



Is higher level of funding for special educational needs and disability (SEND) associated with better outcomes for secondary school aged children in England?

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List of acronyms

ASD	Autistic Spectrum Disorders
CPRU	Children and Families Policy Research Unit
DfE	Department for Education
DSG	Dedicated School Grants
EHCP	Education, Health and Care Plan
GDP	Gross Domestic Product
IMD	Index of Multiple Deprivation
LD	Learning Disabilities
MLD	Moderate Learning Difficulty
NFF	National Funding Formula
PMLD	Profound and Multiple Learning Difficulty
SEND	Special Educational Needs or Disability
SLD	Severe Learning Difficulty
UK	United Kingdom

At a glance

Is higher level of funding for special educational needs and disability (SEND) associated with better outcomes for secondary school aged children in England?

What we found out

- Funding for special educational needs and disability (SEND) support consists of three components: (1) *basic funding* per pupil on the school roll in mainstream schools, (2) *notional SEND funding*, which is a proportion of schools' budget set aside by local authorities to cover additional low-need support (arranged by the school) for pupils with SEND in mainstream schools, and (3) *high-needs funding*, covering support for pupils with complex needs (in mainstream or special schools).
- Basic funding and notional SEND funding per pupil declined in real-terms (i.e., accounting for inflation) over time, while high-needs funding per pupil remained constant.
- School exclusion rates for secondary school aged pupils increased over time, from 10.1 exclusions per 100 pupils in 2015/16 to 12.6 exclusions per 100 pupils in 2018/19.
- Local authorities with higher levels of per pupil *basic funding*, *notional SEND* and *high-needs funding* had on average lower secondary school exclusion rates, especially for pupils with SEND in mainstream schools.

Why we did this study

Higher levels of funding for SEND are likely to lead to better support, and in turn, to better outcomes for pupils. It is known that funding, demand and provision of SEND support vary substantially between local authorities. We explored whether the average amount of funding for SEND support within local authorities was associated with the rate of school exclusions.

Why this is important

Children with SEND may have greater difficulties with learning than the majority of their peers, or a disability that stops them from being able to use school facilities.

Additional support can help them gain equal access to education and improve their wellbeing, academic and health outcomes. Young people with SEND are also more likely to be excluded from school than their peers. School exclusions can further increase educational inequalities experienced by this group and have a negative impact on their long-term prospects.

What we did

We created a dashboard (publicly available [here](#)) which combined local authority level data on three sources of funding for SEND support, using published government data. We calculated average funding per pupil attending school (primary, secondary or special) in each local authority.

We then looked at the average differences between local authorities in levels of SEND funding and school exclusion rates, whilst allowing for other factors that vary between local authorities using data for 148 local authorities in 2015-2018.

What are the implications

SEND funding comes from multiple sources and identifying data on funding is challenging. Transparency of funding should be improved and published in a regularly updated dashboard to support monitoring against service provision and outcomes.

Local authorities with higher levels of *basic per-pupil*, *notional SEND* and *high-needs funding* had lower school exclusion rates, especially for pupils with SEND in mainstream schools. With more funding, mainstream schools may be able to create a more inclusive environment for pupils with SEND. Alternatively, these findings could reflect an increase in the number of pupils with SEND being placed in special schools, which are funded from the high-needs budget. Further work using more detailed school-level funding could provide further insights.

Executive summary

Background

Children and young people with special educational needs or disability (SEND) need extra support or adjustments in school settings to gain equal access to education. Approximately 15% of pupils in England receive some SEND support each year,¹ and nearly 40% will receive support at least once during their school years.²

Higher levels of funding for SEND support are likely to lead to better provision of support, and in turn, to better school outcomes for pupils with SEND. The demand for SEND support and available funding varies substantially between local authorities and has changed over time.^{1,3} Our study explored this variation between geographical areas and over time to determine whether higher levels of funding per pupil are indeed associated with better school outcomes for children with SEND. We used school exclusions as an example of adverse school outcome. We focused on secondary school-aged children as most school exclusions occur in secondary schools.

Aim and objectives

This project aimed to determine whether higher levels of funding for SEND support at local authority level are associated with lower rates of school exclusions in secondary school-aged children.

Specific objectives were to:

1. Derive a measure of local authority's total per-pupil funding for SEND support.
2. Determine the association between local authorities' average per-pupil funding for SEND support and average rates of temporary exclusion from school.

Methods

Funding for SEND support

Local authorities are mandated to provide SEND support for pupils with additional needs who live in their area. SEND funding comes from multiple sources but is distributed by local authorities. We first examined official government statistics to derive a measure of total funding for SEND support. We combined data on three components of SEND funding

in a dashboard, which is publicly available on the [Children and Families Policy Research Unit \(CPRU\) website](#). We then derived three per-pupil funding variables which contribute to the average funding for SEND provision per school aged pupil in each local authority. To enable year-on-year comparisons, we adjusted all funding data for inflation using UK Gross Domestic Product deflator,⁴ relative to 2018.

Association between SEND funding and school exclusions

First, we looked at variation in school exclusion rates using aggregate data obtained from Department for Education on the number of pupils and fixed period school exclusions (when a child is temporarily removed from school, also referred to as suspensions) per local authority in 2015/16-2018/19 for secondary school-aged pupils (aged 11-15 years old at start of school). Data were aggregated according to age, sex, type of SEND need and type of attended school (mainstream or special school).

Next, we combined data on number of pupils and school exclusions with information on local authorities' average SEND funding per school-aged pupil (obtained from the dashboard) to look at the average differences between local authorities in levels of SEND funding and school exclusion rates, whilst allowing for other factors that vary between local authorities, including pupil characteristics (age, sex, type of SEND), school type (mainstream/special) and neighbourhood income levels. We additionally examined these differences separately for pupils with different types of SEND (in particular, for pupils with autism or learning disabilities, which were approximated using SEND type of need recorded in school census as moderate, severe, or profound and multiple learning difficulties).

Results

Funding for SEND support

Total funding for SEND support consist of three components, which we analysed in parallel:

1. *Basic per pupil funding*, covering funding for all pupils on the school roll in mainstream schools.

2. *Notional SEND funding*, a proportion of schools' budget allocated by local authorities to cover additional low-need support (arranged by schools) for pupils with SEND in mainstream schools (derived per pupils with SEND in mainstream schools).
3. *High-needs funding*, which covers costs of support for pupils with complex needs in mainstream and special schools (derived per all pupils with Education, Health and Care Plans, EHCPs).

On average, the total funding for mainstream schools was £33 billion per school year in 2015/16-2018/19, of which £3.4 billion was allocated for the notional SEND funding. This corresponded to approximately £3,800 of basic funding per pupil in mainstream school, and an additional £3,200 per pupil with SEND from the notional SEND funding.

High-needs funding covered on average £5.8 billion per year, corresponding to approximately £26,000 per pupil with EHCP. Although total high-needs funding increased over time, funding per-pupil remained constant, likely due to increases in the number of pupils with EHCPs and in special schools.¹

Association between SEND funding and school exclusions

School exclusion rates increased over time, from 10.1 exclusions per 100 pupils per year in 2015/16 to 12.6 exclusions per 100 pupils in 2018/19. Exclusion rates were 1.4 times higher for pupils with autism, 2.3 times higher for pupils with moderate learning difficulties and nearly 5 times higher for pupils with other SEND, respectively, compared to pupils with no SEND.

Increase in basic per-pupil funding by £390 (that is, the value of one standard deviation) was associated with 7% lower school exclusion rates per local authority. Increase in notional SEND funding by £1,400 (i.e., one standard deviation) was associated with 4% lower school exclusion rates. Increase in high-needs funding per pupil by £5,700 (i.e., one standard deviation) was associated with on average 5% lower school exclusion rates.

