
Methodology

As explained in Box 1 of the main report, this report examines primary and secondary state-funded schools in England using publicly available data from the Department for Education (DfE). The exclusive focus on England is because education is a devolved responsibility, meaning that data is often not comparable across the UK. Most of our data covers the last six academic years, 2018–19 to 2023–24, to ensure that there is a pre-pandemic baseline.

Our analysis is conducted at either a national-, regional- or upper-tier local authority level – with pupils weighted equally in each. We have excluded the Isles of Scilly and City of London from all of our local authority-level analysis, due to low pupil numbers. And we exclude Rutland from all local authority-level analysis of disadvantaged pupils' performance, again because this is a particularly small group of pupils.

In all instances, we have included as many local authorities as possible in our analysis, with the above exceptions.

Our variables

All of our explanatory variables (non-performance measures) are split by phase of education (i.e. primary or secondary school).

Performance measures

As explained in the report summary, we look at three metrics to understand how state-funded schools are performing in different local authorities: pupils' attainment at the end of primary and secondary school and their progress between these two points. We do not cover the progress made by pupils in primary schools as this data was not released in 2024 due to interruptions from Covid. All of our performance data comes from DfE's KS2 performance data or DfE's KS4 performance data.

Refer to the report summary for more details on the performance measures we use.

Absence

Throughout the report, we look at the overall absence rate, using academic-year data from DfE's 'Pupil absence in schools in England' data collection. This is the percentage of all possible sessions that are missed by all pupils, where a session of absence is a half day of school that a pupil misses as a result of authorised or unauthorised absence.

Disadvantage

Whenever we look at rates of disadvantage, we are looking at the proportion of pupils who have been eligible for free school meals at some point in the last six years (using data from DfE's 'Schools, pupils and their characteristics' data collection). DfE also classifies as disadvantaged children who have been, or are currently, in the care of their local authority. A small number of children every year fall into this category. These children are included in our measures of performance among disadvantaged pupils, but not in our measure of disadvantage rates.

Free school meal eligibility is a simplistic economic measure of disadvantage. It is a binary, so fails to capture much of the variation in pupils' economic circumstances. Disadvantaged pupils are not all equally economically disadvantaged and non-disadvantaged pupils are not all equally economically advantaged. And it fails to capture non-economic dimensions of disadvantage, such as key aspects of the home environment.

DfE changed the definition of free school meal eligibility in 2018, which impacted disadvantage statistics for the first time in 2024. The DfE reported that this had "minimal impact on ... disadvantage breakdowns" in 2024,¹ and as such we have treated statistics concerning disadvantage as continuous between 2019 and 2024.

'High-impact' groups

FFT Education Datalab research identifies certain ethnicities (as categorised using census minor ethnicity categories) where educational outcomes are more severely affected by disadvantage – we call these 'high-impact' groups.² These ethnicities are Black Caribbean, Mixed White and Black Caribbean, White British, White Gypsy/Roma, White Irish, and White Travellers of Irish heritage.

We look at the percentage of disadvantaged pupils who are known to come from those ethnic backgrounds, using data from DfE's 'Schools, pupils and their characteristics' data collection.

Per-pupil funding

Our measure of per-pupil funding looks at the schools-block element of dedicated schools grant funding, in 2023/24 prices (according to DfE's 'National funding formula tables for schools and high needs: 2023 to 2024').

Funding is allocated to local authorities according to the National Funding Formula, which is designed to distribute funding based on the needs and characteristics of local areas. Funding levels also reflect differential staffing costs around the country, compensating areas where it is inherently more expensive to run a school.

Regression results

Throughout the report, we use univariate and multivariate regression analysis to identify relationships between different characteristics of a local authority area and educational outcomes. All regressions are ordinary least squares regressions.

As outlined in Box 1 of the main report, these regressions do not let us say that one variable causes another, but it does let us see if a high level in one variable tends to occur with a high or low level in another.

Upper-tier local authorities are the unit of analysis in all of our regressions. As outlined in Box 1, local authorities often cannot be held accountable for pupil performance. Instead, they are largely just used as the geographical unit to examine how pupil characteristics and funding relate to educational outcomes. Our findings may not hold at school- or pupil-level.

We often split our analysis by local authorities in London, and those outside it. We do this to test whether London's distinct pupil population, higher funding, or higher educational outcomes are driving the relationships that we observe.

We split all of our explanatory variables by phase of education (i.e. primary or secondary) and tested our performance measures only against data for the relevant groups of pupils. For example, Regression 1 tests the rate of disadvantage among primary school pupils on KS2 attainment, and the rate of disadvantage among secondary school pupils on KS4 attainment and progress.

Funding data is (partly*) in financial years; where needed, we have aligned 2023/24 funding with 2023–24 academic year data.

Interpreting the regression tables

The following regression tables often show the results of more than one regression. The 'Sample' column indicates which subset of upper-tier local authorities the regression was run on – if there is no 'Sample' column, the regression was run on all upper-tier local authorities for which there was data, with the exclusions of the Isles of Scilly, City of London and sometimes Rutland, for reasons listed above.

The dependent variables (the factors being measured – usually educational outcomes) are listed along the top of the table. There is always exactly one dependent variable per regression. And the independent variables (the factors we are testing the effect of on the dependent variable) are listed in the 'Independent variable' column. There may be more than one independent variable per regression.

