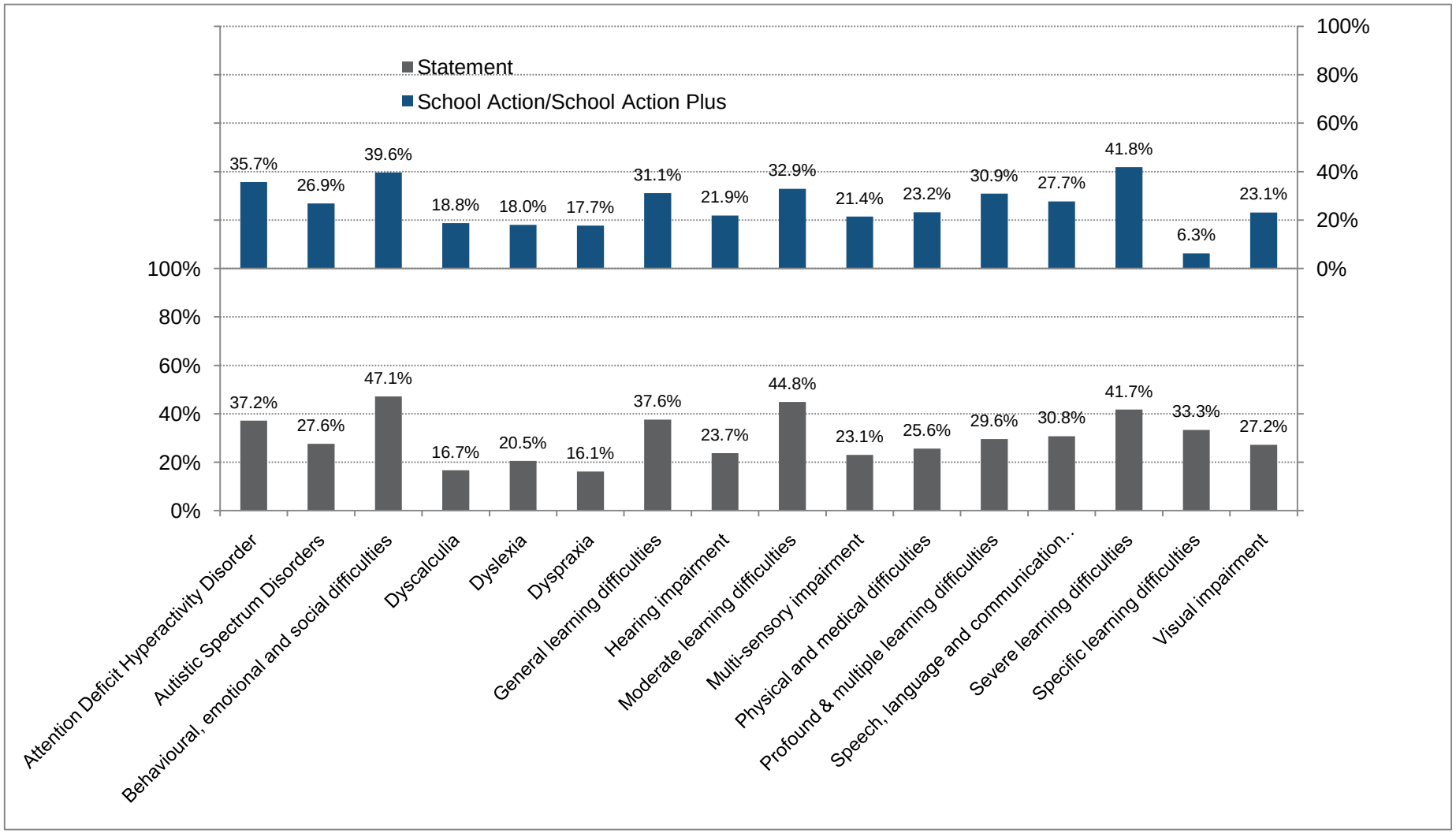
Figure 3.6 Percentage of pupils eligible for FSM by SEN type, 2013 (all SEN pupils)



Source: NFER analysis of 2013 PLASC data for Wales (2014)

N= 96546.

Figure 3.7 Percentage of pupils eligible for FSM by SEN type, 2013 (by SEN provision)



Source: NFER analysis of 2013 PLASC data for Wales (2014)

N Statement= 12069, N School Action/School Action Plus= 84477.

3.3 Pupil mobility

Figure 3.8 Relative pupil mobility of FSM and non-FSM pupils[13]

	Average mobility rate	
	FSM	Non-FSM
Overall	0.13	0.06
Primary	0.11	0.05
Secondary	0.16	0.08

Source: NFER analysis of 2013 PLASC data for Wales (2014)

N=366504

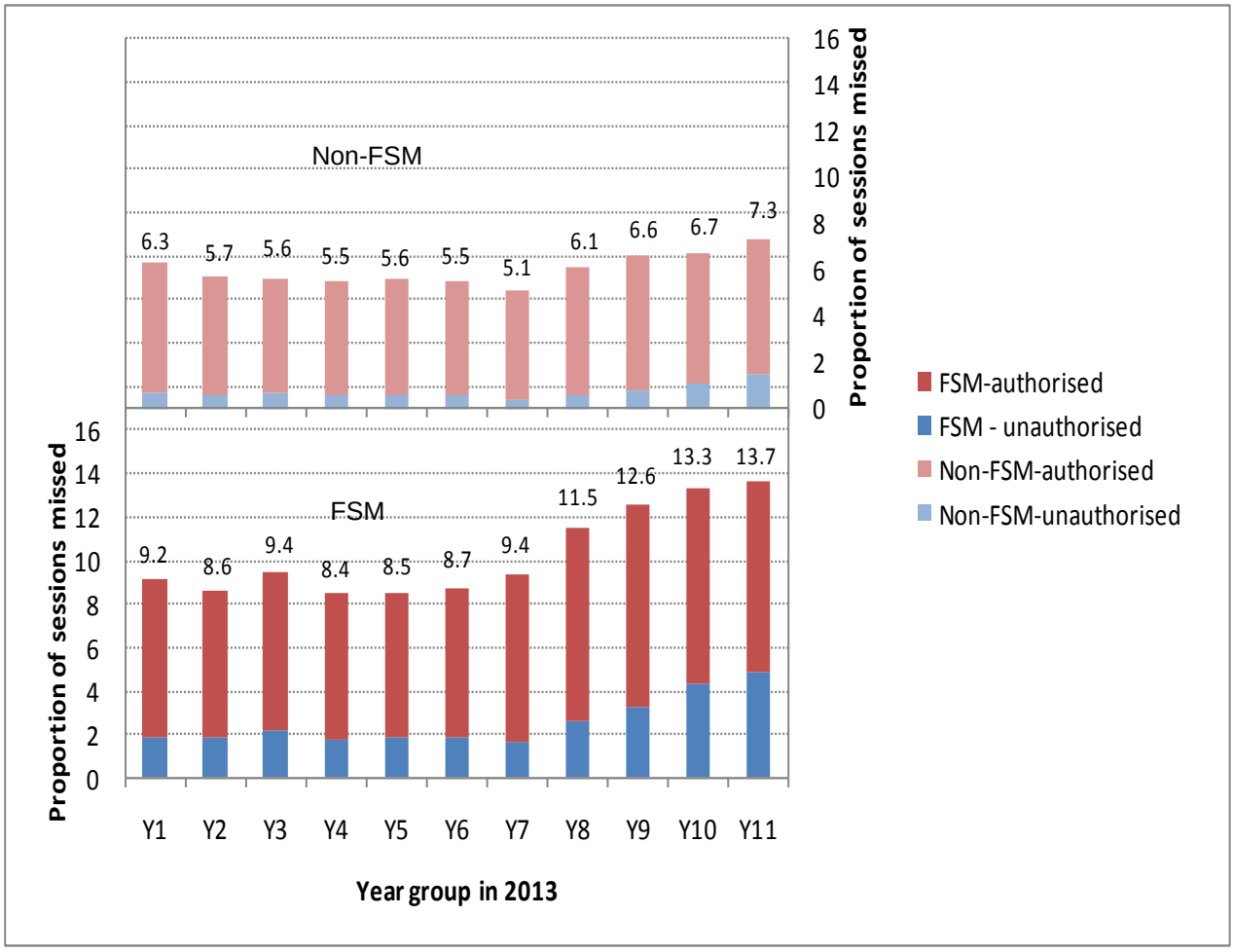
Pupil mobility refers to the number of times a pupil has moved school, other than the normal primary to secondary transition. Figure 3.8 shows that in both primary and secondary schools pupils eligible for FSM have, on average, a higher rate of mobility than non-FSM pupils.

3.4 Attendance

Overall, FSM pupils are more likely to be absent from school than non-FSM pupils. Figure 3.9 shows that, in 2013, among both groups, absence rates were fairly constant across the primary year groups. At secondary school, the rates of absence for both FSM and non-FSM pupils are higher than at primary, but for FSM pupils the contrast with primary is more marked. Between Years 8 and 11, the absence rate of FSM pupils is around double that of non-FSM pupils. These are mainly authorised absences but the rate of unauthorised absence is also considerably higher among FSM pupils compared with their non-FSM counterparts.

[13] Secondary pupils have been counted as mobile if they joined their current school (in 2013) after the first term of Year 7. A mobility rate is calculated as a count of the number of times, if any, that they have changed schools after that point. Primary pupils have been counted as mobile if they joined their current school after the first term of Year 1 (as it is common for pupils to have some mobility between nursery, Reception and Year 1). A mobility rate for each pupil was then calculated in the same way as for secondary pupils.

Figure 3.9 Average proportion of sessions missed by year group and eligibility for FSM

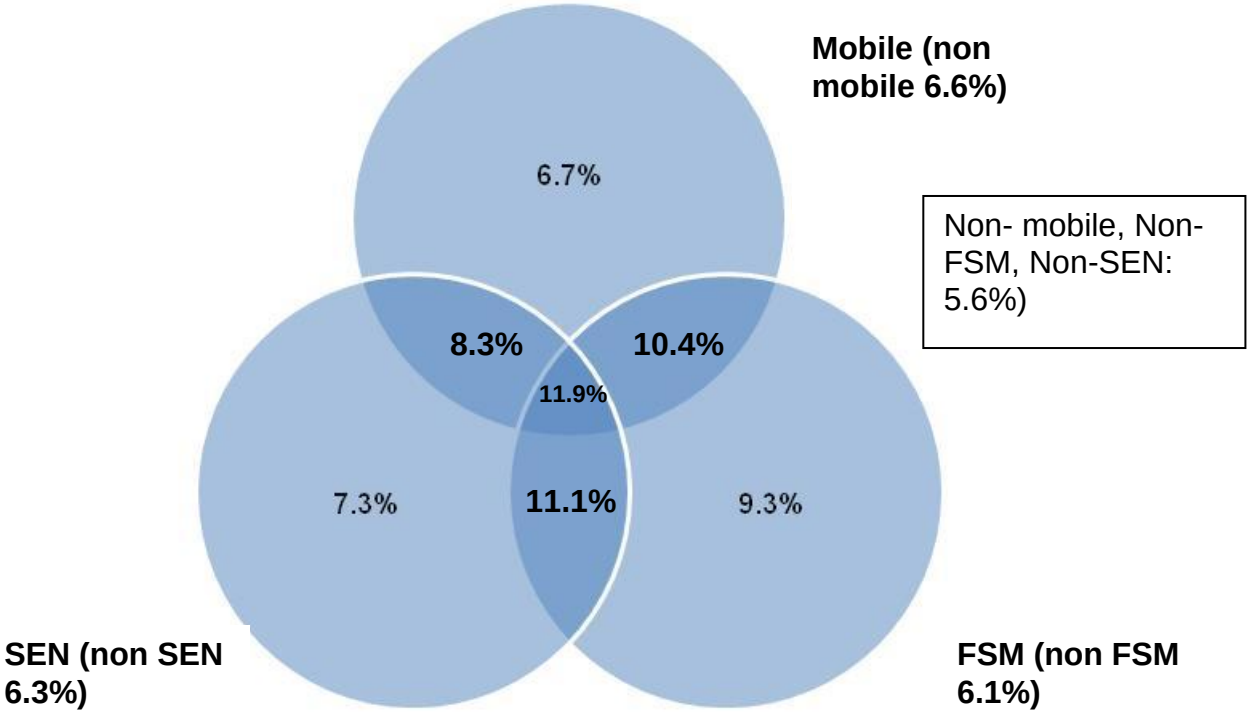


Source: NFER analysis of 2013 Attendance data for Wales (2014)

N FSM=64409; N non-FSM=295443.

Pupils who are eligible for FSM who are also identified with SEN have higher rates of overall absence compared to those with FSM but no identified SEN, and those with SEN but not eligible for FSM (Figure 3.10). The highest absence rate is among those who are identified with SEN, eligible for FSM and mobile. The lowest rate is among pupils who are mobile but are not identified with SEN or eligible for FSM.

Figure 3.10 Variation in absence rates by FSM, SEN status and pupil mobility



Source: NFER analysis of 2013 PLASC data for Wales (2014)
N=359852

Figure 3.12 shows the proportion of pupils in 2013 who fall into different groups defined by three attributes: whether they are eligible for FSM, whether they have been identified with special educational needs (SEN), and whether they live in one of the 30 per cent most deprived areas as defined by the Welsh Index of Multiple Deprivation (WIMD).While 55.2 per cent has none of these attributes, 3.5 per cent has all three (segment 7). This analysis also shows that it is more common to be designated as SEN without having the other attributes (10.1 per cent – segment 3), than to be eligible for FSM without having any of the other attributes (5.7 per cent – segment 4).