In analyses by type of SEND, we found that higher levels of basic per-pupil allowance were associated with lower school exclusion. Most of associations between funding and school exclusions within subgroups, however, were not statistically significant.

Implications of these findings

Identifying data on total funding on SEND is challenging, as funding comes from multiple sources. **We collated information about total SEND funding from a number of UK government published datasets in a dashboard available on the [CPRU website](#).** Data on funding and number of pupils resident in each local authority (published in regularly updated dashboard) are needed to improve transparency of funding and to support monitoring against service provision and outcomes.

Higher levels of basic per-pupil funding, notional SEND funding and high-needs funding were associated with lower school exclusion rates, especially among pupils with SEND in mainstream schools. These trends could indicate that with more funding mainstream schools may be able to create a more inclusive environment and better integrate pupils with SEND, leading to fewer exclusions. Alternatively, these findings could reflect an increase in the number of pupils with SEND being placed in special schools, which are funded from the high-needs budget. Consistent with previous studies, we found that the proportion of pupils in special schools increased over time.¹ This could be due to more children with complex needs surviving into adulthood, parents being better informed about available options for support, shift in provision due to funding pressures in mainstream schools (e.g. due to reduction in the quality or intensity of "lower need" SEND support).^{1,5} Further research using more detailed information about the school characteristics and funding is needed.

School exclusions were more common for pupils with SEND, and rates increased over time. Being excluded from school can have a long term impact on a young person's life, including worse mental and physical health outcomes, increased risk of substance abuse, lower educational achievements or unemployment.⁶ Preventing school exclusions

could contribute to reducing long-term inequalities experienced by most vulnerable children.

Limitations

The key limitation of our study was ecological design using aggregate data. Although we were able to carry out simple and quick analyses using aggregated data, we were limited by the use of funding data per local authority, which averaged out any variation in funding between schools within each local authority. This may attenuate the effects of funding on school exclusion rates, and associations observed on local authority-level may not hold on school-level. We also used average funding per pupil of primary or secondary school age, and we did not account for cross-border movement (where pupils live and attend school in different local authorities). More detailed data on funding and pupil characteristics at school-level could provide further insights.

We focused on the effect of funding on fixed-period school exclusions, however, pupils with SEND are also more likely to experience permanent exclusions and off-rolling (illegal practice of removing pupils from school without a formal exclusion).¹ Our results may therefore be underestimated, although fixed-period exclusions are more common than permanent exclusions (in 2018 there were on average 5.4 fixed-period exclusions per 100 pupils vs 0.1 permanent exclusions per 100 pupils).⁷ Further, we had only a limited number of variables (for example, we did not have information on the level of SEND support) and we were not able to determine the order of events (for example, whether school exclusion led to SEND identification). Analyses based on pupil-level data from the National Pupil Database could overcome these limitations.⁸

Lastly, we used data on funding rather than expenditure. Local authorities reportedly overspend their budgets, in particular on high-needs funding,¹ using accumulated reserves. This raises concerns about sustainability of funding in the long-term. Further, although notional SEND is the best available estimate of how much of the schools budget will be used to support pupils with SEND, calculations are inconsistent between local authorities, and budgets correlate poorly with levels of reported need in schools.¹ Further improvements to data on SEND funding are needed.

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Background

Special Educational Needs and Disability provision

Overview

Children and young people with special educational needs or disability (SEND) have significantly greater difficulties with learning than the majority of their peers, or a disability that prevents them from using school facilities.^{1,2} Pupils with SEND require extra support or adjustments in school settings to gain equal access to education as their peers. This could be due to a broad range of needs such as problems with language or communication, learning disabilities, autism, sensory impairment, physical disability, or social, emotional, or mental health needs (categories of need used in education settings in England are listed in Table 1). Approximately 15% of pupils in England receive some SEND support each year,¹ and nearly 40% will receive support at least once during their school years.³

There are two broad categories of support for pupils with SEND. In any school year, approximately 12% of pupils are allocated “low need” support arranged by the school, referred to as *SEND support* throughout the report.¹ This includes help with learning that is different to that provided as part of the school’s usual curriculum, such as a special learning programme, extra help from a teacher or teaching assistant, working in a smaller group, help communicating with others, or support with physical and personal care difficulties.² The most common primary reason for SEND support is speech, language and communication needs (23% in 2018), followed by moderate learning difficulties (23%) and social, emotional and mental health needs (18%, Table 1).⁴

Children with more complex needs who require more substantial support can be assessed to receive an *Education, Health and Care Plan (EHCP)*. EHCP is a legal document which sets out special measures to meet child’s needs across education, health and social care until 19th birthday, with support extended for some pupils up until 25th birthday. EHCPs are arranged by local authorities following an assessment of child’s needs.^{1,3} The assessment can

be requested by parents, schools or health or social care professionals. Approximately 20% of pupils with SEND (3% of all pupils) have EHCPs. Autism is the most common primary type of need among pupils with an EHCP (29% of pupils with an EHCP in 2018, Table 1), followed by speech, language and communication needs (15%) and social, emotional and mental health needs (13%).

All children with EHCPs can choose to be educated in mainstream schools, unless educating them in mainstream setting would be incompatible with other children’s education and no reasonable steps can be taken to prevent this.² Depending on pupil’s level of need, pupils with EHCPs may be taught in mainstream classes and access additional specialist facilities focussed on supporting specific types of SEND, referred to as *resourced provision*. Children with more complex needs may attend special classes in parallel to their peers in mainstream settings in *SEN Units*.⁵ Alternatively, pupils with EHCPs may also attend special schools, where support may include a special curriculum, smaller classroom, and additional health checks such as visits from community paediatricians, physiotherapy, speech and language therapy and school nurse to help with taking medication. The proportion of pupils placed in special schools varies by type of need (Table 1). For example, approximately 50% of pupils with EHCPs due to autism or moderate learning difficulties attend special schools, compared with less than 20% with visual or hearing impairment.

Table 1 – Number of children in state-funded schools (primary, secondary or special) by type of need and level of support in 2018⁶

	All pupils		Pupils with “low need” SEND Support		Pupils with EHCPs		% of pupils with any SEND support who have EHCPs	Pupils in special schools	
Total (% of all pupils)	8,175,820		956,206 (11.7% of all pupils)		248,321 (3.0% of all pupils)		20.6%	120,761 (1.5% of all pupils)	
Type of need	N	Column %	N	Column %	N	Column %		N	% of all pupils with EHCPs
Speech, Language and Communications needs	261,191	3.2%	223,838	23.4%	37,353	15.0%	14.3%	8,506	22.5%
Moderate Learning Difficulty	246,704	3.0%	217,825	22.8%	28,879	11.6%	11.7%	15,773	54.3%
Social, Emotional and Mental Health	205,673	2.5%	172,667	18.1%	33,006	13.3%	16.0%	15,471	45.7%
Specific Learning Difficulty	151,064	1.8%	142,127	14.9%	8,937	3.6%	5.9%	1,978	21.1%
Autistic Spectrum Disorder	131,337	1.6%	59,318	6.2%	72,019	29.0%	54.8%	35,974	49.5%
Other	92,366	1.1%	85,723	9.0%	6,643	2.7%	7.2%	2,181	29.1%
Physical Disability	35,284	0.4%	22,594	2.4%	12,690	5.1%	36.0%	3,825	29.4%
Severe Learning Difficulty	32,723	0.4%	3,005	0.3%	29,717	12.0%	90.8%	26,659	88.5%
Hearing Impairment	21,857	0.3%	16,467	1.7%	5,390	2.2%	24.7%	906	16.3%
Visual Impairment	12,495	0.2%	9,302	1.0%	3,193	1.3%	25.6%	652	20.1%
Profound & Multiple Learning Difficulty	10,522	0.1%	884	0.1%	9,638	3.9%	91.6%	8,395	85.2%
Multi-Sensory Impairment	3,310	0.0%	2,455	0.3%	855	0.3%	25.8%	308	35.3%