At the intersection between an independent and dependent variable is the coefficient on that independent variable. This shows the unit change in the dependent variable associated with a one-unit higher independent variable, holding all other independent variables constant. One unit is a percentage point for all variables, except for per-pupil funding where a unit is £1 in 2023/24 prices, and for KS4 progress where one unit is a point (see the definition of a progress score above).

We use asterisks to represent the level of significance of an independent variable, as determined by the p-value from our regressions. Three asterisks signify the highest level of significance and one asterisk the lowest.

* Data for 2023/24 records the funding for maintained schools in the 2023/24 financial year, and the funding for academies in the 2023–24 academic year.

The thresholds are as follows, and include the words we use to describe these results in the body of the report:

* Weakly significant: $0.01 < p < 0.05$

** Moderately significant: $0.001 < p < 0.01$

*** Strong relationship: $p < 0.001$

A dot signifies that a variable has fallen just short of significance ($0.05 < p < 0.1$).

We also report the R^2 for univariate regressions (those with only one independent variable). This is the proportion of the variation in the dependent variable that can be explained by variation in the independent variable. Throughout the report, we classify the strength of a correlation as:

Weak if $0 < R^2 < 0.1$

Moderate if $0.1 < R^2 < 0.35$

Strong if $R^2 > 0.35$

Regression 1

Regression 1 Educational outcomes on disadvantage rate, 2023–24

Sample	Independent variable	KS2 attainment	KS4 attainment	KS4 progress
All	Disadvantage rate	0.003655 (0.050651)	-0.30997*** (0.05476)	-0.007361** (-0.002402)
	Constant	61.776107*** (1.422503)	74.17049*** (1.65458)	0.178183* (0.072573)
	Observations	151	151	151
	R^2	0.00003494	0.177	0.05929
London	Disadvantage rate	0.01186 (0.07191)	-0.27705** (0.08249)	-0.006813. (-0.003886)
	Constant	68.63355*** (2.13774)	81.45815** (-2.89773)	0.523590*** (-0.006813)
	Observations	32	32	32
	R^2	0.0009061	0.2733	0.09292

Source: Institute for Government analysis of DfE, 'Schools, pupils and their characteristics', 2023–24; DfE, KS2 performance data, 2024, and DfE, KS4 performance data, 2024. Notes: Local authorities are the unit of analysis – Isles of Scilly and City of London are excluded due to size. Disadvantage rates are among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Main findings: There is a significant negative relationship between both KS4 performance measures and the secondary school disadvantage rate. This means that areas with a greater share of disadvantaged pupils in secondary schools tend to have worse KS4 attainment and progress.

There is no relationship between KS2 attainment and rates of primary school disadvantage (at a local authority level). This is because high disadvantage rates also have a positive effect on an area's educational performance: disadvantaged pupils perform better when disadvantage rates are higher (see Regression 11). In the case of KS2 attainment, the two effects roughly cancel each other out.

Regression 2

Regression 2 **KS4 performance on disadvantage rate, interacted with London, 2023–24**

Independent variable	KS4 attainment	KS4 progress
Disadvantage rate	-0.5174***	-0.016***
	(0.0452)	(0.002)
London dummy	3.8376	0.2062
	(2.7525)	(0.1233)
Disadvantage rate : London dummy	0.2404**	0.0092*
	(0.0825)	(0.0037)
Constant	77.6205***	0.3174***
	(1.2985)	(0.0581)
Observations	151	151

Source: Institute for Government analysis of DfE, 'Schools, pupils and their characteristics', 2023–24, and DfE, KS4 performance data, 2024. Notes: The disadvantage rate is among secondary school pupils only. Local authorities are the unit of analysis - the Isles of Scilly and City of London are excluded due to size. The London dummy variable takes the value 1 if the local authority is in London, and 0 otherwise. The colon represents an interaction effect - in this instance looking at how the relationship between KS4 performance and disadvantage rate depends on whether the local authority is in London. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: Disadvantage rates are less associated with KS4 attainment and progress in London than they are elsewhere (the coefficient on 'Disadvantage rate : London dummy' is significant and positive for both measures). This discrepancy results from the gap between the attainment/progress of disadvantaged pupils and their better-off counterparts being smaller in London than in the rest of the country.

Outside the capital, if 10 percentage points more secondary school pupils are disadvantaged in a given local authority, KS4 attainment falls by an average of 5.2 percentage points and progress falls by an average of 0.16 points (as the coefficient on 'Disadvantage rate' shows).

But in London, the same increase in disadvantage rate means KS4 attainment falls by only 2.8 percentage points and progress by 0.07 points (the sum of the coefficient on 'Disadvantage rate' and 'Disadvantage rate : London dummy', multiplied by 10).

Regression 3

Regression 3 Disadvantaged pupils' educational outcomes on non-disadvantaged pupils', 2023–24

Sample	Independent variable	Disadvantaged pupils' KS2 attainment	Disadvantaged pupils' KS4 attainment	Disadvantaged pupils' KS4 progress
All	Non-disadvantaged pupils' performance†	1.2292*** (0.0872)	1.0489*** (0.0899)	1.0909*** (0.0508)
	Constant	-38.6665*** (6.0155)	-32.7318*** (6.5815)	-0.7574*** (0.0155)
	Observations	150	150	150
	R ²	0.5732	0.4791	0.7573
London	Non-disadvantaged pupils' performance†	1.0335** (0.3329)	0.5084* (0.2059)	0.9387*** (0.1294)
	Constant	-22.0524 (25.0659)	17.0662 (16.2497)	-0.578*** (0.0694)
	Observations	32	32	32
	R ²	0.2432	0.1690	0.6368
Outside of London	Non-disadvantaged pupils' performance†	0.9663*** (0.1178)	0.5659*** (0.0756)	0.8145*** (0.0674)
	Constant	-21.5435** (7.9139)	-0.1932 (5.4105)	-0.7639*** (0.0136)
	Observations	118	118	118
	R ²	0.3671	0.3258	0.5572

Source: Institute for Government analysis of DfE, KS2 performance data, 2024, and DfE, KS4 performance data, 2024. Notes: † The performance metric used matches the dependent variable in each regression. Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: In local areas where non-disadvantaged pupils have good educational outcomes, disadvantaged pupils do too – these variables are strongly positively correlated.