Figure 3.12 Segmentation of pupils by FSM, SEN and persistent absenteeism in 2013[14]

Segment	Attributes			
	FSM	SEN	In a deprived area	% of total cohort
1				55.2
2			✓	13.5
3		✓		10.1
4	✓			5.7
5	✓		✓	4.7
6		✓	✓	4.3
7	✓	✓	✓	3.5
8	✓	✓		2.9

Source: NFER analysis of 2013 PLASC data for Wales (2014)

N=464543.

[14] These segments were derived through cluster analysis. Cluster analysis is a statistical technique used to group individuals into homogeneous sub-groups based on responses to variables (in this case whether they are eligible for FSM, identified with SEN, are a persistent absentee or live in one of the 30 per cent most deprived areas in Wales). All pupils in the analysis belong to one of the eight segments based on the combination of attributes they possess.

4 Impact of deprivation on pupil achievement

Key findings

- Pupils eligible for FSM have, on average, lower attainment than other pupils throughout their progression in the education system in Wales. The gap in attainment identified at Foundation Phase remains at the end of Key Stage 2 and the gap widens further in secondary education.
- Children living in less-deprived areas, as defined by the Welsh Index of Multiple Deprivation, are more likely to have achieved the Foundation Phase Indicator, a score of five or above in a combination of personal and social development, language and communication in English/ Welsh, and mathematical development.
- A non-FSM pupil has better odds of achieving expected attainment levels in key subjects from Key Stage 1 to Key Stage 4. A non-FSM pupil has around three times the odds of achieving the expected levels in English and mathematics at Key Stage 2. At GCSE, only 25.8 per cent of FSM pupils achieve the Level 2 threshold (five or more A*-C grades) including English and mathematics, compared with 58.4 per cent of non-FSM pupils.
- The attainment gap at GCSE has decreased over time but the attainment of FSM pupils at GCSE remains comparatively low.

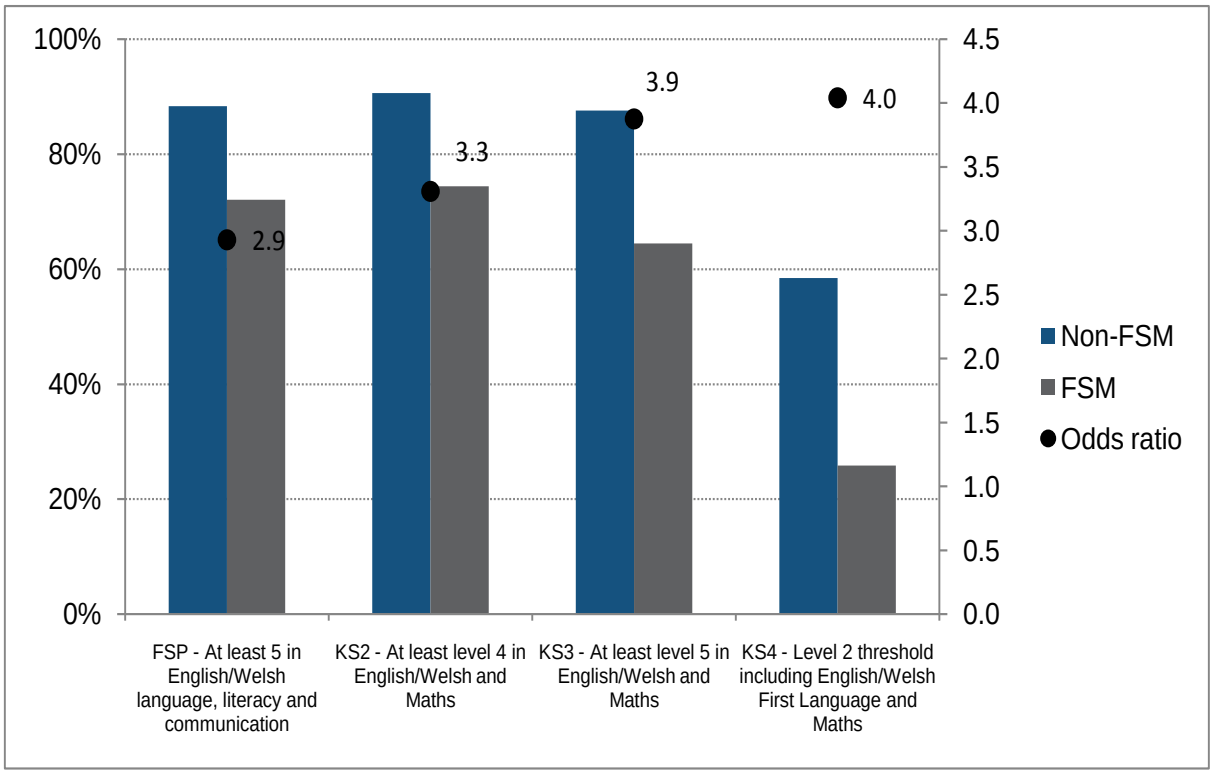
4.1 The FSM gap throughout education

Throughout the education system, pupils eligible for FSM have, on average, lower attainment than other pupils, as illustrated in Figure 4.1.

During the Foundation Phase the odds of a non-FSM pupil achieving at least 6 in English or Welsh language, literacy and communication are 2.9 times that of an FSM pupil. This gap remains at the end of Key Stage 2.

The gap widens further in secondary education. The odds of a non-FSM pupil achieving the Level 2 threshold at GCSE (five or more A*-C grades) including English/Welsh First Language and Maths are four times that of an FSM pupil.

Figure 4.1 FSM achievement gap from Foundation Phase to Key Stage 4, 2013

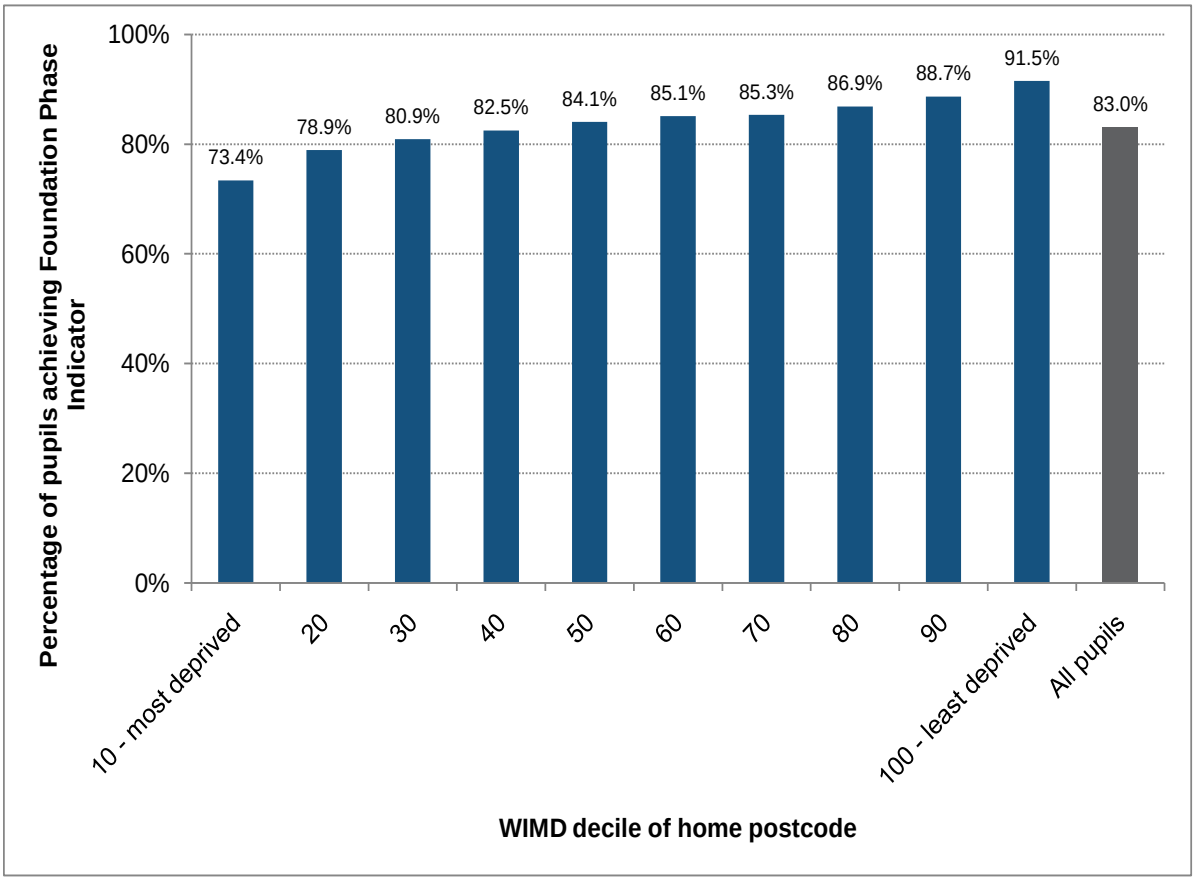


Source: NFER analysis of 2013 PLASC data for Wales (2014)

Foundation Phase N=33199; KS2 N=30888; KS3 N=33187; KS4 N=35154[15].

[15] The odds ratio here (and throughout this chapter) is a measure of association between FSM eligibility and the various achievement levels identified (e.g. achievement of the Level 2 threshold at GCSE). The odds ratio represents the odds that a non-FSM pupil will achieve that level, compared to the odds of an FSM pupil achieving that level. Here, an odds ratio greater than 1 means that non-FSM pupils are more likely to achieve the level than FSM pupils. The odds for each group are calculated by dividing the probability of achieving the level by the probability of not achieving the level.

Figure 4.2 Percentage of pupils achieving Foundation Phase Indicator, by deprivation of local area, 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014)

N=33199.

The Foundation Phase Indicator (FPI) represents the percentage of pupils achieving outcome 5 or above in the scales assessed, in combination:

- personal and social development
- language and communication in English/Welsh
- mathematical development.

Children living in less deprived areas, as defined by the Welsh Index of Multiple Deprivation, are more likely to have achieved this level. There is an 18.1 percentage point difference between the least deprived and the most deprived deciles.

Figure 4.3[16] Percentage of pupils in 2013 achieving the expected level[17] at Foundation Phase to Key Stage 4, by FSM eligibility

Key Stage	Subject/Threshold	% of pupils achieving the expected level				
		Overall	FSM	Non-FSM	Percentage point gap	Odds ratio non-FSM/ FSM pupils
Foundation Stage Profile	Language, literacy and communication - English	85.4	71.9	88.8	16.9	3.1
	Language, literacy and communication - Welsh	86.8	73.9	88.6	14.7	2.8
	Mathematical development	87.5	75.4	90.2	14.8	3.0
	Personal and social development	93.1	85.9	94.8	8.8	3.0
	Foundation Phase Indicator	83.1	68.3	86.4	18.1	3.0
Key Stage 2	English	87.3	74.3	90.5	16.2	3.3
	Welsh first language	86.8	69.0	89.2	20.2	3.7
	Mathematics	87.6	75.3	90.7	15.5	3.2
	Science	89.8	78.3	92.7	14.4	3.5
Key Stage 3	English	83.0	64.2	87.1	22.9	3.8
	Welsh first language	87.6	71.5	89.4	17.9	3.4
	Mathematics	84.0	65.0	88.1	23.1	4.0
	Science	87.2	70.4	90.8	20.3	4.1
Key Stage 4	Level 2 threshold	78.9	57.8	83.0	25.2	3.6
	Level 2 including English/Welsh and mathematics[18]	53.2	25.8	58.4	32.6	3.6
	Any passes	99.8	99.4	99.9	0.4	4.4

Source: NFER analysis of 2013 PLASC data for Wales (2014)

Figure 4.3 presents data on the FSM gap in attainment from the Foundation Phase Key Stage 1 to Key Stage 4 for key subjects, including the percentage point gap and the odds ratio between FSM and non-FSM pupils. Odds ratios are a useful way of comparing gaps across a range of different threshold measures.

A non-FSM pupil has around three times the odds of achieving the expected level in all scales in the Foundation Stage Profile.

A non-FSM pupil has just over three times the odds of achieving the expected level in English at Key Stage 2, which increases to 3.8 at Key Stage 3, compared to an FSM pupil.

A similar pattern is seen for mathematics. At Key Stage 2, a non-FSM pupil has around three times the odds of achieving the expected level, which increases at Key Stage 3, where just 65 per cent of FSM pupils achieve the expected level compared with 88.1 per cent of non-FSM pupils.

For science, over 90 per cent of non-FSM pupils achieve the expected level at Key Stages 2 and 3, whereas for FSM pupils the figures are 78 per cent at Key Stage 2 and 70 per cent at Key Stage 3. At GCSE, only 25.8 per cent of FSM pupils achieve the Level 2 threshold including English/Welsh and mathematics, compared to 58.4 per cent non-FSM pupils.

[16] NFER worked with data provided by the Welsh Government in May 2014, which represents pupils with PLASC data in 2013. There may be some discrepancies with official published attainment figures due to missing data arising during the matching process.

[17] Expected levels are: Foundation Stage: at least 5, KS2: Level 4 or above, KS3: Level 5 or above KS4: 5+ A*-C grades.

[18] This will be referred to as the 'Level 2 inclusive threshold' throughout this report.