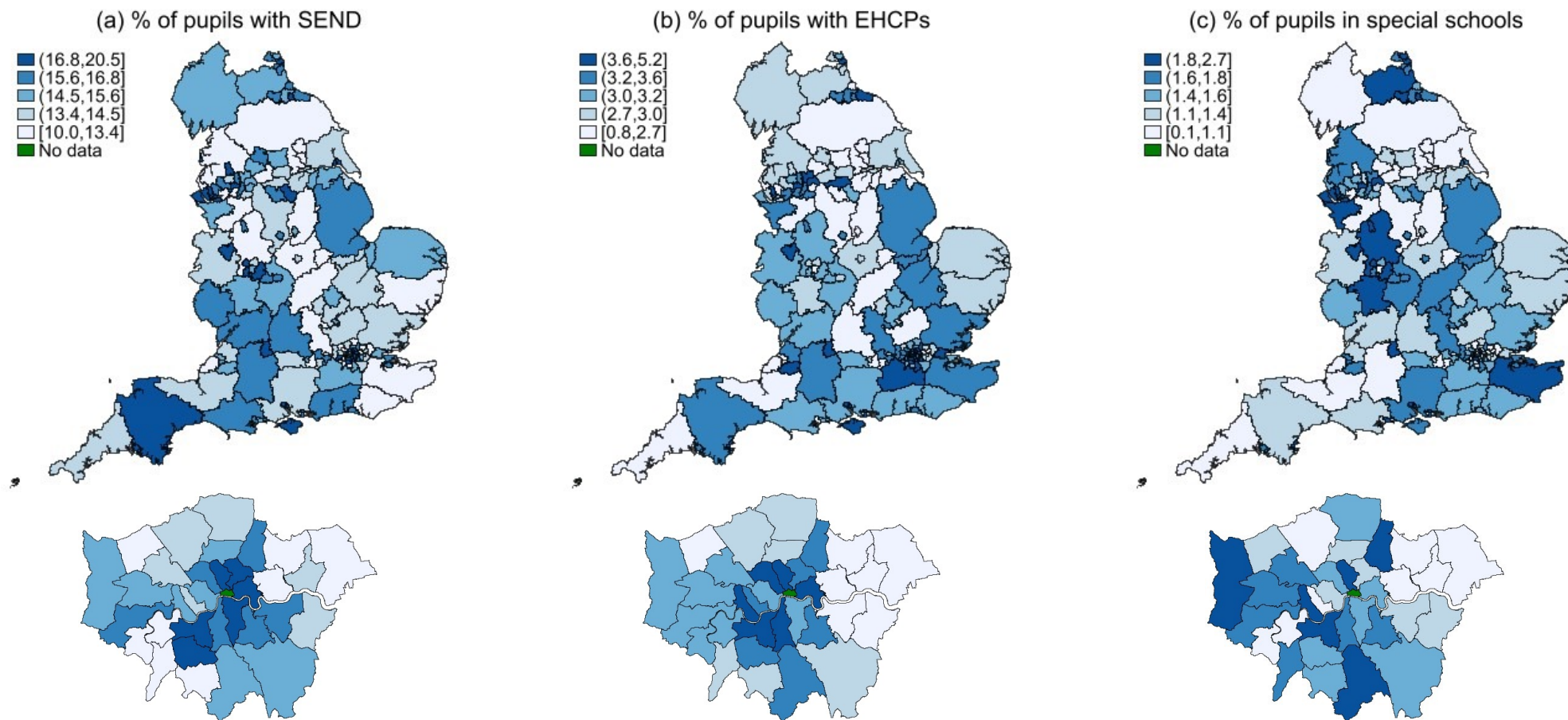
EHCP: Education, Health and Care Plan, SEND: special educational needs or disability

Variation in demand and provision of SEND support

The demand for SEND provision varies substantially between local authorities in England. In 2018, the proportion of pupils receiving any SEND provision varied between 10% in Havering and more than 20% in South Tyneside and Salford (Figure 1). The proportion of all pupils with SEND who had an EHCP ranged from 6.5% in Newham to more than 30% in Southend-on-Sea and Hammersmith and Fulham. There is also a substantial variation in the proportion of pupils educated in special schools (ranging from 6% of pupils with EHCPs in Rutland to 75% in Blackpool in 2018).⁴ These trends may reflect differences in characteristics of pupils and level of need in different areas, variation in how pupils with SEND are identified, assessed and supported, as well as differences in the number and type of special schools available. This variation has led to questions about equity of access to support.¹

The demand for high-level SEND support has also changed over time, with more pupils having EHCPs (the number increased by 17% between 2014 and 2019) and more pupils being educated in special schools (the number of pupils in special schools and alternative provision rose by 20% between 2014 and 2018).¹ These trends can be attributed to a combination of factors including a rise in the total number of pupils, increased survival of children with complex needs due to medical advances, extending support for pupils with EHCPs up to 25th birthday, as well as raised parental awareness and expectations of available options for support.^{1,7}

Figure 1 – Maps illustrating variation between local authorities in the proportion of pupils attending state funded schools (primary, secondary or special) who received any SEND support, had an EHCP or attended special school in 2018⁴



EHCP: Education, Health and Care Plan, SEND: special educational needs or disability

Children with learning disabilities and autistic spectrum disorders

Children with learning disabilities (LD) and autistic spectrum disorders (ASD) are likely to have more complex needs, requiring coordination between primary, secondary, mental health and community care, as well as education and social care services compared to unaffected children. Approximately 2.5% of all school-aged children have LD and 1.4% have autism in England.^{6,8} Improving health and wellbeing of children with LD and ASD is one of the objectives set out in the NHS Long Term Plan.⁹ Children with LD/ASD are more likely to report poor general health, have co-existing comorbidities (such as epilepsy) and mental health problems than other children.¹⁰⁻¹³ They are therefore more likely to receive SEND support or EHCPs to support their health and education needs. However, they are also disproportionately more likely to be excluded from school compared to children with no SEND provision, which can deepen educational inequalities.¹⁴ Provision of SEND support is therefore especially important for this group of children.

Information about children with LD or ASD can be obtained from SEND statistics collected as part of the school census by the Department of Education (DfE). In 2018, 1.6% of all pupils had SEND due to ASD, 55% of whom had EHCP, and 50% of autistic pupils with EHCPs attended special schools (Table 1). Prior to 2014 and reforms to SEND provisions, Public Health England used the number of pupils with moderate learning difficulties (MLD), severe learning difficulties (SLD) and profound and multiple learning difficulties (PMLD) to estimate the number of children with learning disabilities in England.⁸ Since 2014, the proportion of children indicated to require SEND support due to MLD increased, while the overall proportion of pupils with SEND decreased relative to 2013 (as illustrated in Appendix Figures 1-2). These trends likely reflect a change in recording rather than need. However, as no other statistics on health of pupils with LD are available, we still use these three types of need for extra support recorded in school data (i.e. MLD, SLD and PMLD) as a proxy for number of young people with LD, although the numbers are likely to be overestimated.^{4,8} In 2018, 3% of all pupils had SEND due to MLD, of whom 12% had EHCPs,

54% of whom attended special schools; 0.5% had SEND due to SLD/PMLD, over 90% of whom had EHCP; over 85% of pupils with EHCPs due to SLD/PMLD attended special schools (Table 1).