These relationships hold both within and outside London, implying that they are not driven by London having higher educational outcomes among both non-disadvantaged and disadvantaged pupils.

Regression 4

Regression 4 Change in disadvantaged pupils' educational outcomes on change in non-disadvantaged pupils', 2018–19 to 2023–24

Sample	Independent variable	Change in disadvantaged pupils' KS2 attainment	Change in disadvantaged pupils' KS4 attainment	Change in disadvantaged pupils' KS4 progress
All	Change in non-disadvantaged pupils' performance†	0.7983*** (0.0988)	0.8078*** (0.0952)	1.0053*** (0.0716)
	Constant	-2.9738*** (0.4398)	-1.9528*** (0.296)	-0.1463*** (0.0095)
	Observations	143	143	143
	R ²	0.3166	0.3381	0.5833
London	Change in non-disadvantaged pupils' performance†	0.8818** (0.2688)	0.3736 (0.2749)	0.7672*** (0.1669)
	Constant	-3.8941*** (0.8162)	0.0128 (1.0479)	-0.0898** (0.0253)
	Observations	32	32	32
	R ²	0.2640	0.0580	0.4133
Outside of London	Change in non-disadvantaged pupils' performance†	0.9036*** (0.1142)	0.8231*** (0.1093)	1.0357*** (0.0787)
	Constant	-2.2491*** (0.5462)	-2.1272*** (0.3144)	-0.1576*** (0.01)
	Observations	111	111	111
	R ²	0.3650	0.3421	0.6139

Source: Institute for Government analysis of DfE, KS2 performance data, 2019 and 2024, and DfE, KS4 performance data, 2019 and 2024. Notes: † The performance metric used matches the dependent variable in each regression. Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: The same places seeing improvements in non-disadvantaged pupils' performance between 2019 and 2024 have also seen improvements in disadvantaged pupils' performance over the same period.

These relationships hold within and outside London, except for KS4 attainment which is insignificant in London.

Regression 5

Regression 5 Educational outcomes on absence rate, 2023–24

Sample	Independent variable	KS2 attainment	KS4 attainment	KS4 progress
All	Absence rate	-4.1287*** (1.023)	-4.1429*** (0.3473)	-0.1823*** (0.0133)
	Constant	84.8267*** (5.667)	101.8278*** (3.0942)	1.5777*** (0.1181)
	Observations	146	146	146
	R ²	0.1016	0.4970	0.5676
London	Absence rate	0.369 (1.6947)	-4.255* (1.5593)	-0.2346*** (0.0597)
	Constant	66.9844*** (9.1382)	103.7172*** (11.5949)	2.0342*** (0.4438)
	Observations	32	32	32
	R ²	0.0016	0.1989	0.3399
Outside of London	Absence rate	-3.1751*** (0.8118)	-3.5342*** (0.4682)	-0.1378*** (0.0171)
	Constant	77.7368*** (4.5302)	95.9113*** (4.3451)	1.148*** (0.1587)
	Observations	114	114	114
	R ²	0.1202	0.3372	0.3672

Source: Institute for Government analysis of DfE, 'Pupil absence in schools in England', 2023–24; DfE, KS2 performance data, 2024, and DfE, KS4 performance data, 2024. Notes: Absence rates are among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Local authorities are the unit of analysis – Isles of Scilly and City of London are excluded due to size. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: Local authority areas with higher absence rates tend to perform worse, and those with lower absence rates tend to perform better. These relationships also hold within and outside London, except for KS2 attainment, which is insignificant in London.

In general, absence explains much less of the variation in primary school performance across council areas than in secondary school performance. As can be seen by the R²s, it explains 50% of the variation in KS4 attainment and 57% of the variation in KS4 progress, but only 10% of the variation in KS2 attainment.

Regression 6

Regression 6 **Change in the educational outcome gaps between disadvantaged and non-disadvantaged pupils, 2018–19 to 2023–24**

Independent variable	Change in KS2 attainment disadvantage gap	Change in KS4 attainment disadvantage gap	Change in KS4 progress disadvantage gap
Change in absence disadvantage gap	-0.0898	0.5917*	0.0279**
	(0.7836)	(0.2971)	(0.0097)
Change in disadvantage rate	-0.2995	0.0145	0.0049
	(0.1671)	(0.1656)	(0.0054)
Change in share of disadvantaged pupils from 'high-impact' groups	0.1246	0.0424	0.0104*
	(0.1437)	(0.145)	(0.0047)
Change in EAL rate	0.2348*	0.0652	0.0023
	(0.1175)	(0.1305)	(0.0042)
Constant	3.485*	0.6825	0.111**
	(1.3368)	(1.2389)	(0.0402)
Observations	117	98	98

Source: Institute for Government analysis of DfE, 'Pupil absence in schools in England', 2018–19 and 2023–24; DfE, KS2 performance data, 2019 and 2024, and DfE, KS4 performance data, 2019 and 2024. Notes: All independent variables are among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Local authorities are the unit of analysis – Isles of Scilly, Rutland and City of London are excluded due to size. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Main findings: Controlling for changes in disadvantage rate, EAL rate and the ethnic composition of the disadvantaged group, if a local authority area's disadvantage gap in absence increased by 1 percentage point between 2018–19 and 2023–24, we would expect its disadvantage gap in KS4 attainment to grow by 0.6 percentage points and in KS4 progress to grow by 0.03 points.