Figure 4.4 Percentage of pupils in 2013 achieving the expected level at Foundation Phase to Key Stage 4, by deprivation of local area

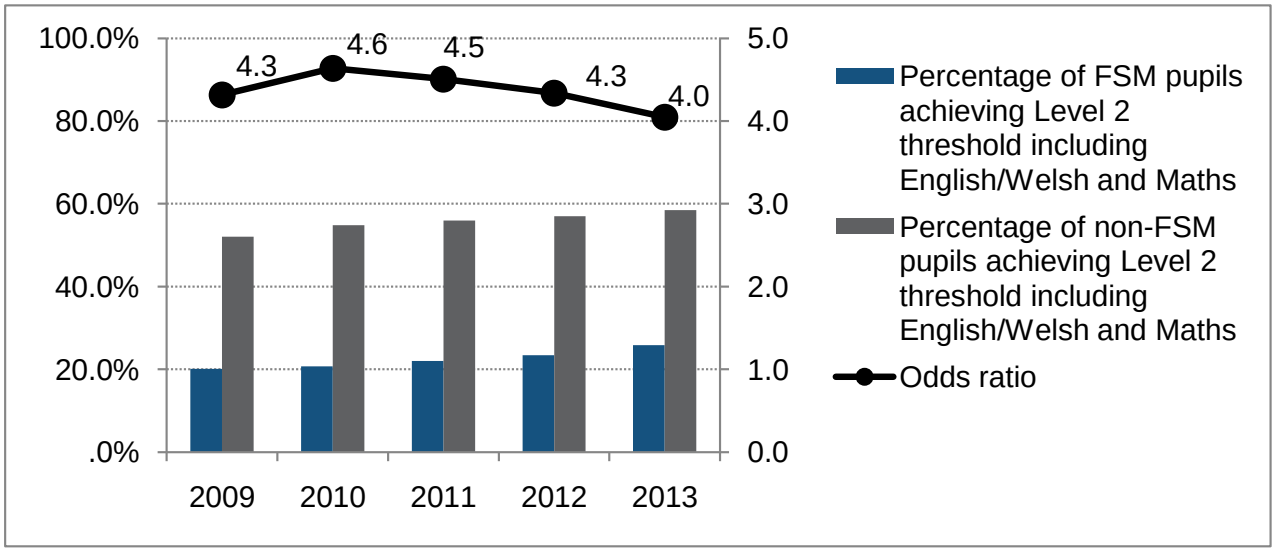
	Foundation Stage Profile				Key Stage 2				Key Stage 3				Key Stage 4		
Wales	**LLCE**	**LLCW**	**MD**	**PSD**	**English**	**Welsh**	**Maths**	**Science**	**English**	**Welsh**	**Maths**	**Science**	**Level 2 threshold**	**Level 2 inclusive**	**Any passes**
0-10% most deprived	76.2%	79.0%	79.3%	87.6%	78.2%	80.9%	79.6%	81.8%	69.2%	74.6%	71.4%	74.3%	64.6%	31.7%	99.5%
10-20%	81.3%	85.9%	84.6%	90.6%	83.5%	87.0%	83.7%	86.0%	76.2%	81.6%	77.5%	82.6%	71.0%	38.4%	99.8%
20-30%	83.7%	85.6%	86.0%	92.5%	84.5%	83.3%	85.5%	87.8%	77.8%	77.0%	79.9%	83.2%	73.9%	43.7%	99.7%
30-40%	84.9%	85.0%	87.0%	93.1%	86.4%	85.3%	87.1%	89.4%	81.1%	85.5%	82.1%	85.1%	76.8%	48.3%	99.8%
40-50%	87.1%	85.3%	88.5%	93.7%	87.1%	84.4%	86.7%	89.6%	83.7%	88.2%	84.0%	87.8%	79.2%	52.0%	99.8%
50-60%	87.8%	87.2%	89.3%	94.8%	89.2%	85.6%	89.4%	91.6%	86.2%	88.0%	86.9%	90.7%	82.3%	57.2%	100.0%
60-70%	87.4%	87.7%	89.0%	94.7%	88.9%	87.7%	89.7%	92.1%	88.3%	92.1%	88.1%	91.0%	84.2%	61.0%	99.9%
70-80%	89.2%	88.8%	90.5%	95.2%	90.5%	89.8%	91.4%	93.1%	88.4%	91.5%	88.9%	91.9%	85.9%	64.0%	99.9%
80-90%	91.0%	91.2%	91.5%	95.8%	92.6%	92.2%	91.8%	94.0%	91.7%	93.7%	92.3%	94.1%	87.2%	68.7%	99.9%
90-100% least deprived	93.7%	94.3%	93.7%	96.5%	94.4%	95.3%	94.2%	95.5%	92.7%	95.3%	93.4%	95.2%	89.3%	74.6%	100.0%
Percentage point gap between most and least deprived	17.5%	15.2%	14.4%	8.9%	16.3%	14.4%	14.6%	13.7%	23.5%	20.8%	22.0%	20.9%	24.7%	42.9%	0.5%
Odds ratio between least and most deprived	**4.7**	**4.4**	**3.9**	**3.9**	**4.7**	**4.8**	**4.2**	**4.7**	**5.7**	**7.0**	**5.6**	**6.8**	**4.6**	**6.3**	**17.2**

Source: NFER analysis of 2013 PLASC data for Wales (2014)

Figure 4.4 presents attainment at the expected level from the Foundation Phase to Key Stage 4 by WIMD decile, showing the percentage point gap and odds ratio for the most and least deprived deciles. The percentage point gap increases through Key Stages 2 to 4 and is greatest for Level 2 at Key Stage 4 including English/Welsh first language and mathematics.

4.2 Changes in the FSM gap over time

Figure 4.5 Percentage of pupils achieving Level 2 threshold at GCSE including English/Welsh first language and mathematics, 2009-2013, by FSM eligibility



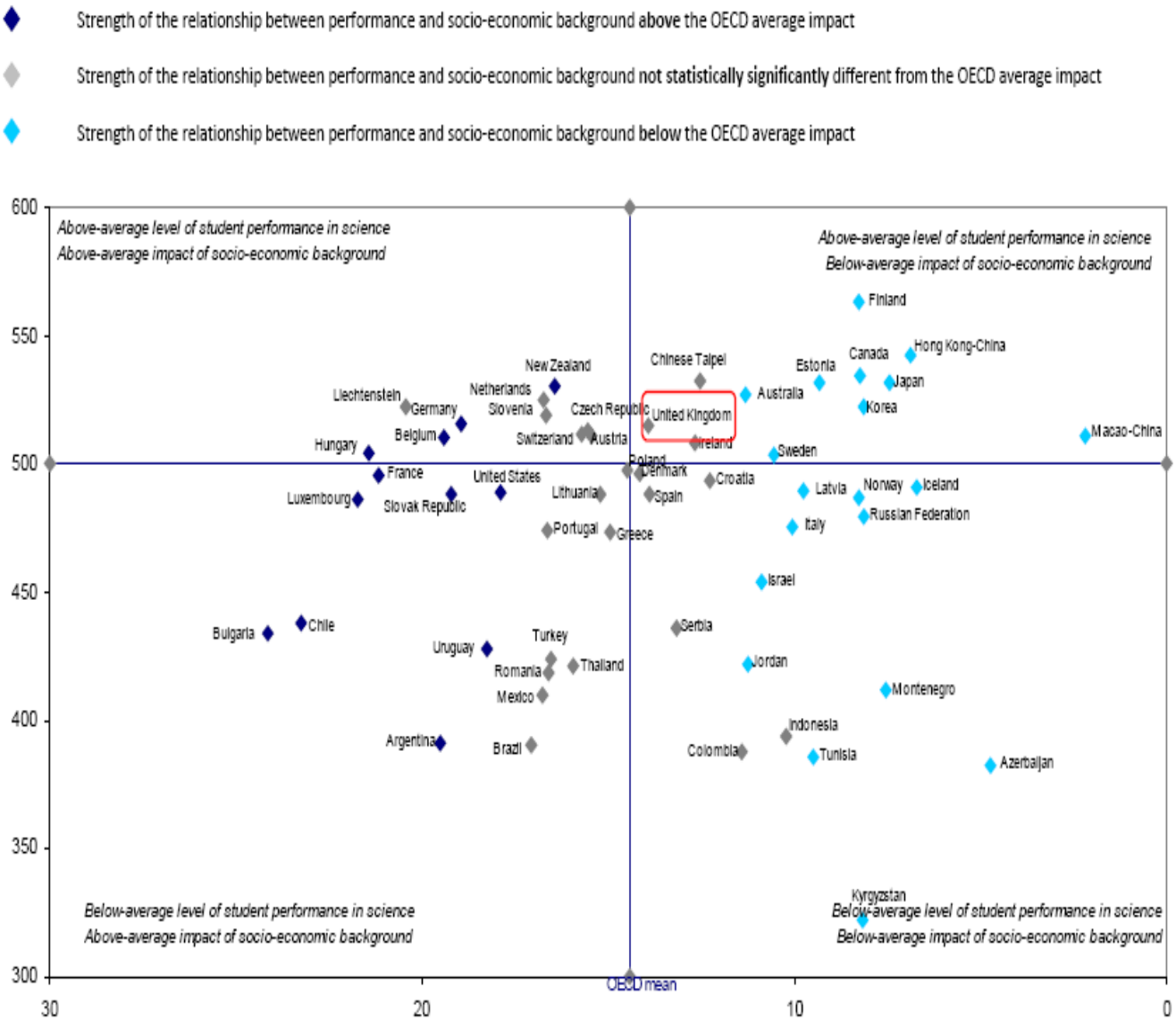
Source: NFER analysis of 2013 PLASC data for Wales (2014).

N 2013=35154, N 2012=32892, N 2011=33767, N 2010=35030, N 2009=35700.

The FSM gap in pupils' Key Stage 4 attainment (Level 2 including English/Welsh first language and mathematics), has slightly decreased between 2009 and 2013 (by 5.7 percentage points).

The odds ratios have fallen slightly over time – in 2009 a non-FSM pupil had 4.3 times the odds of achieving the threshold compared to an FSM pupil, whereas in 2013 this ratio was 4.0.

Figure 4.6 Average performance of countries on the PISA science scale and the relationship between performance and the index of economic, social and cultural status, 2006



Source: OECD PISA 2006 database, Table 4.4a. Note: OECD mean used in this figure is the arithmetic average of all OECD countries.

Source: Department for Children, Schools and Families (2009), p.51.

The negative effect of deprivation on educational attainment is an international problem. Findings from PISA 2006 (above) show the extent of the problem. In all countries, pupils from less advantaged home backgrounds tend to have lower PISA scores. However, the size of this gap varies across countries.

Figure 4.6 contrasts a country's average performance in science (on the vertical axis) with the strength of the relationship between socio-economic background and science performance (on the horizontal axis). The UK is not significantly different from the OECD average.

5 Impact of deprivation on pupil trajectories

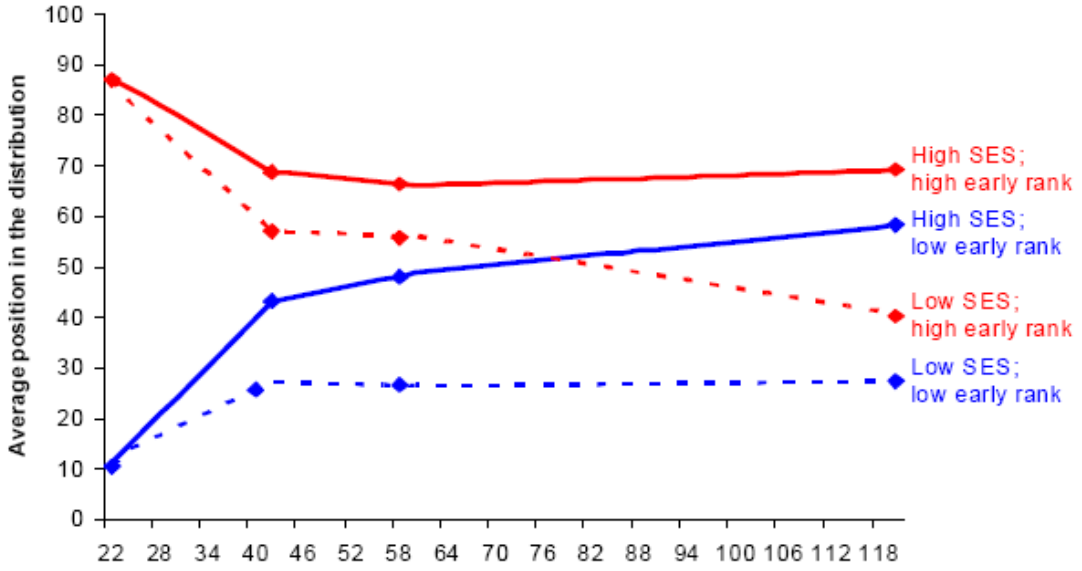
Key findings

- Non-FSM pupils make more progress than FSM pupils in English, Welsh, mathematics and science. They are more likely to achieve the expected level in those subjects by the end of Key Stage 2.
- Pupils eligible for FSM who had achieved the expected level at Key Stage 2 were slightly less likely than non-FSM pupils to do the same at Key Stage 3.
- Pupils eligible for FSM who had achieved the expected level at Key Stage 3 were less likely to achieve the Level 2 inclusive threshold at GCSE than their non-FSM counterparts from the same starting point.
- The gap between FSM and non-FSM pupils' likelihood of gaining a GCSE in mathematics or English grades A*-C is widest for pupils achieving Level 5 at Key Stage 3. Starting from higher levels of Key Stage 3 attainment, the differences between FSM and non-FSM pupils are less pronounced.
- The gaps in the percentage attaining an A*-C grade at GCSE between FSM and non-FSM pupils are smaller in science than for English and mathematics at all levels of prior attainment.
- Girls perform better than boys at GCSE whether or not they are eligible for FSM. Boys eligible for FSM perform the lowest of all, with just 22 per cent achieving the Level 2 inclusive threshold

5.1 Educational progress

The negative effect of deprivation on educational attainment is evident from an early age. Feinstein (2003) showed that even those children from lower socio-economic groups performing well initially on tasks such as cube stacking and language use (at 22 months) were, on average, overtaken by others from higher socio-economic groups by the time they started primary school (Figure 5.1).