Funding for SEND provision

There is no single source of funding for SEND support. Instead, the total funding for SEND provision in mainstream and special schools is derived from three components of the overall school funding, (provided in two separate funding “blocks”). Places in mainstream schools are funded from the schools block, with a basic funding provision of approximately £4,000 per pupil (component 1). A proportion of the schools block funding (referred to as notional SEND funding) is expected to also cover “low need” SEND support in mainstream schools to a maximum additional value of £6,000 per pupil with SEND (component 2). Additional support for pupils with complex needs is funded from the high-needs block (component 3). This includes ‘top-up’ funding for mainstream schools if costs exceed £10,000 per pupil with SEND and places in special schools and alternative provision (e.g., for pupils excluded from schools). Funding mechanisms for SEND provision are described in detail in next chapter (from p15).

In 2018 the DfE provided an estimated £9.4 billion specifically to support pupils with SEND, accounting for 24% of the overall funding for schools allocated to local authorities. Notional SEND funding covered £3.8 billion (40%) and the high-needs block covered £5.6 billion (60%).¹ Total funding for schools and SEND provision has increased over time in real terms, however, it has not kept pace with increases in the population of pupils. This resulted in a real-term reduction in per-pupil funding for mainstream schools of 4.8% between 2014/15-2018/19 and a real-term reduction of 2.6% in per-pupil high-needs funding between 2013/14 and 2017/18.^{1,15}

Study aim and objectives

Provision of SEND support can help pupils gain equal access to education as their peers, and support their well-being, school and health outcomes. Higher levels of funding for SEND are likely to lead to better resourced provision of SEND support, and in turn, to better outcomes for pupils with SEND.

This study examined the association between funding levels per pupil with SEND (basic per-pupil, notional SEND and high-needs funding, averaged across primary and secondary schools) and school exclusion rates in secondary school children among the 148 local authorities in England. We focus on secondary school-aged children, as the majority of exclusions are in secondary school (see Appendix Figure 3). We used publicly available local authority-level data on funding for school years 2015/16-2018/19. The ecological study design utilised variation in SEND provision and funding between local authorities and over time, allowing for simplified but quicker analyses than using individual-level or school-level data.

We focussed on fixed term exclusion (when a child is temporarily removed from school, also termed suspension) as an example of adverse school outcome that might be affected by low intensity or poor quality of SEND provision due to lower levels of funding. Exclusion from school can have long-term adverse impacts on a pupil's life, including worse mental and physical health outcomes, increased risk of substance abuse, lower educational achievements or unemployment.^{16,17} Although reasons for exclusions are similar for most pupils (most commonly, persistent disruptive behaviour, physical assault against a pupil, verbal abuse against an adult),¹⁴ pupils with SEND are more likely to be excluded from school than pupils without SEND, which can further deepen educational inequalities experienced by this group. In 2017/18, children with SEND accounted for 44.9% of permanent exclusions and 43.4% of fixed-period exclusions, despite only 15% of school children having SEND.¹

The overall aim of this project was to determine whether higher levels of funding per pupil with SEND support can lead to better outcomes for children with SEND.

Specific objectives to achieve this aim were to:

1. Derive a measure of local authority's total per-pupil funding for SEND support.
2. Determine the association between local authorities' average funding for SEND support per pupil and school exclusion rates in secondary school aged pupils and examine whether this association varies between pupils with different types of SEND need (in particular for children with SEND support due to LD or ASD).

Funding for SEND provision

Overview

This section presents our work to meet objective 1 – to derive a measure of total funding for support for pupils with SEND. We first provide an overview of funding for education and SEND provision. Next, we describe data on SEND funding presented in a Dashboard on Special Educational Needs Funding by local authority (available on the [Children and Families Policy Research Unit \(CPRU\) website](#)). Lastly, we describe variation in funding over time and between local authorities.

Funding for SEND provision

Core government funding for state-funded mainstream and special schools is allocated from the Education Funding Agency to local authorities via the Dedicated Schools Grant (DSG). This includes local authority-maintained schools as well as academies and free schools. Funding covered by DSG is split into three separate funding blocks: *the schools block*, *the high-needs block*, and *the early years block* (which is not considered in this study as it covers pre-school provision only).

There is no single source of funding for SEND support, and funding mechanisms differ between mainstream and special schools. Funding for SEND support consists of **three key components** derived from the schools and high-needs blocks (illustrated in Figure 2):

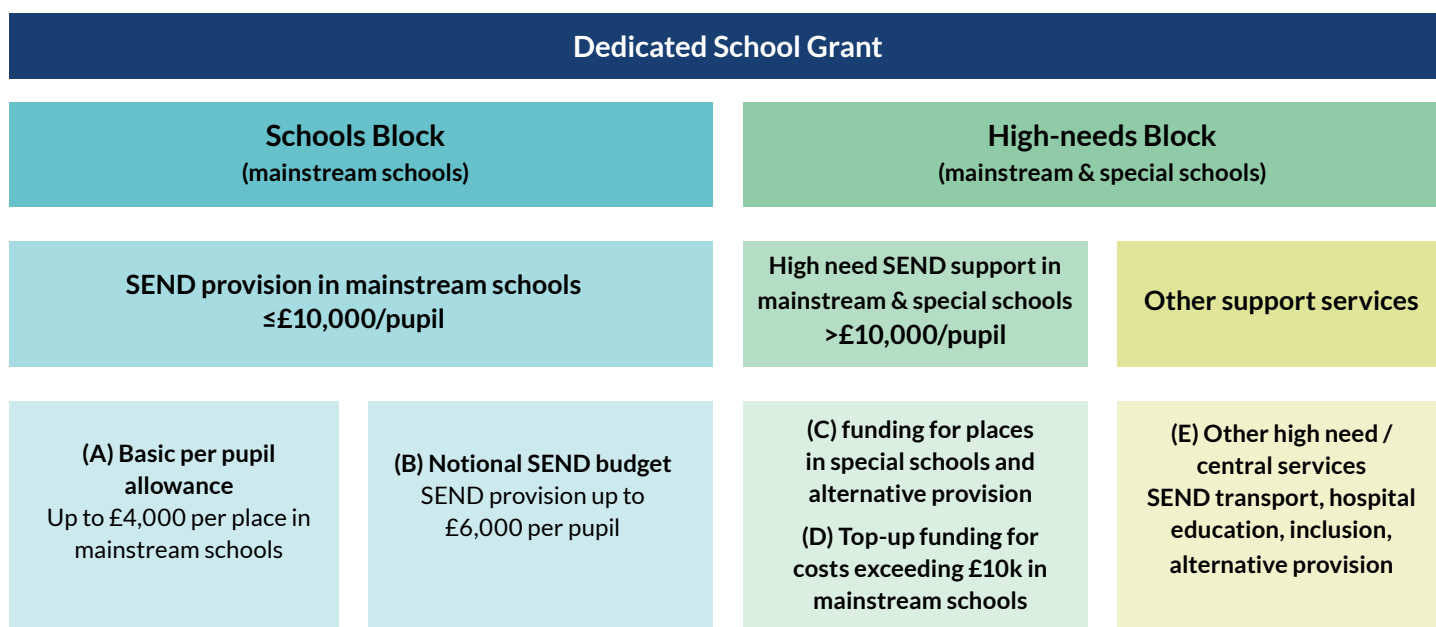
a) Basic per-pupil allowance: available up to a maximum of £4,000 per pupil per annum (applicable to all pupils on the school roll in mainstream schools).

b) Notional SEND funding: a local authority-specified proportion of an individual school's budget allocated to fund general SEND provision applicable to all pupils with SEND support/EHCPs in mainstream schools or academies (publicly funded independent schools). Whilst this funding is not ring-fenced for SEND provision, schools are expected to meet the expense of SEND support up to a threshold of £6,000 per pupil per annum.

c) High-needs funding: local authorities have a further responsibility to provide high-needs support for children and young people under the Children and Families Act 2014. The high-needs block element of the DSG covers:

1. 'Top-up' funding, covering the costs of high-need SEND provision in mainstream schools over and above the £10,000 threshold funded from the schools block.
2. Funding for places in special schools and alternative provision (including for pupils who were excluded from schools), covering both the first £10,000 of per-pupil funding (equivalent to the sum of basic per-pupil and notional SEND funding amounts) as well as the 'top-up' funding over that threshold.