Regression 7

Regression 7 Educational outcomes on per-pupil funding, 2023–24

Sample	Independent variable	KS2 attainment	KS4 attainment	KS4 progress
London	Per-pupil funding	0.0008	-0.0028*	0
		(0.0011)	(0.0012)	(0.0001)
	Constant	64.4601***	92.9217***	0.5719
		(6.1661)	(9.2315)	(0.418)
	Observations	32	32	32
	R ²	0.0177	0.1454	0.0145
Outside of London	Per-pupil funding	-0.0059**	-0.0144***	-0.0004***
		(0.002)	(0.0015)	(0.0001)
	Constant	88.7757***	153.9741***	2.2851***
		(9.8276)	(9.7347)	(0.4233)
	Observations	117	117	117
	R ²	0.0693	0.4299	0.2195

Source: Institute for Government analysis of DfE, 'National funding formula tables for schools and high needs: 2023 to Isles of Scilly and City of London are excluded due to size. Levels of per-pupil funding are among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Main findings: Outside London, local authority areas with higher levels of funding tend to have lower KS2 attainment, KS4 attainment and KS4 progress. We see no effect of funding on KS2 attainment and KS4 progress in London.

Regression 8

Regression 8 Educational outcomes on per-pupil funding, disadvantage rate and EAL rate, 2023–24

Sample	Independent variable	KS2 attainment	KS4 attainment	KS4 progress
London	Per-pupil funding	0.0038	0.0033	0.0002*
		(0.0029)	(0.0025)	(0.0001)
	Disadvantage rate	-0.2249	-0.5092*	-0.0254**
		(0.1847)	(0.1859)	(0.0073)
	EAL rate	0.0337	0.0678	0.0091**
		(0.0525)	(0.0734)	(0.0029)
	Constant	52.5125***	62.376***	-1.0176.
		(11.1801)	(13.8798)	(0.547)
	Observations	32	32	32
Outside of London	Per-pupil funding	-0.009**	-0.0071	-0.0002
		(0.0032)	(0.0045)	(0.0002)
	Disadvantage rate	0.0701	-0.3878**	-0.0148**
		(0.064)	(0.1262)	(0.0046)
	EAL rate	0.0261	0.1902***	0.0125***
		(0.0276)	(0.0483)	(0.0018)
	Constant	101.5258***	115.9106***	1.4361
		(14.3592)	(24.5699)	(0.8966)
	Observations	117	117	117

Source: Institute for Government analysis of DfE, 'National funding formula tables for schools and high needs: 2023 to 2024'; DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS2 performance, 2024 and DfE, KS4 performance, 2024. Notes: Local authorities are the unit of analysis - Isles of Scilly and City of London are excluded due to size. Each independent variable is among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: After controlling for EAL and disadvantage rates, we find little evidence of a relationship between funding and these performance measures, at a local authority level, although outside London, funding is still negatively correlated with KS2 attainment, and inside London, funding is positively correlated with KS4 progress.

Regression 9

Regression 9 Per-pupil funding on disadvantage rate, interacted with London, 2023–24

Independent variable	Primary school per-pupil funding	Secondary school per-pupil funding
Disadvantage rate	15.3602*** (1.6236)	29.2726*** (2.0385)
London dummy	-595.0578*** (91.7624)	-246.0214* (123.6011)
Disadvantage rate : London dummy	44.0339*** (3.1417)	35.4728*** (3.7054)
Constant	4459.4595*** (45.0326)	5497.0914*** (58.8432)
Observations	149	149

Source: DfE, 'National funding formula tables for schools and high needs: 2023 to 2024', and DfE, 'Schools pupils and their characteristics', 2023–24. Notes: The disadvantage rate is among primary school pupils for the regression involving primary school funding, and among secondary school pupils otherwise. Local authorities are the unit of analysis – the Isles of Scilly and City of London are excluded due to size. The London dummy variable takes the value 1 if the local authority is in London, and 0 otherwise. The colon represents an interaction effect – in this instance looking at how the relationship between funding and disadvantage rate depends on whether the local authority is in London. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: Funding is targeted towards disadvantaged pupils, so if disadvantage rates are higher in a local authority, per-pupil funding tends to be higher (as can be seen in the positive coefficients on 'Disadvantage rate').

But funding is more targeted towards disadvantaged pupils in London than elsewhere (as can be seen by the positive and significant coefficients on 'Disadvantage rate : London dummy').

In London boroughs, each additional percentage point of disadvantage is associated with receiving £59 more in per-pupil primary school funding (the sum of the coefficient on 'Disadvantage rate' and 'Disadvantage rate : London dummy'). For local authorities in the rest of the country, the boost to funding is only £15 (the coefficient on 'Disadvantage rate'), a quarter of what it is in London. At secondary school level, the equivalent increase in funding is £65 per pupil in London, but less than half that (£29) elsewhere.