Figure 5.1 Differential trajectory of children by socio-economic group from 22 to 118 months



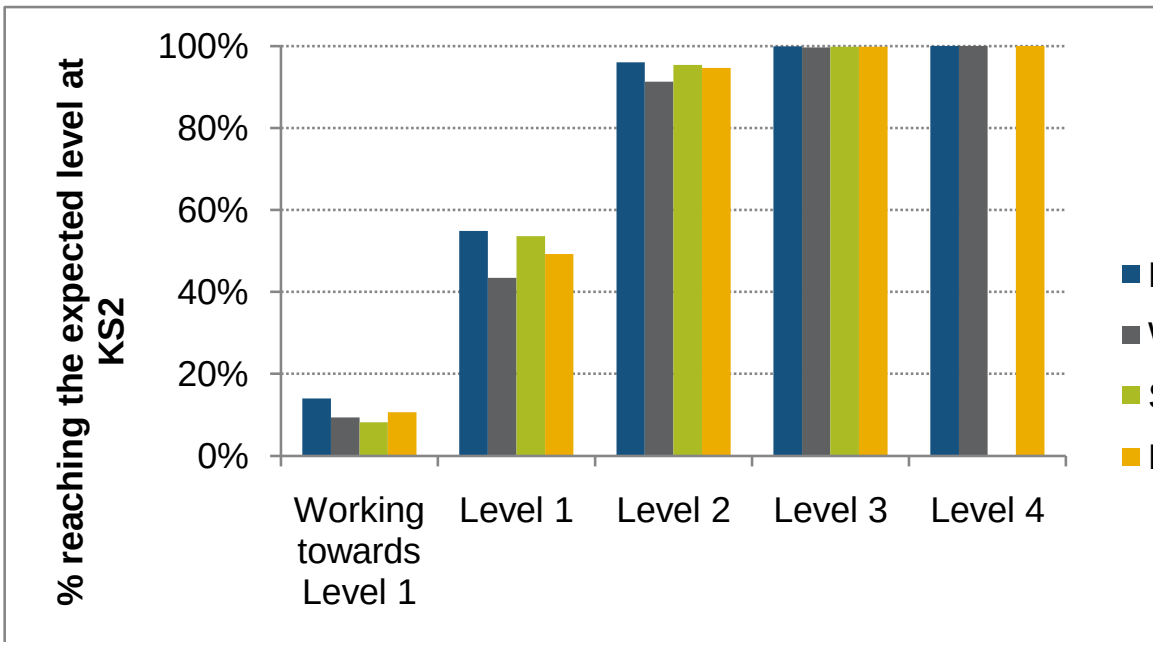
Source: Feinstein (2003), reproduced from DCSF (2009) p.34.

Figures 5.2 and 5.3 show the percentage of pupils who reach the expected level in English, Welsh, mathematics and science at Key Stage 2, by their prior attainment at Key Stage 1[19].

From the lowest levels of attainment in all subjects at Key Stage 1, for example 'working towards' Level 1 and Level 1, non-FSM pupils make more progress (in that they are more likely to attain the expected level in those subjects) by Key Stage 2. At the higher levels of attainment, Levels 2 and 3, the difference between FSM and non-FSM pupils is less pronounced.

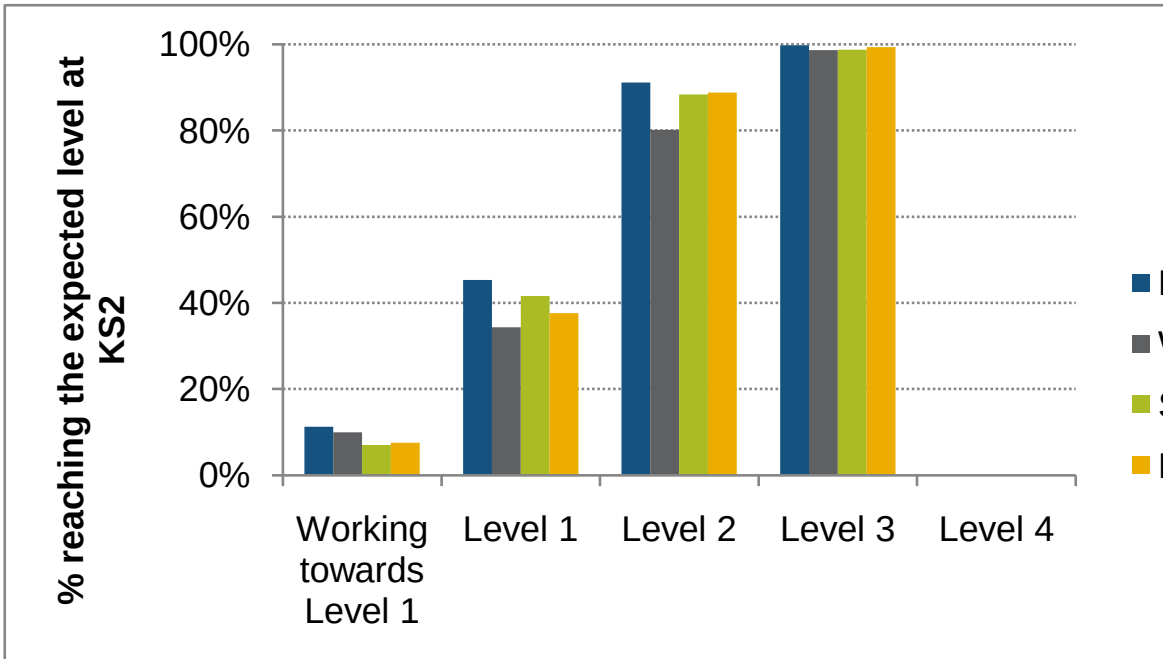
[19] Please note that a very small number of pupils achieve Level 4 at Key Stage 1.

Figure 5.2 Percentage who reach the expected level at Key Stage 2, 2013, by level at Key Stage 1 (2009[20]): Non-FSM pupils



Source: NFER analysis of 2013 PLASC data for Wales (2014).
N English= 17846, N Welsh= 5144, N Science= 23236, N Maths= 23236.
Please note that a very small number of pupils achieve Level 4 at Key Stage 1.

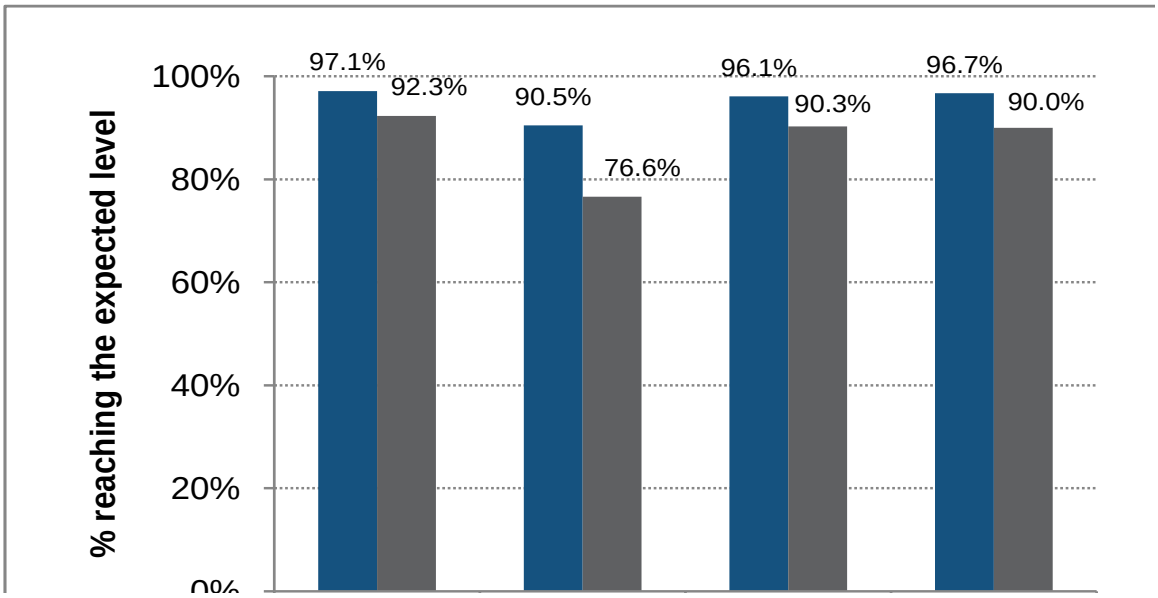
Figure 5.3 Percentage who reach the expected level at Key Stage 2, 2013, by level at Key Stage 1 (2009): FSM pupils



Source: NFER analysis of 2013 PLASC data for Wales (2014).
N English= 4772, N Welsh= 687, N Science= 5526, N Maths= 5526.
Please note that a very small number of pupils achieve Level 4 at Key Stage 1.

[20] 93 per cent of those who had KS2 assessments in 2013 had completed KS1 assessments in 2009. A very small number of pupils took KS1 assessments in 2008, 2010 or 2011; for the remainder KS1 data was missing.

Figure 5.4 Percentage of pupils who achieved expected level at KS1 (2009) and went on to achieve expected level at KS2 (2013), by FSM eligibility

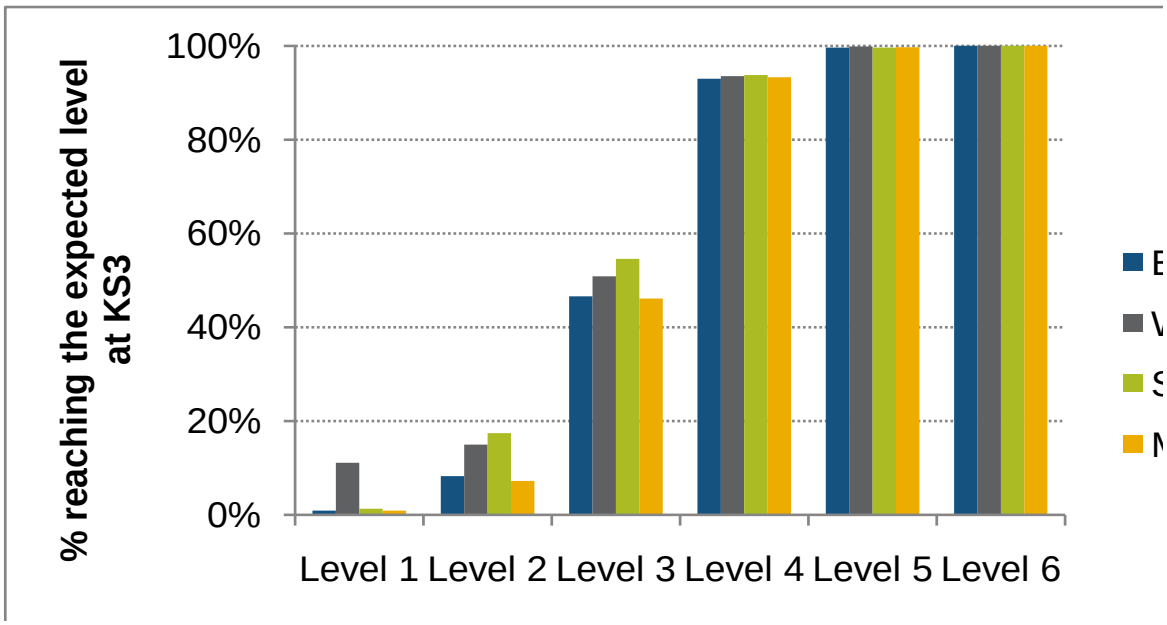


Source: NFER analysis of 2013 Schools Census data for Wales (2014).

N English=18861, N Welsh=5557, N Maths=25124, N Science=25989.

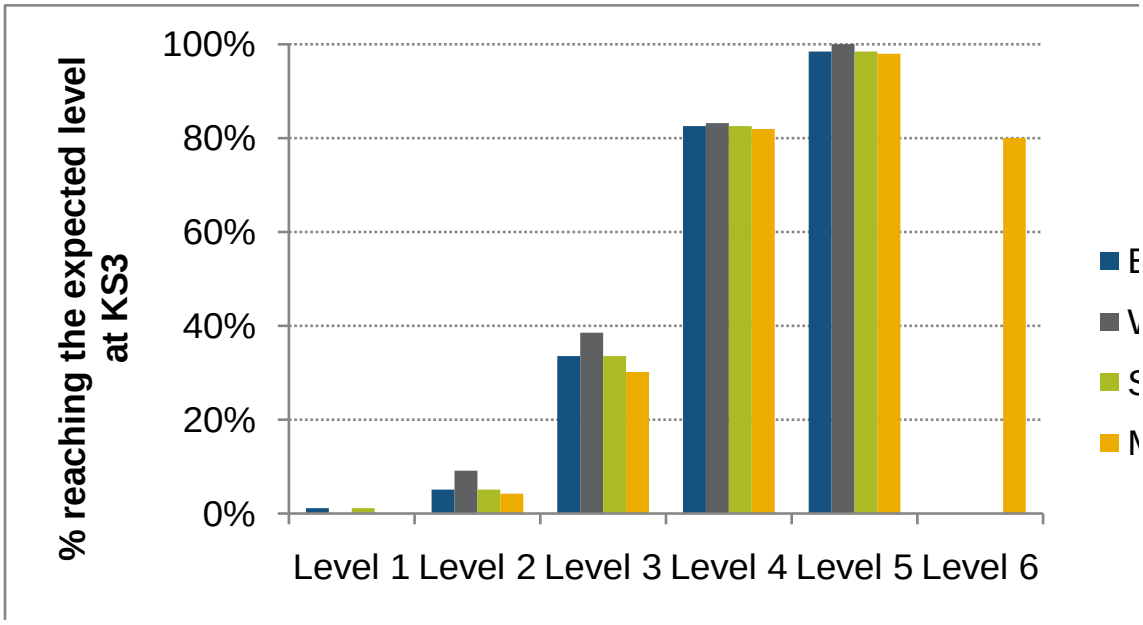
The majority of pupils who achieved the expected level at Key Stage 1 went on to achieve the expected level at Key Stage 2 (Figure 5.4). However, there was a slight gap in that pupils eligible for FSM who had achieved the expected level at Key Stage 1 were slightly less likely to do the same at Key Stage 2. The difference was largest for Welsh.