Figure 2 – Overview of school funding for Special Educational Needs or Disability (SEND) support¹



Funding allocation has changed over time in an attempt to make the system more transparent and based on the needs of pupils in each local authority. The most significant change was the introduction of the national funding formula (NFF) in 2018/19. Prior to 2018/19, school funding (in the schools block and high-needs block) was largely based on historical spending patterns, adjusted for deprivation and a small number of other optional factors (such as number of pupils with low prior attainment or in care).^{15,18} As a result, funding was likely to vary even between local authorities with comparable characteristics.¹⁵ Further, the three blocks contributing to DSG were notional and local authorities were able to move funds between the blocks.

In 2018/19, a new NFF was introduced to allocate the schools block and half of the high-needs block based on proxy indicators of pupils’ need. The NFF for schools block funding includes the size of the pupil population, characteristics of pupils (such as the number of pupils with low prior attainment, who are looked-after or who speak English as an additional language), and characteristics of schools (for example, whether school is small or remote), indicators of deprivation (such as, number of pupils

eligible for free school meals) and pupil mobility (how many pupils joined after the start of the school year).¹⁵ A proportion of the calculated funding for each factor is assigned to the notional SEND funding (this proportion will vary between local authorities). The NFF for the high-needs block is based on factors associated with SEND provision such as the number of children with a disability or poor health, with low prior attainment or living in deprived areas. Half of the high-needs budget is based on planned spending in the previous year.¹

Local authorities are then responsible for distributing the money between schools. They are allowed to vary funding allocations for each school according to a local funding formula, however they are not able to move funds between the three blocks.¹⁵ In 2018, minimum per-pupil funding levels were also introduced for all schools. These resulted in increased allocations for 16% of schools, mostly with low levels of deprivation (as per-pupil allocations in schools with high levels of deprivation were already higher than the minimum).¹⁵

Data on school funding and funding for SEND provision

Dashboard on Special Educational Needs or Disability in England

SEND funding is complex and there is no single data source capturing information on total funding and spending on SEND provision. We identified several UK government published datasets required to bring together information about SEND funding. We collated this information in a dashboard available on [CPRU website](#), with all data sources listed there.

The dashboard builds on an earlier data pack published by the DfE as part of a consultation on funding for children and young people with SEND (originally published 2014).¹⁹ With permission from DfE, we updated the dashboard to cover information on school years 2015/16-2018/19. To enable fair year-on-year comparisons, we included a function to adjust SEND funding levels for changes in prices over time (i.e. inflation). We used the UK Gross Domestic Product (GDP) deflator (a broad price index produced by HM Treasury to measure inflation) to derive real-terms funding levels relative to 2018.^{20,21}

The dashboard covers two main sources of data which may be used to look at funding for SEND provision: data on DSG allocations for each local authority from the Education and Skills Funding Agency (used in this report), and Section 251 data on planned spending and actual expenditure submitted by local authorities to the Secretary of State.¹⁸ In this section we describe these data, assumptions made when deriving funding per-pupil from DSG, and rationale for not using Section 251 data.

Official statistics from the Education and Skills Funding Agency

We obtained information about DSG allocation for each local authority from the Education and Skills Funding Agency.²² These data cover funding for the schools block (for mainstream schools) and high-needs block (covering mainstream and special schools). Data on the notional SEND funding within the schools block

for maintained schools was obtained from DfE official statistics on local authorities' schools block funding formulae.²³ In the dashboard these data are available in "Funding (GDP)" tab in columns R:AU for notional SEND funding (columns labelled "Total Notional SEN (excl. MFG)") and for total schools block funding (columns labelled "Schools Block Total funding"), and in columns C:P for high-needs block (columns labelled "High Needs Block").

We derived three key components of per-pupil SEND funding from these data: the basic per-pupil allowance (for all pupils attending mainstream schools), the notional SEND funding per pupil with any SEND provision (in mainstream schools), and high-needs funding per pupil with high-needs (in mainstream or special schools, approximated by the number of pupils with EHCPs):

- **Basic per pupil allowance:** To calculate basic per-pupil allowance we subtracted notional SEND funding from the schools block funding, and divided it by the number of pupils in state-funded mainstream schools (primary or secondary).
- **Notional SEND funding per pupil with SEND:** this funding covers costs of general SEND provision within mainstream schools (in addition to basic school funding per pupil of ≤£4,000/pupil). To derive notional SEND funding per pupil, we therefore divided the total funding by the number of pupils with any SEND provision (low level support or EHCP) attending state-funded mainstream schools (primary or secondary).
- **High-needs funding per pupil with EHCP:** high-needs block covers funding for (i) pupils with high-needs that attend special schools, (ii) 'top-up' funding for pupils needing support over the £10,000 per year threshold in mainstream schools. We therefore derived per-pupil funding by dividing the high-needs block funding by the total number of pupils with EHCPs in state-funded schools (primary, secondary or special) per local authority.

Denominator populations for the calculations described above were obtained from DfE official statistics on special educational needs in England.⁴ We used data on the number of pupils (overall, with any SEND provision and with EHCPs) according to school type (state-funded primary, secondary or special school), school year and local authority where the pupil attends school (data based on local authority of residence was not available). All data used are available on <https://github.com/UCL-CHIG/funding-for-SEND-provision>.

Funding for mainstream and special schools from the high-needs budget cannot be separated, therefore all analyses in this report combine pupils from mainstream and special schools. Further, it is not possible to separate funding by pupils age, therefore funding levels reflect average spending per pupil of primary or secondary school age.

Section 251: planned funding and actual spending

Local authorities are required to submit an overview of planned spending and actual expenditure within the schools budget and children and young people's services to the Secretary of State for Education under Section 251 of the Apprenticeships, Skills, Children and Learning Act 2009.¹⁸ Section 251 data can therefore be used to examine planned and actual spending, as well as to determine whether local authorities are under or overspending their budgets.

Submission is standardised and all local authorities report their planned and actual spending under defined headlines. Funding on SEND provision can be obtained by summing data from relevant headings.¹⁸ These headings cover funding from schools block and high-needs block but do not include separate information about the proportion of school's budget spent on notional SEND funding. In 2018/19, notional SEND funding was £3.8 billion, accounting for 40% of the total funding for SEND provision.¹ Due to lack of this information, we did not use Section 251 data in this report.

Local authority variation in funding for schools and SEND provision

Methods

We first described trends in overall funding from DSG (covering school and high-needs blocks), schools block, notional SEND allocation and high needs block over time.