Regression 10

Regression 10 Per-pupil funding on disadvantage rate, interacted with London, and EAL rate, 2023–24

Independent variable	Primary school per-pupil funding	Secondary school per-pupil funding
Disadvantage rate	15.0193*** (1.6541)	27.3385*** (2.0306)
London dummy	-626.4132*** (96.3251)	-370.5189** (123.6645)
EAL rate	1.0384 (0.9746)	5.1687*** (1.4308)
Disadvantage rate : London dummy	44.0339*** (3.1417)	35.8337*** (3.5618)
Constant	4449.7245*** (45.9296)	5474.4461*** (56.8873)
Observations	149	149

Source: DfE, 'National funding formula tables for schools and high needs: 2023 to 2024', and DfE, 'Schools pupils and their characteristics', 2023–24. Notes: The disadvantage and EAL rate are among primary school pupils for the regression involving primary school funding, and among secondary school pupils otherwise. Local authorities are the unit of analysis – the Isles of Scilly and City of London are excluded due to size. The London dummy variable takes the value 1 if the local authority is in London, and 0 otherwise. The colon represents an interaction effect – in this instance looking at how the relationship between funding and disadvantage rate depends on whether the local authority is in London. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main finding: One possible explanation for the relationship in Regression 9 (that London boroughs' funding is more targeted to disadvantaged pupils than in the rest of the country) is that London boroughs with higher levels of disadvantage also tend to have more pupils with English as an additional language (EAL), which attracts additional funding through the National Funding Formula. However, this does not appear to be true at a local authority level – the coefficient on 'Disadvantage rate : London dummy' remains positive and significant for both primary and secondary schools, even after controlling for EAL rate.

Regression 11

Regression 11 Disadvantaged pupils' performance on disadvantage rates, 2023–24

Independent variable	Disadvantaged pupils' KS2 attainment	Disadvantaged pupils' KS4 attainment	Disadvantaged pupils' KS4 progress
Disadvantage rate	0.5522*** (0.0658)	0.2543*** (0.0739)	0.0061* (0.0028)
Constant	31.0492*** (1.8521)	36.4886*** (2.2373)	-0.7518*** (0.086)
Observations	150	150	150
R ²	0.3226	0.0741	0.0303

Source: Institute for Government analysis of DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS2 performance, 2024 and DfE, KS4 performance, 2024. Notes: Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. The disadvantage rate is among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main finding: Disadvantaged children tend to have better KS2 attainment, KS4 attainment and KS4 progress in local authority areas where they make up a higher proportion of pupils. The correlation (R^2) is weaker at secondary school level.

Regression 12

Regression 12 **Disadvantaged pupils' educational outcomes on disadvantage rate and per-pupil funding, 2023–24**

Independent variable	Disadvantaged pupils' KS2 attainment	Disadvantaged pupils' KS4 attainment	Disadvantaged pupils' KS4 progress
Disadvantage rate	0.215** (0.0684)	-0.5097*** (0.0709)	-0.0222*** (0.0029)
Per-pupil funding	0.0111*** (0.0014)	0.0151*** (0.001)	0.0006*** (0)
Constant	-15.6016** (5.906)	-40.2883*** (5.5115)	-3.5892*** (0.2235)
Observations	148	148	148

Source: DfE, 'National funding formula tables for schools and high needs: 2023 to 2024', DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS2 performance, 2024 and DfE, KS4 performance, 2024. Notes: Each independent variable is among primary school pupils for the regression involving primary school funding, and among secondary school pupils otherwise. Local authorities are the unit of analysis – the Isles of Scilly, City of London and Rutland are excluded due to size. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Main finding: The relationship we found in Regression 11 is explained (for KS4 performance measures) by funding. In fact, disadvantage rates actually have a negative effect on disadvantaged pupils' KS4 attainment and KS4 progress once funding is controlled for. But the relationship for KS2 attainment persists (the correlation on 'Disadvantage rate' is positive and significant).

Regression 13

Regression 13 **Disadvantaged pupils' educational outcomes on various demographic characteristics and funding, 2023–24**

Sample	Independent variable	Disadvantaged pupils' KS2 attainment	Disadvantaged pupils' KS4 attainment	Disadvantaged pupils' KS4 progress
All	Disadvantage rate	0.351*** (0.0446)	-0.0235 (0.0638)	0.0011 (0.0025)
	Proportion of disadvantaged pupils in 'high-impact' groups	-0.11*** (0.0173)	-0.1421*** (0.0204)	-0.0027** (0.0009)
	Non-disadvantaged pupils' performance†	0.8388*** (0.072)	0.6649*** (0.0787)	0.849*** (0.0824)
	Per-pupil funding	0.0008 (0.0011)	0.005*** (0.0011)	0.0001* (0)
	Constant	-17.9248** (6.7115)	-27.6526*** (8.1561)	-1.1575*** (0.2554)
	Observations	136	120	120
London	Disadvantage rate	0.3689 (0.1918)	0.0759 (0.1296)	0.0013 (0.0048)
	Proportion of disadvantaged pupils in 'high-impact' groups	-0.2136*** (0.0538)	-0.2644*** (0.0414)	-0.0075*** (0.0018)
	Non-disadvantaged pupils' performance†	0.7319** (0.2072)	0.8579*** (0.1384)	-0.0075*** (0.0018)
	Per-pupil funding	-0.0004 (0.0031)	0.0021 (0.0016)	0.7734*** (0.1193)
	Constant	-0.3285 (17.9734)	-20.1668 (12.9043)	0 (0.0001)
	Observations	32	24	24
Outside of London	Disadvantage rate	0.361*** (0.0679)	0.1324 (0.1315)	0.0036 (0.0053)
	Proportion of disadvantaged pupils in 'high-impact' groups	-0.0886*** (0.0205)	-0.1326*** (0.0316)	-0.002 (0.0014)
	Non-disadvantaged pupils' performance†	0.8568*** (0.0946)	0.5465*** (0.0923)	0.839*** (0.1047)
	Per-pupil funding	0.0003 (0.0033)	-0.0011 (0.0047)	0 (0.0002)
	Constant	-18.6451 (17.9583)	14.0331 (30.1167)	-0.7677 (1.1015)
	Observations	104	96	96