Figure 5.5 Percentage who reach the expected level at Key Stage 3, 2013, by their level at Key Stage 2 (2010[21]): Non-FSM pupils



Source: NFER analysis of 2013 PLASC data for Wales (2014).
N Welsh= 4989, N English/Science/Maths= 26299.
Please note that a very small number of pupils achieve Level 6 at Key Stage 2.

Figure 5.6 Percentage who reach the expected level at Key Stage 3, 2013, by their level at Key Stage 2 (2010): FSM pupils



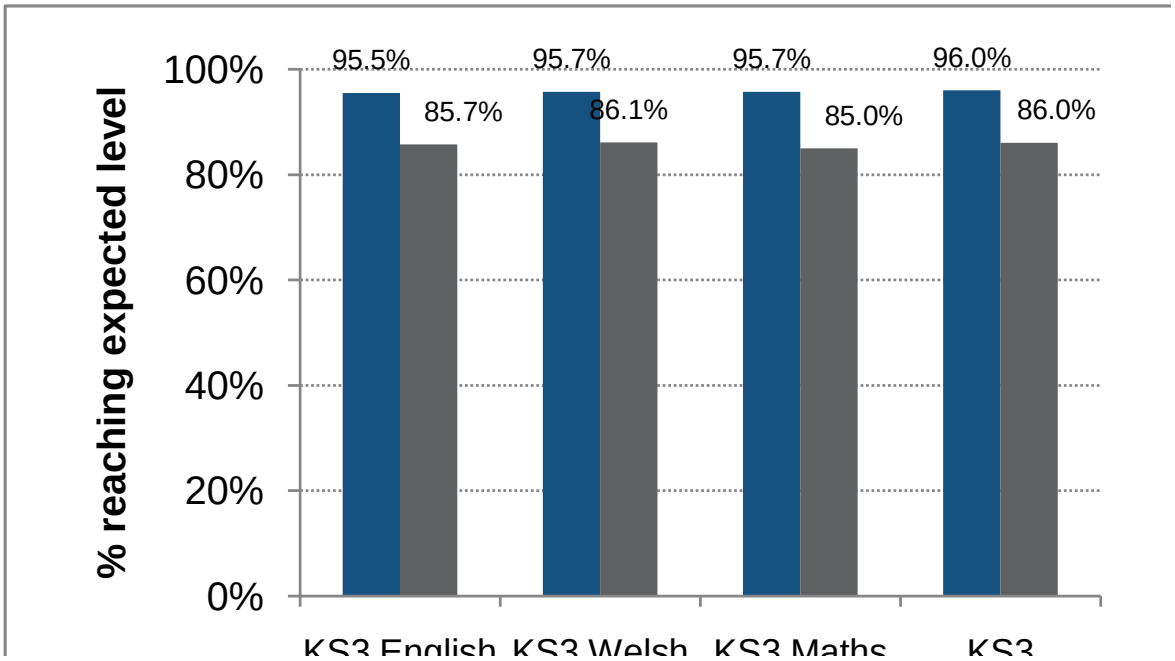
Source: NFER analysis of 2013 PLASC data for Wales (2014).
N Welsh= 545, N English/Science/Maths= 5576.
Please note that a very small number of pupils achieve Level 6 at Key Stage 2.

[21] 96 per cent of those who had KS3 assessments in 2013 had completed KS2 assessments in 2010. A very small number of pupils took KS2 assessments in 2009, 2011 or 2012; for the remainder, KS2 data was missing.

Figures 5.5 and 5.6 show the percentage of pupils who obtain the expected level in English, Welsh, mathematics and science at Key Stage 3, by their prior attainment at Key Stage 2[22].

From the lowest levels of attainment at Key Stage 2, Levels 2 and 3, and Level 4, non-FSM pupils make more progress than FSM pupils, in that they are more likely to attain the expected level in English, mathematics and science by Key Stage 2. At Level 5, the difference between FSM and non-FSM pupils is less pronounced.

Figure 5.7 Percentage of pupils who achieved expected level at KS2 (2010) and went on to achieve expected level at KS3, by FSM eligibility, 2013



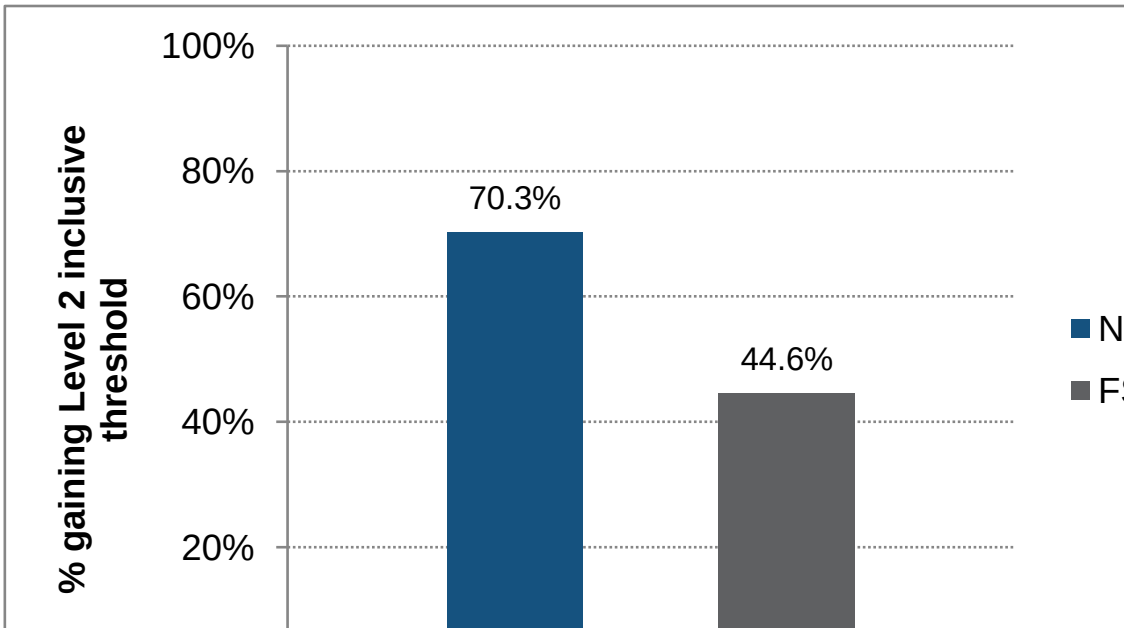
Source: NFER analysis of 2013 PLASC data for Wales (2014).

N Science=27645; N Maths=26637; N Welsh=5188; N English=26226.

The majority of pupils who achieved the expected level at Key Stage 2 went on to achieve the expected level at Key Stage 3 (Figure 5.7). However, there was a slight gap in that pupils eligible for FSM who had achieved the expected level at Key Stage 2 were slightly less likely to do the same at Key Stage 3. The gaps were larger than those between Key Stage 1 and Key Stage 2 (Figure 5.4).

[22] Please note that a very small number of pupils achieve Level 6 at Key Stage 2.

Figure 5.8 Percentage of pupils achieving Level 2 inclusive threshold at GCSE from a starting point of achieving threshold at KS3 (2011[23]), by FSM eligibility, 2013



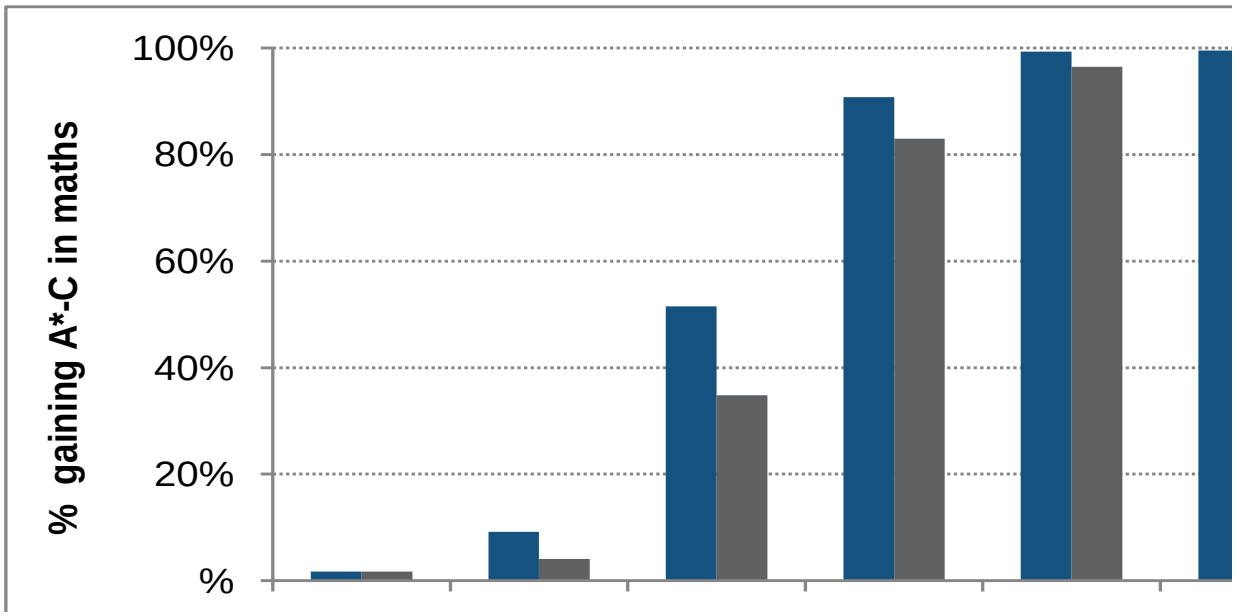
Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=26918.

Pupils eligible for FSM, who had achieved the threshold at Key Stage 3, were less likely to obtain five GSCEs at grades A*-C than their non-FSM counterparts from the same starting point.

[23] 98 per cent of those who had KS4 data for 2013 had completed KS3 assessments in 2011. A very small number of pupils took KS3 assessments in 2010 or 2012; for the remainder, KS3 data was missing.

Figure 5.9 Percentage of pupils attaining A*-C in mathematics by KS3 mathematics level (2011) and by FSM eligibility, 2013



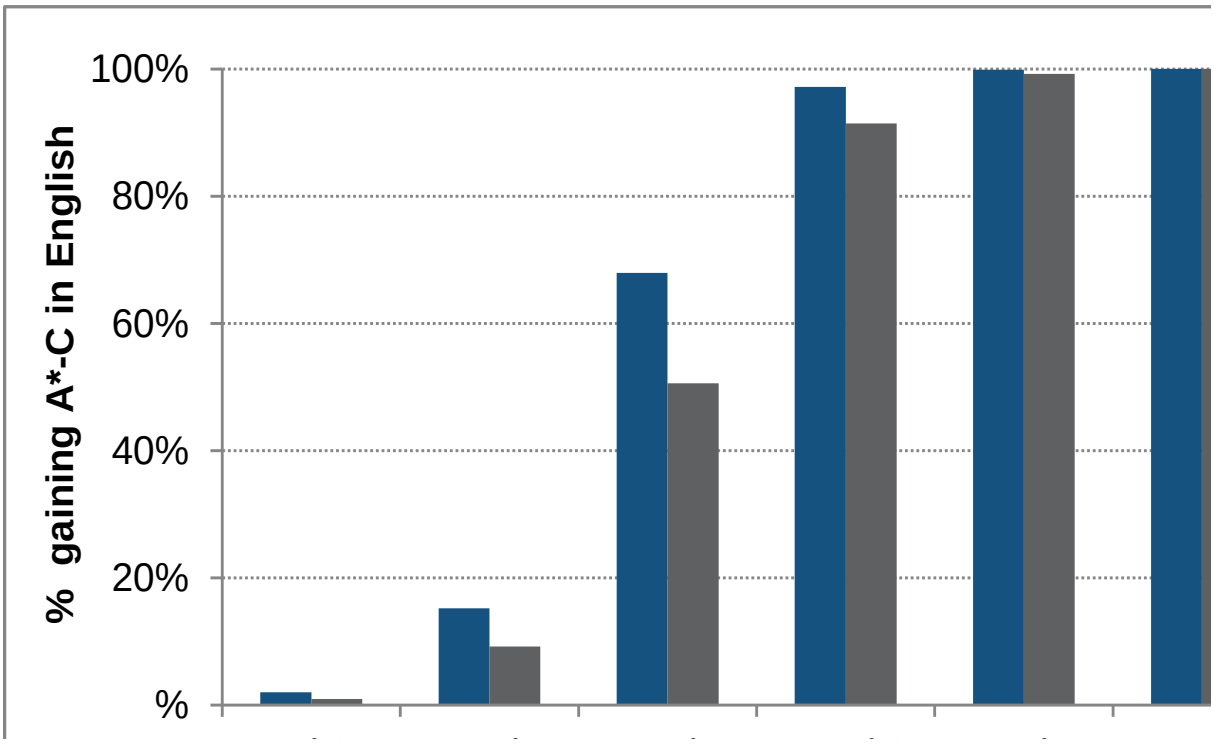
Source: NFER analysis of 2013 PLASC data for Wales (2014).
N FSM=5064, N non-FSM=28341.

Figures 5.9 to 5.11 show the percentage of pupils gaining A*-C grades at GCSE in mathematics, English and science, by their Key Stage 3 level in that subject.

Figure 5.9 shows that the likelihood of gaining an A*-C in mathematics GCSE increases according to a pupil's level in Key Stage 3 mathematics. The gap between FSM and non-FSM is widest for pupils achieving Level 5 at Key Stage 3; 35 per cent of FSM pupils achieving at this level go on to achieve five A*-Cs, compared with 52 per cent of non-FSM pupils. At the higher levels of Key Stage 3 achievement the differences between FSM and non-FSM pupils are less pronounced.

The situation is similar for English (Figure 5.10) in that the largest difference between FSM and non-FSM pupils is among those who start at Level 5 at Key Stage 3; 51 per cent of FSM pupils achieving at this level attained an A*-C grade, compared with 68 per cent of non-FSM pupils.