We then summarised variation in per pupil funding levels between local authorities over time using means, standard deviations, interquartile range, and minimum and maximum values. We described the correlation between funding variables using Pearson correlation coefficients. We visually assessed variation in average per-pupil funding levels per year over 2015/16-2018/19 between local authorities using maps. All funding variables were GDP-adjusted relative to 2018 to account for inflation.

All results are presented for 148 local authorities in England excluding data for City of London, Isles of Scilly, Newham, Rutland and South Kensington and Chelsea for consistency with results in chapter 3. We excluded these local authorities due to small numbers of pupils or other data quality issues. All analyses were carried out using Stata 17.

Results

Real-term DSG allocations increased from £42.0 billion in 2015/16 to £43.7 billion in 2018/19. The schools block covered on average £33.2 billion a year in 2015/16-2018/19. Total funding on SEND increased from £8.9 billion in 2015/16 to £9.8 billion in 2018/19. Notional SEND funding covered on average £3.4 billion per year, and the high-needs block covered £5.8 billion (Table 2).

Table 2 – Overall funding (in billions) on education and SEND support in 2015-2018 (GDP-adjusted relative to 2018)

	2015	2016	2017	2018
1) Total Dedicated School Grant (DSG)	£42.0	£42.1	£43.0	£43.7
2) Schools block	£33.4 (80% of DSG)	£33.1 (78% of DSG)	£33.0 (77% of DSG)	£33.3 (76% of DSG)
3) Notional SEND funding	£3.3 (38% of total SEND funding)	£3.2 (37% of total SEND funding)	£3.2 (35% of total SEND funding)	£3.7 (38% of total SEND funding)
4) High-needs block	£5.6	£5.5	£5.9	£6.1
5) Total funding for SEND (sum of 3 and 4)	£8.9	£8.7	£9.1	£9.8

DSG: Dedicated Schools Grant, GDP: Gross Domestic Product, SEND: special educational needs or disability

Real-term basic per-pupil funding declined over time. The median was £3,814 in 2015/16 compared to £3,651 in 2018/19 (Table 3). The basic per-pupil allowance (excluding funding for notional SEND) ranged from £3,145 per pupil in York in 2017/18 to £5,634 per-pupil in Southwark in 2015/16. The median notional SEND funding per pupil decreased from £2,863 in 2015/16 to £2,708 in 2017/18, and shifted to £3,110 in 2018/19 (possibly reflecting the introduction of NFF in 2018/19). Real-term high-needs funding remained stable, with median between £24,000-£25,000.

Table 3 – Variation in local authority-level funding for education, notional SEND and high-needs (GPD-adjusted relative to index year 2018)

Year	Mean	Standard deviation	Median	Inter-quartile range (25th and 75th centile)		Minimum	Maximum
Basic per-pupil allowance (excluding notional SEND funding) per pupil in mainstream schools							
2015	£3,895	£387	£3,814	£3,652	£4,064	£3,207	£5,634
2016	£3,813	£387	£3,717	£3,576	£3,975	£3,154	£5,597
2017	£3,779	£389	£3,670	£3,536	£3,931	£3,148	£5,414
2018	£3,737	£381	£3,651	£3,486	£3,878	£3,174	£5,348
Notional SEND funding per pupil with SEND in mainstream schools							
2015	£3,230	£1,472	£2,863	£2,311	£3,822	£726	£8,443
2016	£3,089	£1,330	£2,795	£2,258	£3,711	£680	£7,643
2017	£3,012	£1,323	£2,708	£2,112	£3,598	£622	£7,731
2018	£3,364	£1,335	£3,170	£2,494	£3,977	£890	£8,162
High-needs block funding per pupil with EHCP							
2015	£26,661	£5,832	£25,562	£22,608	£29,600	£17,107	£46,111
2016	£25,640	£5,565	£24,371	£21,899	£28,194	£16,326	£43,352
2017	£26,440	£5,895	£25,118	£22,284	£28,666	£17,055	£48,047
2018	£25,162	£5,283	£24,226	£21,574	£26,983	£16,891	£46,874

EHCP: Education, Health and Care Plan, GDP: Gross Domestic Product, SEND: special educational needs or disability

Basic per-pupil allowance was negatively correlated with levels of notional SEND funding per pupil, meaning that local authorities with higher notional SEND funding had lower levels of basic per-pupil funding, although the correlation was weak. High-needs funding was positively correlated with the other two funding variables, i.e. local authorities with higher funding for pupils with high-needs also had higher levels of basic funding per-pupil and for notional SEND funding in mainstream schools (Table 4).

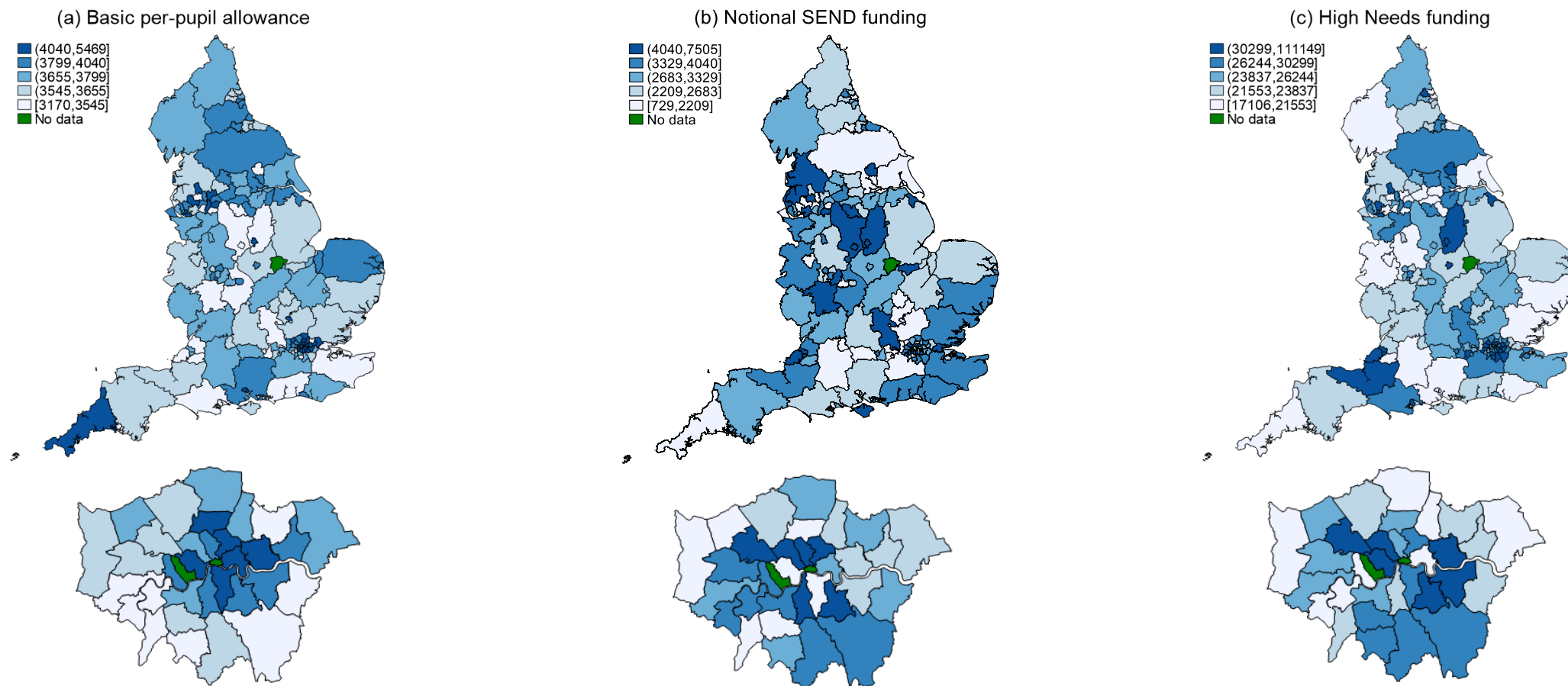
Table 4 – correlation coefficients for the three funding variables

	Basic per-pupil allowance		High-needs funding (per pupil with EHCP)	
	Pearson correlation coefficient	p-value	Pearson correlation coefficient	p-value
Notional SEND funding (per pupil with SEND)	-0.09	0.02	0.15	0.003
High-needs funding (per pupil with EHCP)	0.22	<0.0001		

EHCP: Education, Health and Care Plan, SEND: special educational needs or disability

There was substantial variation in funding between local authorities (Figure 3). London boroughs were in the top 20% of local authorities with highest levels of funding across all three sources, likely reflecting geographical variation in area-level costs (such as labour market costs).