Source: Institute for Government analysis of DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS2 performance, 2024 and DfE, KS4 performance, 2024. Notes: Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. The disadvantage rate and proportion of disadvantaged pupils in 'high-impact' groups are among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. The metric used for non-disadvantaged pupils' performance matches the metric used for disadvantaged pupils' in each regression. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: Disadvantaged pupils continue to do better at KS2 in areas where there are more of them, even after controlling for funding, non-disadvantaged pupils' performance (as a proxy for school quality) and the proportion of disadvantaged pupils in 'high-impact' groups.

This relationship is significant outside London, and only just insignificant within London ($0.05 < p\text{-value} < 0.1$).

Regression 14

Regression 14 **Proportion of disadvantaged pupils from 'high-impact' groups on disadvantage rate, 2023–24**

Independent variable	Proportion of primary school disadvantaged pupils from 'high-impact' groups	Proportion of secondary school disadvantaged pupils from 'high-impact' groups
Disadvantage rate	-0.5951* (0.2324)	-0.8626*** (0.2239)
Constant	80.5578*** (6.6308)	88.9966*** (6.8112)
Observations	137	120
R ²	0.0463	0.1117

Source: Institute for Government analysis of DfE, 'Schools pupils and their characteristics', 2023–24. Notes: Local authorities are the unit of analysis – Isles of Scilly and City of London are excluded due to size. The disadvantage rate is among primary school pupils for the regression involving primary school pupils, and among secondary school pupils for the other regression. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Main findings: Areas with more disadvantaged pupils typically have fewer from 'high-impact' ethnic groups.

Regression 15

Regression 15 **Disadvantaged pupils' educational outcomes on EAL rate, 2023–24**

Sample	Independent variable	Disadvantaged pupils' KS2 attainment	Disadvantaged pupils' KS4 attainment	Disadvantaged pupils' KS4 progress
London	EAL rate	0.2568** (0.089)	0.2951*** (0.0757)	0.0135*** (0.0031)
	Constant	43.4829*** (4.3876)	45.7096*** (3.0687)	-0.6414*** (0.1251)
	Observations	32	32	32
	R ²	0.2172	0.3363	0.3882
Outside of London	EAL rate	0.1756*** (0.0432)	0.2234*** (0.0373)	0.0097*** (0.0016)
	Constant	40.1139*** (0.9282)	36.9573*** (0.6637)	-0.841*** (0.0288)
	Observations	118	118	118
	R ²	0.1249	0.2366	0.2368

Source: Institute for Government analysis of DfE, 'Schools, pupils and their characteristics', 2023–24; DfE, KS2 performance data, 2024, and DfE, KS4 performance data, 2024. Notes: Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. Disadvantage rates are among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Main findings: Local authority areas with a higher proportion of EAL pupils tend to have higher KS2 attainment, KS4 attainment and KS4 progress among their disadvantaged pupils – in each case, the relationship is moderate ($R^2s > 0.1$) or strong ($R^2s > 0.35$).

Regression 16

Regression 16 **Disadvantaged pupils' educational outcomes on EAL rate, disadvantage rate and per-pupil funding, 2023–24**

Sample	Independent variable	Disadvantaged pupils' KS2 attainment	Disadvantaged pupils' KS4 attainment	Disadvantaged pupils' KS4 progress
London	EAL rate	0.1774*	0.2645**	0.0133***
		(0.0691)	(0.0729)	(0.0029)
	Disadvantage rate	0.3331	-0.1746	-0.0163*
		(0.2428)	(0.1845)	(0.0075)
	Per-pupil funding	0.0027	0.0049	0.0003*
		(0.0038)	(0.0025)	(0.0001)
	Constant	22.9929	16.1564	-2.1131***
		(14.7013)	(13.7807)	(0.5578)
	Observations	32	32	32
Outside of London	EAL rate	0.1075**	0.2838***	0.0124***
		(0.0342)	(0.0542)	(0.0023)
	Disadvantage rate	0.5917***	0.0215	-0.0053
		(0.0798)	(0.1423)	(0.006)
	Per-pupil funding	-0.0088*	-0.0049	-0.0001
		(0.004)	(0.0051)	(0.0002)
	Constant	68.5722***	66.6457*	-0.1026
		(17.7309)	(27.9791)	(1.1707)
	Observations	116	116	116

Source: Institute for Government analysis of DfE, 'National funding formula tables for schools and high needs: 2023 to 2024'; DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS2 performance, 2024 and DfE, KS4 performance, 2024. Notes: Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. Each independent variable is among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Main findings: Neither funding, nor disadvantage rate, appears able to explain the relationship in Regression 15 (between disadvantaged pupils' performance and EAL rate). The coefficient on EAL rate and disadvantaged pupils' performance is significant and positive on all performance measures, both within and outside London, with these controls.