Figure 5.10 Percentage attaining A*-C in English by KS3 English level (2011) and by FSM eligibility, 2013

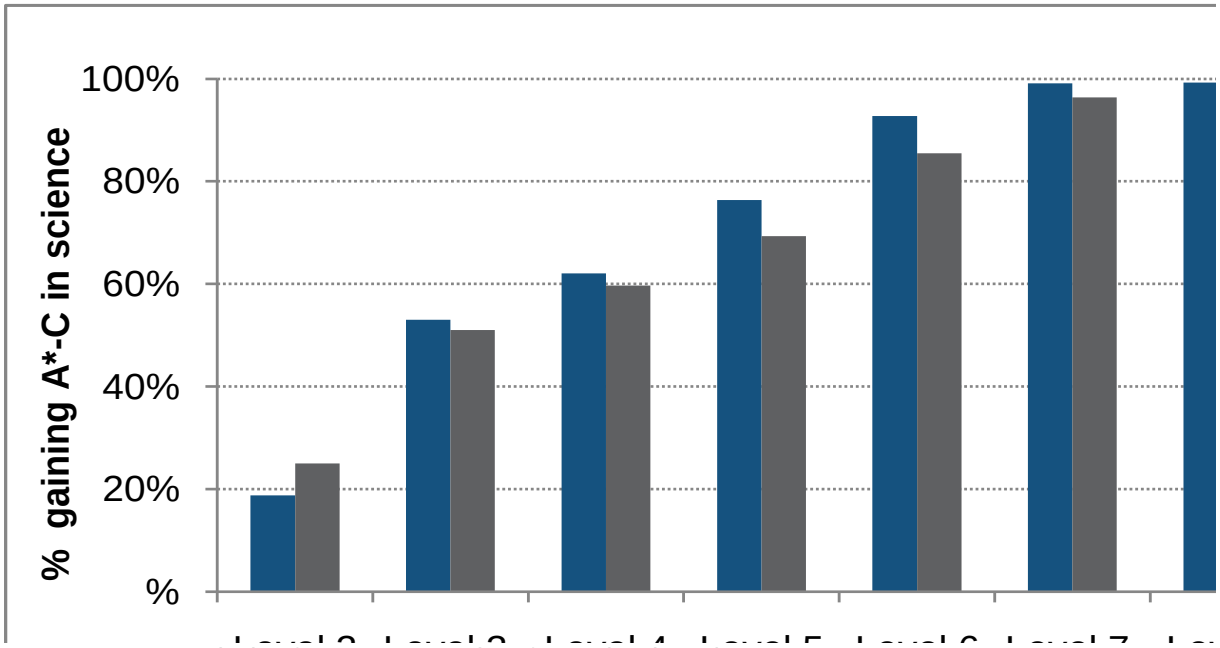


Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=33167.

In science (Figure 5.11), higher numbers of pupils gain a GCSE A*-C grade from the lower levels of attainment at Key Stage 3. The proportions of both FSM and non-FSM pupils attaining an A*-C grade is also higher from these lower levels than for English and mathematics. At all levels in science, the gaps between FSM and non-FSM pupils are smaller than for English and mathematics.

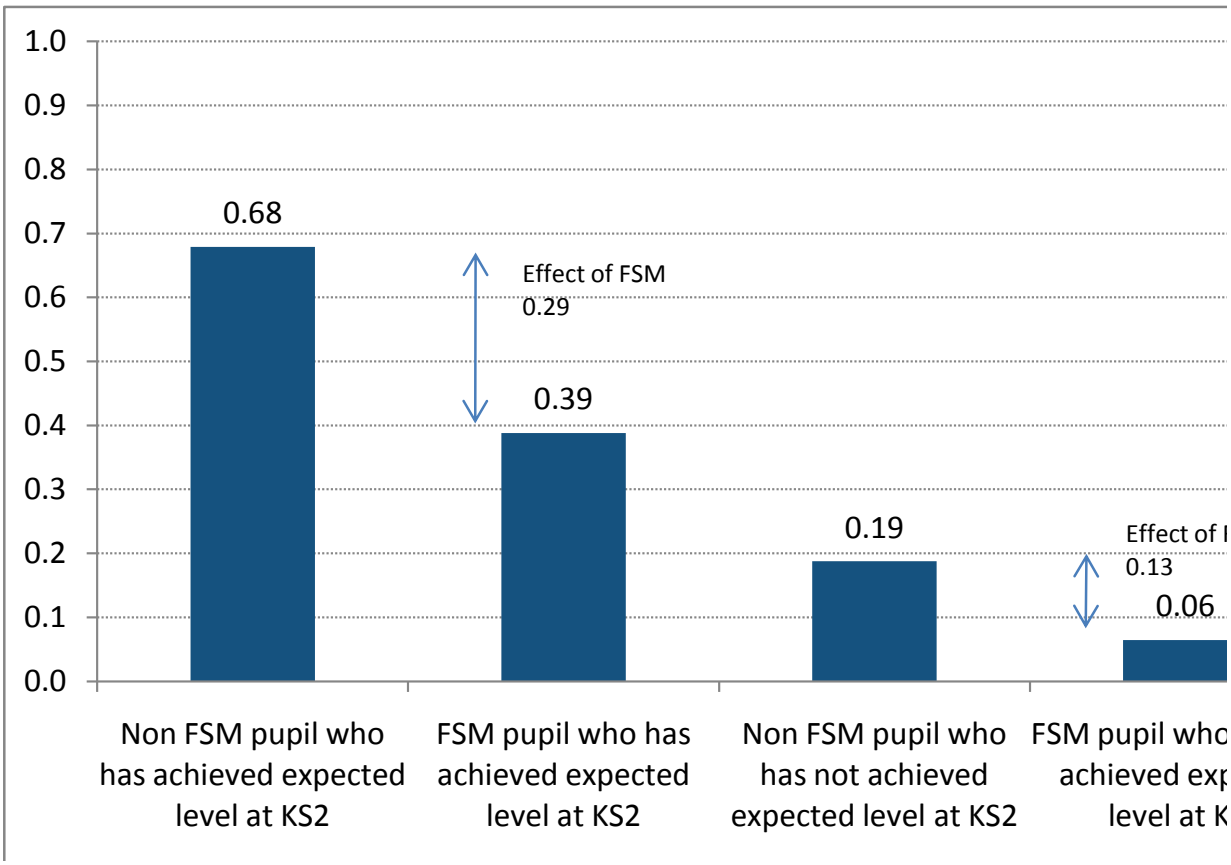
Figure 5.11 Percentage attaining A*-C in science by KS3 science level (2011) and by FSM eligibility, 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=32731.

Figure 5.12 Relative impact of FSM eligibility and prior attainment on progress made between KS2 and KS4

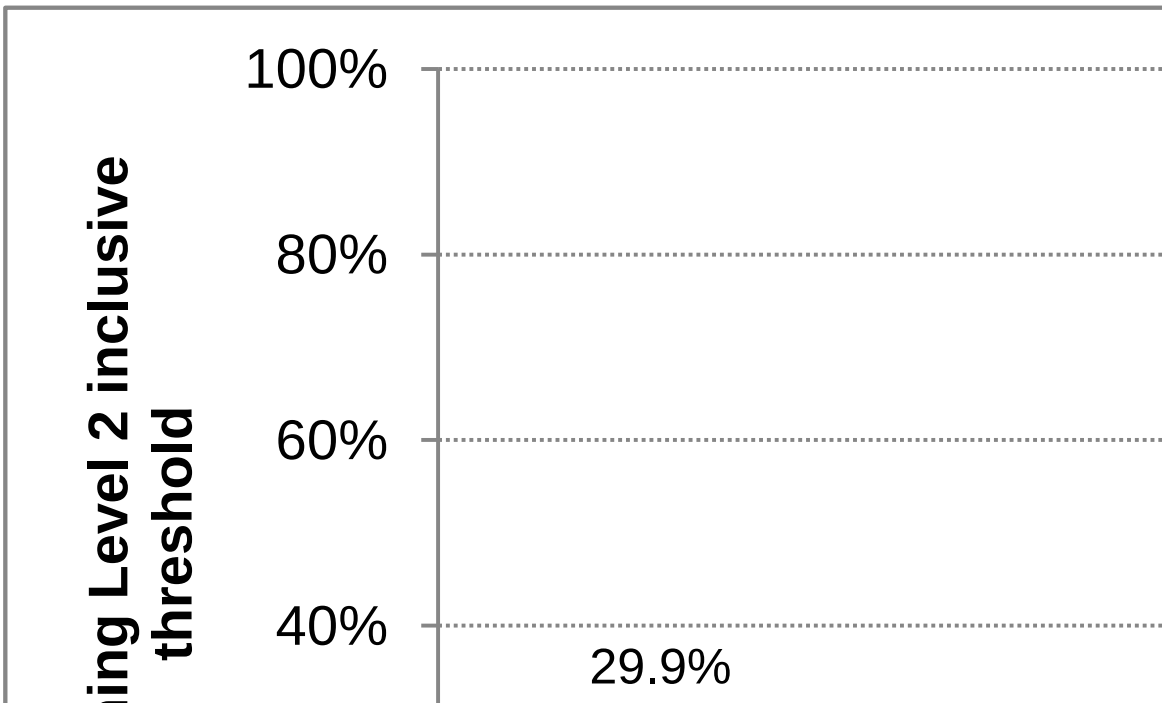


Source: NFER analysis of 2013 PLASC data for Wales (2014).
N=35154.

Figure 5.12 shows the predicted probability of pupils in four categories achieving the Level 2 inclusive threshold at GCSE. These are predicted probabilities from a logistic regression model that takes into account prior attainment at Key Stage 2 (reaching the Key Stage 2 threshold) and eligibility for FSM. A comparison of these probabilities shows the independent effects of prior attainment and FSM eligibility on GCSE performance.

The predicted probability of achieving the Level 2 threshold for a FSM pupil who did not achieve the Key Stage 2 threshold is 0.06. For a non-FSM pupil with the same level of prior attainment, the equivalent probability is 0.19 - a gap of 0.13. The FSM gap for pupils who did achieve the threshold is 0.29.

Figure 5.13 Percentage achieving Level 2 inclusive threshold by gender and FSM, 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014)

N=35154.

Figure 5.13 shows that girls perform better than boys at GCSE whether or not they are eligible for FSM. Boys eligible for FSM perform the lowest of all, with just 22 per cent achieving the Level 2 inclusive threshold.

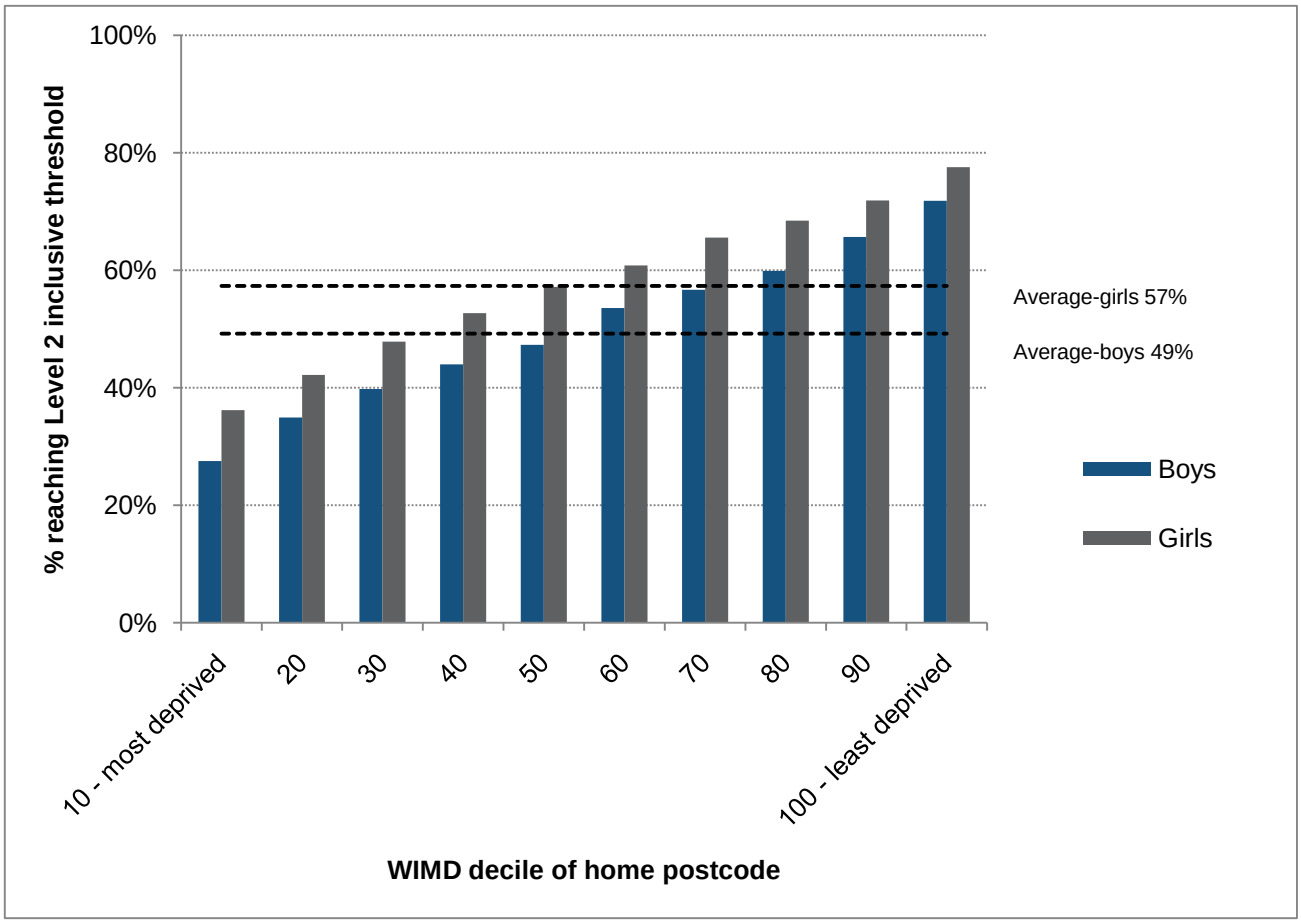
6 Interaction of factors affecting pupil achievement

Key findings

- There is a gender gap in GCSE attainment consistent across all area deprivation deciles.
- The group least likely to achieve the Level 2 inclusive threshold at GCSE is pupils with both FSM eligibility and SEN. SEN has a stronger impact than FSM eligibility on GCSE attainment.
- For all ethnic groups analysed, there is a FSM-related gap in pupils' GCSE achievement, although the size of this gap varies across groups.
- Looking at patterns of achievement in relation to combined measures of disadvantage, the pattern is similar at Key Stage 2 and Key Stage 4. The percentage achieving the Level 2 threshold is highest among pupils who have none of the measures of disadvantage examined, and lowest among pupils who are eligible for FSM, identified with SEN and living in a deprived area.
- Of several background variables analysed, special educational needs has the largest impact on a pupil's probability of attaining the threshold at Key Stage 2. The predicted probability of a pupil with a statement of SEN achieving this is 21 per cent, two-thirds less than the average.
- The negative impact of FSM on KS2 achievement is larger than the impact of living in a deprived area. However, pupils who are eligible for FSM and live in a deprived area experience a double-negative impact on their Key Stage 2 attainment.
- Of several background variables analysed, special educational needs has the largest impact on a pupil's GCSE attainment. The overall average proportion of pupils achieving the Level 2 inclusive threshold is 53 per cent. The predicted probability of a pupil with a statement of SEN achieving the threshold is 11 per cent.
- The impact of FSM eligibility is larger at Key Stage 4 than at Key Stage 2 and is larger than the impact of living in a deprived area.