Figure 3 – Maps grouping local authorities into quintiles according to average funding across 2015/16-2018/19 for: (a) basic per pupil allowance (per pupil in primary or secondary school), (b) notional SEND funding (per pupil with SEND in mainstream primary or secondary school) and (c) high-needs funding per pupil with EHCP (in mainstream or special school)



EHCP: Education, Health and Care Plan, GDP: Gross Domestic Product, SEND: special educational needs or disability; Funding variables were GPD-adjusted relative to 2018; funding variables were averaged across 2015/16-2018/19 before deriving quintiles;

Is higher level of funding for SEND associated with better school outcomes?

Overview

To assess whether higher levels of funding per pupil with allocated SEND support can lead to better outcomes for children with SEND (objective 2), we carried out a local authority-level ecological analysis of the association between levels of funding and school exclusion rates in secondary school aged pupils. We also examined whether this association differed for pupils with different type of SEND, focusing particularly on children with LD or ASD, who are likely to have more complex educational and health needs. Improving health and wellbeing of children with LD and ASD is one of the objectives set out in the NHS Long Term Plan.⁹ Our analysis used the funding variables described in previous chapter.

Methods

Study population

We used a bespoke aggregate data extract, obtained under a Freedom of Information request, derived from the school census by the DfE. The study population captured all pupils aged 11-15 years old at the start of the school years 2015/16-2018/19 respectively, who attended state-funded mainstream and special schools, or non-maintained special schools and pupil referral units in England. These data included information about the number of pupils, fixed-period and permanent exclusions, aggregated by local authority where pupil attends school, school year (2015/16-2018/19), school type (mainstream/special) and selected pupil characteristics (age, sex, type of primary SEND). Our analyses focus on pupils of secondary school age as the majority of all school exclusions occur in secondary schools (see Appendix Figure 3). Data used for these analyses can be found on GitHub <https://github.com/UCL-CHIG/funding-for-SEND-provision>.

Due to small numbers of pupils or other data quality issues we excluded data from City of London, Isles of Scilly, Newham, Rutland and South Kensington and Chelsea. In addition, we excluded data from 2018/19

from Bournemouth, Dorset, and Poole as there were inconsistencies in coding of total number of students and exclusions due to local authority boundary changes.²⁴

Outcomes

Our main outcome of interest was the fixed-period exclusion from school (when a child is temporarily removed from school, also referred to as suspension). We focussed on fixed-period exclusions as they are more common than permanent exclusions (in 2018/19 there were on average 5.4 fixed-period exclusions per 100 pupils vs 0.1 permanent exclusions per 100 pupils).²⁵ Throughout the report we refer to these as “school exclusions”.

We calculated school exclusion rate as the number of fixed-period exclusions divided by the total number of pupils.²⁵ One pupil may experience multiple exclusions, which we were not able to account for as we received separate aggregate data on the total number of exclusions and pupils. We report the number of school exclusions per 100 pupils, consistent with how exclusion rates are calculated by DfE.²⁵

Exposures: level of funding for SEND

We used three per-pupil funding variables described in chapter 2:

- Basic funding per-pupil in mainstream school.
- Notional SEND funding per pupil with any SEND support in mainstream schools (with or without EHCP).
- High-needs funding per pupil with higher-level of need (approximated as the number of pupils with EHCPs) in any school (mainstream or special).

Levels of funding per pupil were derived using the total number of pupils (in state-funded primary, secondary and special schools) as we were not able

to split funding by school type. Therefore, funding levels reflect average spending per pupil of primary or secondary school age.

Other covariates

Our aggregate data extract included information on primary SEND need, grouped as ASD, MLD, SLD, PMLD, other SEND, no SEND. Children with SLD and PMLD were grouped together for statistical models due to small numbers. For each local authority, data was also aggregated according to age at start of school year, sex, school year, school type (mainstream or special).

As noted in the introduction, prior to 2014 and reforms to SEND provisions, Public Health England used the number of pupils with MLD, SLD, PMLD to estimate the number of children with learning disabilities in England.⁸ Since 2014, the proportion of children indicated to require SEND support due to MLD increased, likely due to a change in recording rather than need. We still use these three categories of SEND as a proxy for number of young people with LD, although the numbers are likely to be overestimated (proportion of pupils with any of these three codes was 2.5% in 2013/14 compared to 3.7% in 2018/19).^{4,8}

We additionally included information on several local authority-level variables from publicly available sources. These were:

- The percentage of children 16 years old or less in low income families (obtained from the Local Authority Interactive Tool).²⁶
- Quintile of Index of Multiple Deprivation (IMD) 2015 score, an area-level deprivation measure derived for an average of 650 households.²⁷ IMD scores per local authority were derived from population weighted averages of the IMD scores for Lower Layer Super Output Areas in each authority (data on quintiles was obtained from Public Health England Fingertips website).²⁸
- Proportion of pupils with any SEND support in special or mainstream school (obtained from DfE official statistics on SEND).⁴

- Proportion of pupils allocated any SEND support who receive an EHCP in special or mainstream school (obtained from DfE official statistics on SEND).⁴

Statistical analyses

We examined variation in pupil characteristics (number of pupils overall and by SEND type, number of pupils in special schools) over time and between local authorities. We derived crude fixed-period exclusion rates for each local authority by child characteristics (age, sex, type of SEND, school type). We also examined correlation between local authorities' school exclusion rates, the proportion of pupils with SEND and the average level of funding using Pearson correlation coefficients.

We then derived adjusted school exclusion rates from multilevel negative binomial regression models. We included the number of school exclusions for pupils in each local authority as the outcome, and the number of pupils as the offset variable. A priori models included pupil characteristics available in the aggregated data extract: age (as a categorical variable as the association with school exclusions was not linear), sex, type of primary SEND, school type (mainstream or special) and school year. We allowed for a random intercept for local authority (due to repeated measures and to allow for unexplained variation within local authorities). We additionally considered local authority-level variables (listed in "Other covariates" section). These continuous variables were centred on the national mean per calendar year. We selected which of the additional local authority-level variables to include in the model, without adding the three funding variables. Initially we included all pupil-level and local authority-level variables in the model. Variables that were not statistically significant in the multivariable models were then excluded and models were compared using Akaike Information Criterion (AIC) with smaller values indicating better model fit.

Next, we simultaneously added the three funding variables of interest (basic per-pupil funding, notional SEND and high-needs funding) to the model to determine the association between funding and

school exclusion rates. All funding variables were standardised so the rate ratios derived from the models reflect change in school exclusion rates associated with one standard deviation increase in funding relative to mean funding in a given school year.

We considered five models with funding variables:

Model 1) included all relevant pupil-level and local authority-level variables and the three funding variables.