Regression 17

Regression 17 **Disadvantaged pupils' educational outcomes on EAL rate and the proportion of disadvantaged pupils in 'high-impact' groups, 2023–24**

Sample	Independent variable	Disadvantaged pupils' KS2 attainment	Disadvantaged pupils' KS4 attainment	Disadvantaged pupils' KS4 progress
London	EAL rate	-0.238	-0.1184	0.0008
		(0.1455)	(0.169)	(0.0064)
	Proportion of disadvantaged pupils in 'high-impact' groups	-0.5182***	-0.4112*	-0.0147*
		(0.1317)	(0.1521)	(0.0057)
	Constant	84.3398***	74.4363***	0.3822
		(10.9916)	(11.031)	(0.4164)
Observations		32	24	24
Outside of London	EAL rate	0.211	0.0628	-0.005
		(0.1435)	(0.116)	(0.0053)
	Proportion of disadvantaged pupils in 'high-impact' groups	0.0338	-0.1258	-0.0097**
		(0.1099)	(0.0728)	(0.0033)
	Constant	37.0651***	48.1182***	0.0972
		(10.7584)	(7.0031)	(0.3214)
Observations		105	96	96

Source: Institute for Government analysis of DfE, 'National funding formula tables for schools and high needs: 2023 to 2024'; DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS2 performance, 2024 and DfE, KS4 performance, 2024. Notes: Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. Each independent variable is among primary school pupils for the regression involving KS2 attainment, and among secondary school pupils for both KS4 measures. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: The relationship between EAL rates and disadvantaged pupils' performance (Regression 15) appears to be driven by difference in local authorities' ethnic compositions. After controlling for the proportion of disadvantaged pupils in 'high-impact' groups, the coefficients between EAL rate and disadvantaged pupils' performance is insignificant for all metrics, both within and outside London. This is likely because areas with many pupils from high-impact ethnic backgrounds tend to have fewer EAL pupils (Regression 18).

Regression 18

Regression 18 EAL rate on the proportion of disadvantaged pupils in 'high-impact' groups, 2023–24

Sample	Independent variable	EAL rate in primary schools	EAL rate in secondary schools
London	Proportion of disadvantaged pupils in 'high-impact' groups	-0.7828*** (0.0831)	-0.8071*** (0.0851)
	Constant	73.7133*** (3.028)	63.8751*** (2.8798)
	Observations	32	24
	R ²	0.7475	0.8036
Outside of London	Proportion of disadvantaged pupils in 'high-impact' groups	-0.7275*** (0.0236)	-0.5958*** (0.0205)
	Constant	72.7437*** (1.7814)	58.5696*** (1.5198)
	Observations	105	96
	R ²	0.9019	0.9003

Source: Institute for Government analysis of DfE, 'Schools, pupils and their characteristics', 2023–24. Notes: Local authorities are the unit of analysis – Isles of Scilly, City of London and Rutland are excluded due to size. The proportion of disadvantaged pupils in 'high-impact' groups is among primary school pupils for the regression involving the primary EAL rate, and among secondary schools for the regression involving the secondary EAL rate. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Main findings: Areas with many pupils from high-impact ethnic backgrounds tend to have fewer EAL pupils. This is because the high-impact group is made up mostly of White British pupils, who overwhelmingly speak English as a first language.

Omitted analysis on the London effect

As discussed in the report, London's outperformance of other regions, especially among disadvantaged pupils, is often referred to as the 'London effect'. This effect may stem from differences in pupil characteristics and funding between London and the rest of the country, and/or from genuine differences in school quality.

We ran regressions that control for differences in pupil characteristics and funding, to test whether they account for the London effect.* The results suggest that London's stronger performance at KS4 could be entirely explained by them (and pupils' higher prior attainment). At KS2, however, some of London's advantage remains unexplained, suggesting that its primary schools may be higher quality than those elsewhere in England.

* Specifically, we regress performance variables on various predictors of performance (such as rates of disadvantage, or English as an additional language) and a London dummy. In practice, this means we estimate the effects of the predictor variables on performance based on variation between non-London areas and variation between London areas. These effects differ from an alternative regression that excluded London.

This analysis was omitted from the main body of the report out of concerns in its robustness. Because London boroughs differ so significantly from other local areas in terms of these demographic characteristics and funding, there are not many similar non-London local authority areas to which we can compare educational outcomes. And there is some evidence that the relationship between these variables and attainment is different inside and outside London. As a result, we cannot conclude with confidence that the difference in performance between London and elsewhere is being driven by those differences in demographics and funding.

The results of the analysis are, however, presented here in case they are of interest to any readers. Coefficients on per-pupil funding should be interpreted with particular caution given that funding is distributed with the aim of closing performance gaps and may be a proxy for other variables that are likely to play a role in children's performance, such as parents' income, education and cultural capital.

The London effect at KS2

In 2024, 12.0 percentage points more disadvantaged pupils reached the expected standard at KS2 in the average London borough area than in the average non-London local authority area.* After controlling for London's differing levels of per-pupil funding, disadvantage rate, rate of disadvantaged pupils from 'high-impact' groups and EAL rate, 7.4 percentage points of this gap remains unaccounted for. The same is also true for overall KS2 attainment: differences in pupil characteristics and funding cannot explain the London effect fully – a 7.8 percentage point gap remains.

* As can be seen by the coefficient on the London dummy in the univariate regression using disadvantaged pupils' KS2 attainment in Regression 19. If we weight pupils – instead of local authorities – equally, that gap is 13 percentage points. The difference between these two figures (12 and 13 percentage points) suggests that London boroughs with more disadvantaged pupils tend to have higher attainment among disadvantaged pupils than London boroughs with fewer. We cover this finding in detail in the main body of the report, in the chapter 'What is behind the performance gaps?'.