6.1 Interaction with home area deprivation, gender, SEN and ethnicity

Figure 6.1 Percentage of pupils achieving the Level 2 inclusive threshold at GCSE by deprivation of home post code and by gender, 2013

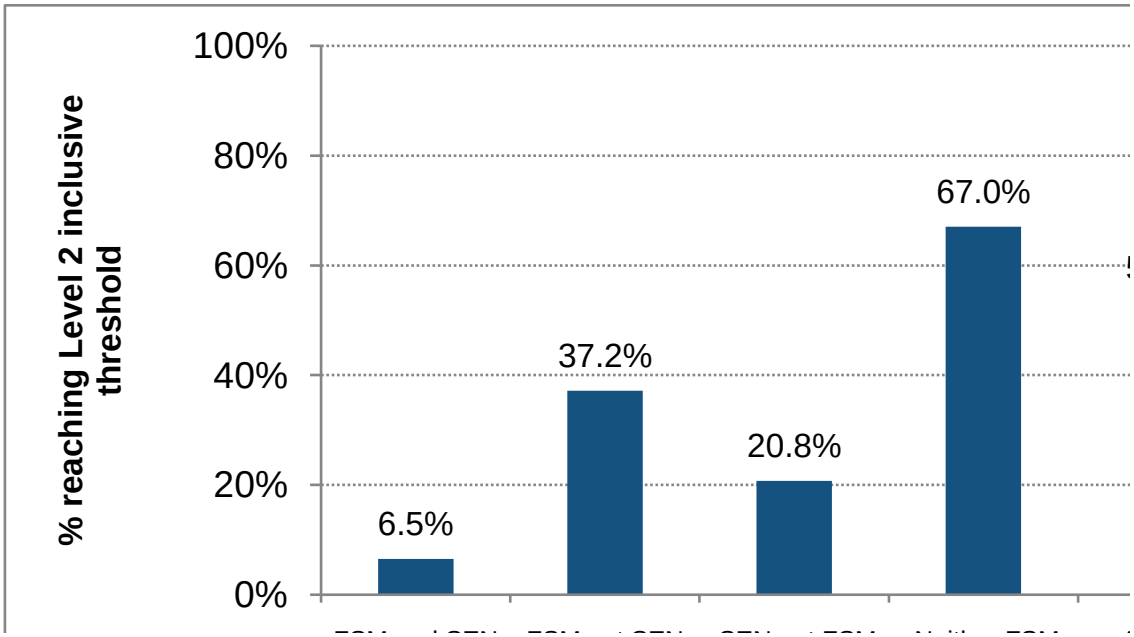


Source: NFER analysis of 2013 PLASC data for Wales (2014).

N boys=17887, N girls=16997.

Figure 6.1 illustrates that the gender gap is consistent across different WIMD deciles, in that girls more commonly achieve the Level 2 inclusive threshold at GCSE.

Figure 6.2 Percentage of pupils achieving the Level 2 inclusive threshold at GCSE by SEN and FSM eligibility, 2013

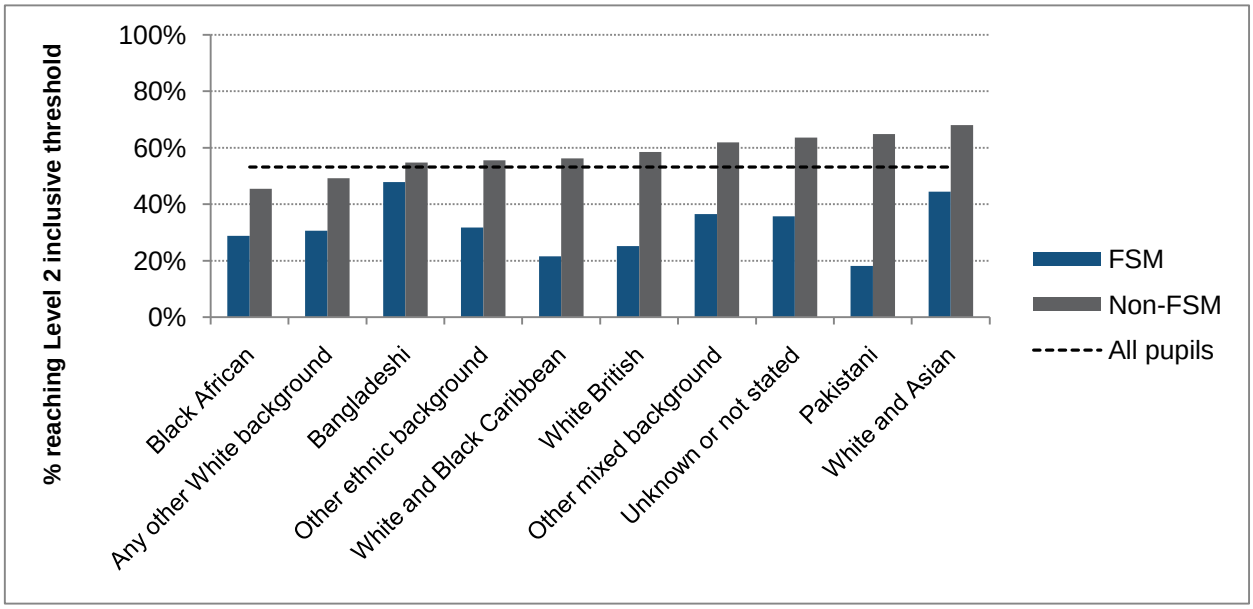


Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=35154.

The group with the highest percentage achieving the Level 2 inclusive threshold is pupils with neither SEN nor FSM eligibility. The lowest attaining group is pupils with both FSM eligibility and SEN. However, taken separately SEN seems to have a stronger impact on GCSE attainment than FSM eligibility. Over a third of pupils with FSM only achieve the Level 2 Inclusive threshold; for pupils with SEN only, but not FSM, this figure is just 20.8%.

Figure 6.3 Percentage of pupils achieving Level 2 inclusive threshold at GCSE, by ethnicity and FSM eligibility, 2013



Source: NFER analysis of 2013 PLASC data for Wales (2014). N FSM=5642, N non-FSM= 29125.

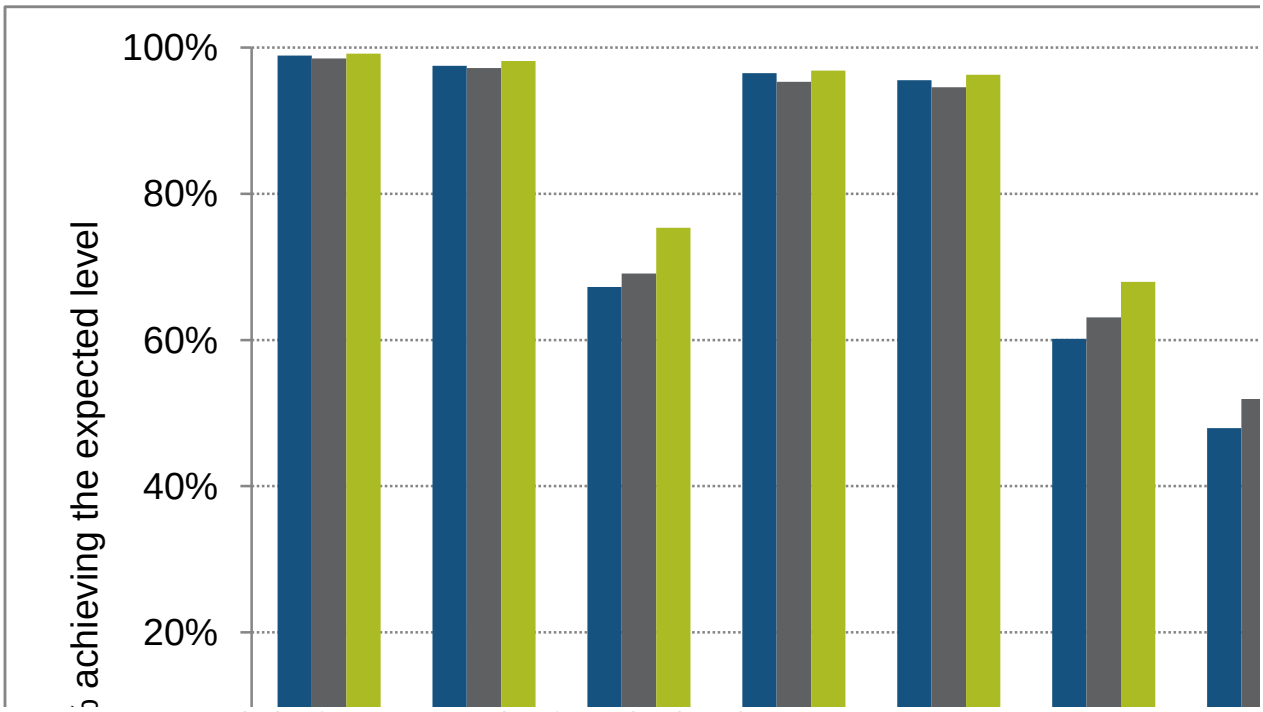
For all ethnic groups[24] there is an FSM gap when it comes to GCSE achievement. For some minority ethnic groups, the size of the FSM gap is smaller than average (e.g. Bangladeshi, Black African). However, these are the groups where overall attainment tends average or lower than average.

The FSM gap is relatively large in the following groups: White British, mixed ethnicities, and Pakistani. White British FSM pupils are low attaining with just over a quarter achieving the Level 2 inclusive threshold at GCSE. The highest attaining group is non-FSM White and Asian pupils.

Figure 6.4 shows the percentage of pupils in the segments identified in Figure 3.12 achieving the expected level at Key Stage 2, in English, mathematics and science. The highest achieving group is Segment 1, pupils with none of the attributes included in the segmentation analysis (see reproduction of Figure 3.12 below). Where SEN is present lower percentages of pupils attain the expected level (Segments 3,6,7,8), whereas among pupils who live in deprived areas but do not have any of the other attributes (Segment 2), the percentage attaining the expected level is nearly the same as in Segment 1. Among the lowest attaining segments, pupils tend to do better in science.

[24] Groups with very small numbers of KS4 pupils in 2013 (less than 100) have not been included in this analysis. These are: Black Caribbean (23), Traveller (7), Gypsy Roma (20), White and Black African (67), Other Asian Background (64), Chinese (61), other Black Background (42).

Figure 6.4 KS2 attainment by segment



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=30888.

Reproduction of Figure 3.12 for reference

Figure 3.12 Segmentation of pupils by FSM, SEN and persistent absenteeism in 2013[25]

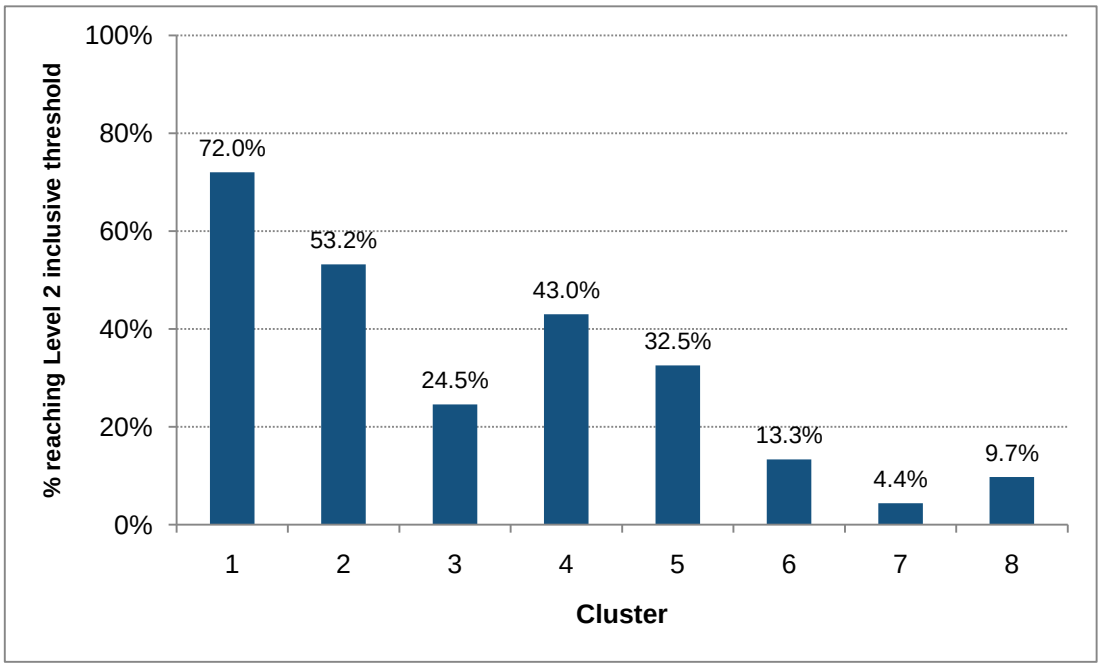
Segment	Attributes			
	FSM	SEN	In a deprived area	% of total cohort
1				55.2
2			✓	13.5
3		✓		10.1
4	✓			5.7
5	✓		✓	4.7
6		✓	✓	4.3
7	✓	✓	✓	3.5
8	✓	✓		2.9

Source: NFER analysis of 2013 PLASC data for Wales (2014)

N=464543.

[25] These segments were derived through cluster analysis. Cluster analysis is a statistical technique used to group individuals into homogeneous sub-groups based on responses to variables (in this case whether they are eligible for FSM, identified with SEN, are a persistent absentee or live in one of the 30 per cent most deprived areas in Wales). All pupils in the analysis belong to one of the nine segments based on the combination of attributes they possess.

Figure 6.5 KS4 attainment by segment



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=35154.

The pattern of achievement across segments is similar in Key Stage 4 and Key Stage 2. The percentage achieving the Level 2 threshold at GCSE is highest in Segment 1 and lowest in Segment 7.

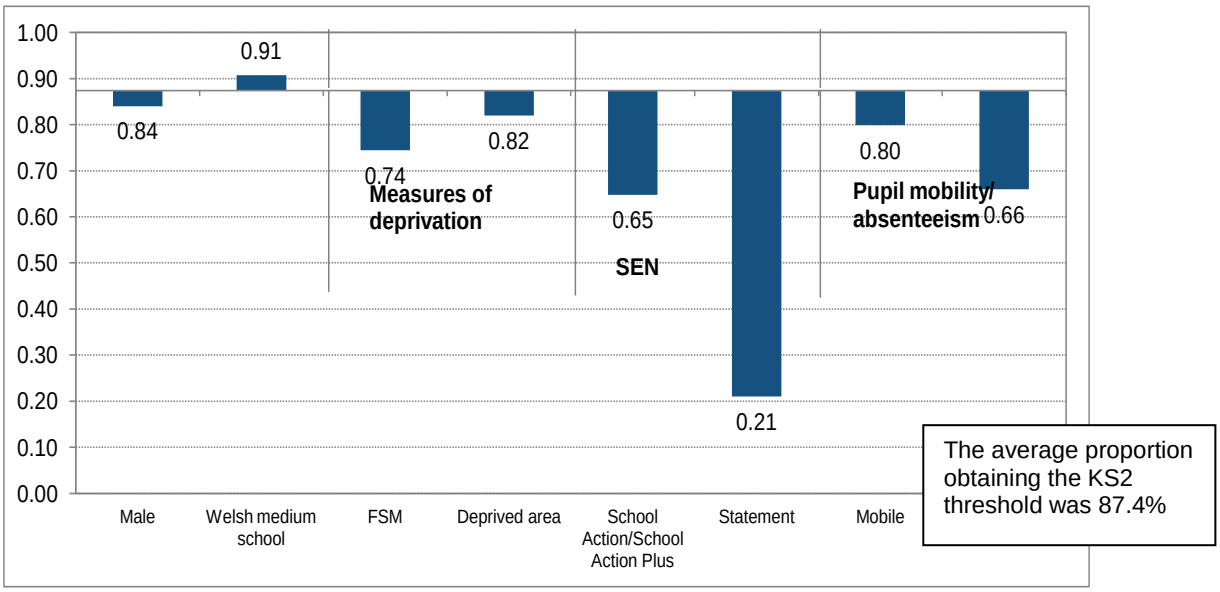
6.2 Relative impact of deprivation

It is important to place the influence of deprivation in the context of other influences on attainment. Regression modelling offers a way of comparing the size of the independent effects of different factors, including deprivation measures. The following two figures show the results of logistic regression models which are used to examine the likelihood of attaining the Key Stage 2 threshold and the Level 2 threshold at GCSE respectively, taking into account the variety of different factors that might influence these outcomes. The results are shown in terms of the predicted probabilities among groups with different characteristics, according to the model. We can compare these with the overall average proportion achieving the threshold and consequently see the impact of these characteristics.

Among pupils with Key Stage 2 results in 2013, the overall proportion obtaining the threshold was 87 per cent. As Figure 6.6 shows, SEN has the largest association with a pupil's probability of reaching this threshold. The predicted probability of a pupil with a statement of SEN achieving the threshold is 21 per cent, 66 per cent less than the average.

The negative impact of FSM on achievement is larger than the impact of living in a deprived area. However it should be noted that the model estimates the independent effect of each variable: so for example, pupils who are FSM and also live in a deprived area will experience a double negative impact on their attainment.

Figure 6.6 The impact of multiple variables on pupil achievement at KS2, 2013 (probability of reaching the KS2 threshold)



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=30888.

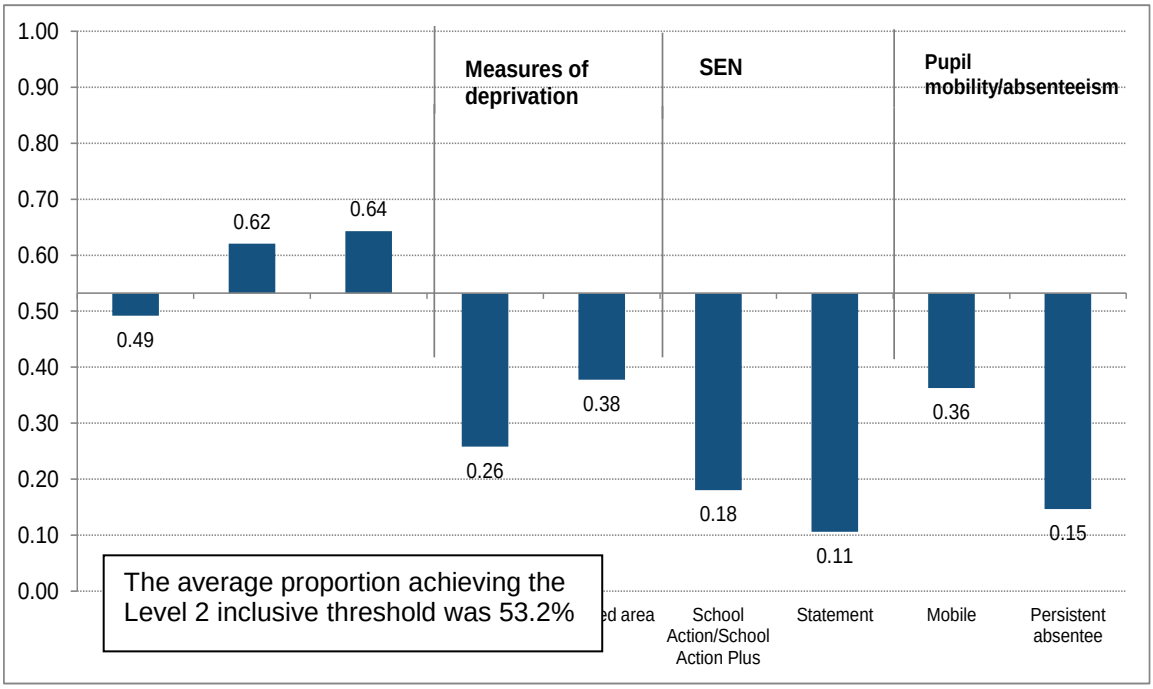
As Figure 6.7 shows, the overall average proportion of pupils in Wales achieving the Level 2 inclusive threshold at GCSE is 53 per cent. If a pupil has been identified with SEN (statement) this will bring down the likelihood of achieving that result considerably; the predicted probability is 11 per cent, over 40 per cent lower than the average.

This model also included prior attainment, having attained the Key Stage 2 threshold, which increases a pupil's probability of achieving the Level 2 threshold by 11 per cent.

The negative impact of FSM on achievement is larger than at Key Stage 2, and is again larger than the impact of living in a deprived area. Pupil absenteeism[26] has a larger impact at GCSE than at Key Stage 2, as does pupil mobility.

[26] A 'persistent absentee' is defined as having been absent for more than 20 per cent of the mode number of required half-day school sessions (see Welsh Government 2013b).

Figure 6.7 The impact of multiple variables on pupil achievement at KS4, 2013 (probability of achieving the Level 2 inclusive threshold)



Source: NFER analysis of 2013 PLASC data for Wales (2014).

N=35154.

7 Conclusion

The analysis presented in this report shows that the relationship between deprivation and educational outcomes in Wales is complex. This is explained to some extent by the meaning of deprivation and its reach. As noted in Chapter 1, deprivation encompasses a lack of opportunities as well as a lack of material resources and is therefore wider than poverty which is often defined as a lack of money. While eligibility for free school meals (FSM) is a well-used indicator of deprivation in educational policy making and research, this research study has found that there is a range of factors which interact with pupils' educational attainment. In addition to eligibility for FSM, these factors include having special educational needs (SEN), being a persistent school absentee and living in a deprived area of Wales. Around two-fifths of pupils are affected by one or more of these factors. The study finds that the interaction of these factors has a continuing and cumulative association with pupils' attainment. This suggests that policy responses need to include different interventions in order to address the multi-faceted deprivation-education relationship.

The study shows that taking a geographic approach to addressing the educational impact of deprivation - by targeting policy responses and interventions exclusively on pupils who live in deprived areas - will not offer a comprehensive solution. Such an approach will, for example, exclude pupils living in other parts of Wales who are SEN, eligible for FSM and performing less successfully than their peers. This suggests that a broader approach is required which ensures that support is provided for vulnerable pupils wherever they live. Pupils' personal circumstances are more influential than their geographic location.

The study also finds evidence of an attainment gap between FSM and non-FSM pupils for nearly all ethnic groups, which starts at the beginning of pupils' school life and widens during secondary education. Pupils eligible for FSM make less progress than other pupils in their attainment at key stages of the National Curriculum. This suggests that early intervention is required to identify pupils who are struggling with education in the Foundation Phase and to provide additional support to help improve their learning capability. The findings also suggest that effective tracking of pupils' progress is required to make interventions at an appropriate time and prevent pupils falling further behind as a result of the effects of deprivation.

Pupils eligible for FSM perform considerably less well than non-FSM pupils in English and mathematics at all key stages. This suggests that the catch-up learning activities for literacy and numeracy funded through the School Effectiveness Grant and the Pupil Deprivation Grant need to be extended and intensified in order to close these critical attainment gaps.

The study identifies a gender gap in attainment in addition. Girls perform better than boys at GCSE whether or not they are eligible for FSM. Boys who are eligible for FSM are the lowest-performing group at GCSE. These findings indicate that additional tracking and support is required to help under-performing boys improve their educational progress and attainment.

Finally, the outcomes from the study confirm that there is no simple solution to breaking the association of deprivation with pupils' educational attainment. We conclude that addressing this issue requires the application of a combination of targeted preventative interventions alongside the provision of continuing additional support and catch-up learning activities.

References

Department for Children, Schools and Families (2009). *Deprivation and Education: the Evidence on Pupils in England, Foundation Stage to Key Stage 4*. London: DCSF [online]. Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/222172/DCSF-RTP-09-01.pdf [3 June, 2014].

Estyn (2014). *Pupil Deprivation.* Cardiff: Estyn [online]. Available: http://www.estyn.gov.uk/download/publication/309390.9/pupil-deprivation-may-2014/ [3 June, 2014].

Feinstein, L. (2003). 'Inequality in the early cognitive development of British children in the 1970 cohort', *Economica*, **70**, 73-97.

Organisation for Economic Cooperation and Development (2014). *Improving Schools in Wales: an OECD Perspective.* Paris: OECD [online]. Available: http://www.oecd.org/edu/Improving-schools-in-Wales.pdf [23 April, 2014].

Welsh Government (2011a). *Welsh Index of Multiple Deprivation 2011: Summary Report*. Cardiff: Welsh Government [online]. Available: http://wales.gov.uk/docs/statistics/2011/110831wimd11summaryen.pdf [09 [9 June, 2014].

Welsh Government (2011b) *The Model for Banding Secondary Schools.* Cardiff: Welsh Government [online]. Available: http://wales.gov.uk/docs/dcells/publications/120118bandingpresentationen.pdf [5 June, 2014].

Welsh Government (2012). *Improving Schools*. Cardiff: Welsh Government [online]. Available: http://learning.wales.gov.uk/docs/learningwales/news/121025improvingschoolsen.pdf [3 June, 2014].

Welsh Government (2013a). *School Effectiveness Grant and Pupil Deprivation Grant 2013–2015* (Guidance Document No: 101/2013). Cardiff: Welsh Government [online]. Available: http://wales.gov.uk/docs/dcells/publications/130426-school-effectiveness-grant-2013-2015-en.pdf [3 June, 2014].

Welsh Government (2013b). *Absenteeism from Secondary Schools, 2012-2013* (Statistical First Release 149/2013). Cardiff: Welsh Government [online]. Available: http://wales.gov.uk/docs/statistics/2013/130910-absenteeism-secondary-schools-2012-13-en.pdf [5 June, 2013].

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