Regression 19 The 'London effect' at KS2, 2023–24

Independent variable	KS2 attainment	Disadvantaged pupils' KS2 attainment
London dummy	8.9495*** (0.7117)	12.0433*** (1.2553)
Constant	60.0192*** (0.3452)	43.6442*** (0.6089)
Observations	136	136
R ²	0.5413	0.4072
London dummy	7.8248*** (1.3379)	7.3637*** (1.6945)
Per-pupil funding	0.0001 (0.0014)	0.0002 (0.0018)
Proportion of disadvantaged pupils from 'high-impact' groups	-0.0301 (0.0542)	-0.0403 (0.0687)
EAL rate	-0.0034 (0.0668)	0.0838 (0.0846)
Disadvantage rate	-0.053 (0.0541)	0.4372*** (0.0685)
Constant	63.1587*** (8.6402)	31.9966** (10.9433)
Observations	136	136

Source: Institute for Government analysis of DfE, 'National funding formula tables for schools and high needs: 2023 to 2024'; DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS2 performance, 2024. Notes: See the Methodology for concerns around the robustness of these regressions. Local authorities are the unit of analysis – Isles of Scilly, City of London are excluded due to size in all regressions, and Rutland is excluded due to size when looking at disadvantaged pupils' performance. The univariate regressions exclude all local authorities that are missing data in their multivariate counterpart, to ensure comparability. All independent variables (except for the London dummy) are among primary school pupils. The London dummy variable takes the value 1 if the local authority is in London, and 0 otherwise. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

The London effect at KS4

To look at the London effect at KS4, we use KS4 progress (which accounts for pupils' KS2 attainment) and controlled for the same variables as in the KS2 analysis. With those differences in demographics and funding removed, and prior attainment at KS2 taken into account, areas in London do not appear to have discernibly better KS4 performance than those elsewhere (the London dummy is insignificant). The same is true for disadvantaged pupils' KS4 progress.

Regression 20 The 'London effect' at KS4, 2023–24

Independent variable	KS4 progress	Disadvantaged pupils' KS4 progress
London dummy	0.434*** (0.0499)	0.5879*** (0.051)
Constant	-0.1194*** (0.0223)	-0.6854*** (0.0228)
Observations	120	120
R ²	0.3905	0.5299
London dummy	0.0745 (0.0599)	0.1243 (0.0739)
Per-pupil funding	0.0002*** (0.0001)	0.0002*** (0.0001)
Proportion of disadvantaged pupils from 'high-impact' groups	-0.004 (0.0022)	-0.0052 (0.0027)
EAL rate	0.0037 (0.0032)	0.0037 (0.0039)
Disadvantage rate	-0.0241*** (0.0027)	-0.0122*** (0.0033)
Constant	-0.5726 (0.4247)	-1.3365* (0.5237)
Observations	120	120

Source: Institute for Government analysis of DfE, 'National funding formula tables for schools and high needs: 2023 to 2024'; DfE, 'Schools pupils and their characteristics', 2023–24; DfE, KS4 performance, 2024. Notes: See the Methodology for concerns around the robustness of these regressions. Local authorities are the unit of analysis – Isles of Scilly, City of London are excluded due to size in all regressions, and Rutland is excluded due to size when looking at disadvantaged pupils' performance. The univariate regressions exclude all local authorities that are missing data in their multivariate counterpart, to ensure comparability. All independent variables (except for the London dummy) are among secondary school pupils. The London dummy variable takes the value 1 if the local authority is in London, and 0 otherwise. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Other methodological notes

To explain the findings of the regressions more clearly, in some places in the report we demonstrate the implied effect of one variable on another at the median. To do this, multiply the coefficient on the independent variable by the difference between the 50th and 75th percentile of that variable. We then compare this to the median of the dependent variable to demonstrate the estimated size of the effect.

In the section entitled 'The disadvantage gap in absence has widened, perpetuating inequalities in educational outcomes' we state that the widening disadvantage gap in absence can account for all of the growth in the disadvantage gap in KS4 attainment and KS4 progress since 2018–19.

For this calculation, we use the results from Regression 6 to calculate the expected change in the disadvantage gap in KS4 attainment and KS4 progress, assuming that the absence gap changed by 3.3 percentage points (as it did in England between 2018–19 and 2023–24), and all other independent variables did not change at all.

By multiplying each coefficient by these assumed levels of change, and adding the regression constant, we get an expected increase of 2.7 percentage points for KS4 attainment and 0.20 points for KS4 progress. In actuality, these changed across England by 2.2 percentage points and 0.15 points respectively, between 2018–19 and 2023–24.

We cannot say whether the widening disadvantage gap in absence caused the disadvantage gap in attainment to widen, or if both trends are attributable to changes in other variables not included in our models.

References

- 1 Department for Education, 'Methodology: Key Stage 2 attainment', webpage, Department for Education, 27 February 2025, retrieved 14 May 2025, <https://explore-education-statistics.service.gov.uk/methodology/key-stage-2-attainment#content-section-3-content-10>
- 2 Treadaway M, 'Long-term disadvantage, part three: Ethnicity, EAL and long-term disadvantage', blog, FFT Education Datalab, 28 July 2017, retrieved 14 May 2025, <https://ffteducationdatalab.org.uk/2017/07/long-term-disadvantage-part-three-ethnicity-eal-and-long-term-disadvantage>