Model 2) included an additional interaction term for notional SEND and high-needs funding with an indicator of pupils having SEND (yes / no). The rationale here was that notional SEND and high-needs funding would only be relevant to children with SEND, but there could be an indirect effect (through increased investment) on children with no SEND as well.

Model 3) included an interaction term for high-needs funding with school type (mainstream/special) as all special school funding should be covered from high-needs budget.

Model 4) included all covariates and funding variables excluding SEND type variable to explore whether higher levels of funding for SEND support might be associated with higher recognition/indication of SEND (due to more available resources).

We assessed whether funding variables were statistically significant using Wald test (p -value <0.05).

Subgroup analyses by type of SEND

We re-ran our final models separately for pupils with different types of SEND.

All analyses were run using Stata 17.

Results

Characteristics of secondary school aged pupils in England

In 2015/16-2018/19 there were on average 2.7 million pupils aged 11-15 years old per year. The number of pupils increased from 2,713,251 in 2015/16 to 2,835,516 in 2018/19 (4.5% increase). On average, 15.1% of pupils received any SEND support in each school year, and this proportion remained constant year-on-year. 1.7% of pupils had SEND due to autism (the proportion increased over time), 3.6% due to MLD (the proportion decreased over time), 0.4% due to SLD, 0.1% due to PMLD and 9.3% had other SEND (Table 5).

1.9% of all pupils (and 12.9% of pupils with SEND) attended special schools. The absolute number and proportion of children attending special schools increased over time. This proportion varied by type of primary SEND: over 80% of all pupils with SLD or PMLD and 29% of children with autism attended special schools, compared to 10.2% of pupils with MLD and 7.1% with other SEND (Table 5).

Table 5 – Changes in characteristics of pupils aged 11-15 years old over time

	2015/16	2016/17	2017/18	2018/19	Average across all years
Number of pupils	2,713,251	2,746,641	2,796,119	2,835,516	
% with any SEND	15.4%	15.0%	14.9%	15.1%	15.1%
% with ASD	1.5%	1.6%	1.7%	1.9%	1.7%
% with MLD	3.9%	3.6%	3.4%	3.3%	3.6%
% with SLD	0.4%	0.4%	0.4%	0.4%	0.4%
% with PMLD	0.1%	0.1%	0.1%	0.1%	0.1%
% with other SEND	9.5%	9.3%	9.2%	9.4%	9.3%
% in special schools overall	1.9%	1.9%	2.0%	2.0%	1.9%
Number of pupils in special schools	50,730	52,398	55,031	57,928	
% with any SEND in special schools	12.1%	12.7%	13.2%	13.5%	12.9%
% with ASD in special school	28.2%	28.5%	29.0%	29.1%	28.7%
% with MLD in special schools	10.0%	10.2%	10.4%	10.3%	10.2%
% with SLD in special schools	83.7%	83.9%	83.6%	85.0%	84.0%
% with PMLD in special schools	89.1%	88.4%	88.0%	89.1%	88.7%
% with other SEND in special schools	6.5%	7.0%	7.3%	7.6%	7.1%

ASD: Autistic Spectrum Disorders, MLD: moderate learning difficulty, PMLD: profound and multiple learning difficulty, SEND: special educational needs or disability, SLD: severe learning difficulty

There was considerable variation in the distribution of characteristics between local authorities. For example, the proportion of pupils with SEND ranged between 8% and 27%, with a median of 16%, and the proportion of pupils attending special schools ranged from 0.6% to 5.7%, with a median of 2% (Table 6).

Table 6 – Summary statistics illustrating variation in characteristics of pupils aged 11-15 years old between local authorities

Variable	Summary statistic	2015/16	2016/17	2017/18	2018/19
Number of pupils per local authority	Median	13,827	14,023	14,416	14,730
	25th centile	9,986	10,091	10,344	10,809
	75th centile	21,046	21,167	21,404	22,823
	Minimum	5,210	5,209	5,303	5,413
	Maximum	80,209	81,039	82,825	85,157
Proportion of pupils with SEND	Median	15.7%	15.5%	15.4%	15.5%
	25th centile	13.9%	13.5%	13.6%	13.8%
	75th centile	17.7%	16.9%	16.9%	17.2%
	Minimum	7.9%	8.3%	8.9%	9.8%
	Maximum	27.5%	23.4%	22.9%	22.2%
Proportion of pupils in special schools	Median	1.9%	1.9%	2.0%	2.1%
	25th centile	1.5%	1.5%	1.5%	1.6%
	75th centile	2.3%	2.3%	2.4%	2.5%
	Minimum	0.7%	0.7%	0.6%	0.7%
	Maximum	4.3%	4.7%	5.1%	5.7%
Proportion of pupils with ASD	Median	1.4%	1.5%	1.6%	1.7%
	25th centile	1.1%	1.1%	1.3%	1.4%
	75th centile	1.9%	2.0%	2.2%	2.3%
	Minimum	0.6%	0.6%	0.7%	0.5%
	Maximum	3.6%	3.7%	3.7%	3.8%
Proportion of pupils with MLD	Median	3.6%	3.3%	3.1%	3.1%
	25th centile	2.7%	2.6%	2.3%	2.4%
	75th centile	4.9%	4.5%	4.5%	4.2%
	Minimum	0.7%	0.6%	0.8%	0.7%
	Maximum	12.0%	8.6%	8.4%	8.1%
Proportion of pupils with SLD	Median	0.4%	0.4%	0.4%	0.4%
	25th centile	0.3%	0.3%	0.3%	0.3%
	75th centile	0.5%	0.5%	0.5%	0.5%
	Minimum	0.1%	0.1%	0.1%	0.1%
	Maximum	1.0%	1.1%	1.4%	1.1%
Proportion of pupils with PMLD	Median	0.1%	0.1%	0.1%	0.1%
	25th centile	0.1%	0.1%	0.1%	0.1%
	75th centile	0.1%	0.2%	0.2%	0.2%
	Minimum	0.0%	0.0%	0.0%	0.0%
	Maximum	0.3%	0.4%	0.3%	0.3%
Proportion of pupils with other SEND	Median	9.5%	9.2%	9.5%	9.6%
	25th centile	8.1%	8.2%	8.1%	8.2%
	75th centile	11.7%	11.2%	11.1%	11.2%
	Minimum	4.0%	3.8%	4.1%	4.9%
	Maximum	19.0%	15.8%	16.6%	15.7%

ASD: Autistic Spectrum Disorders, MLD: moderate learning difficulty, PMLD: profound and multiple learning difficulty, SEND: special educational needs or disability, SLD: severe learning difficulty

Unadjusted school exclusion rates

Overall there were 1,273,515 school exclusions among pupils aged 11-15 years old in 2015/16-2018/19, corresponding to 11.5 exclusions per 100 pupils per year (Table 7). School exclusion rates increased over time (from 10.1/100 pupils in 2015/16 to 12.6/100 pupils in 2018/19), and with age, peaking at age 14 years old. Exclusion rates were highest for children with “other SEND” (33.1/100 pupils per year, which is likely driven by children with social emotional and mental health needs, who accounted for over half of fixed-period exclusions in 2018/19),²⁵ followed by exclusions for pupils with MLD (23.1/100) and ASD (14.8/100). Pupils with SLD or PMLD had the lowest school exclusion rates (4.9/100 and 1.5/100, respectively).

Table 7 – Characteristics of pupils and school exclusions

	Number of pupils	Number of fixed-period exclusions	Crude fixed-period exclusion rate per 100 pupils per year
Total	11,091,527	1,273,515	11.5
School year			
2015/16	2,713,251	275,358	10.1
2016/17	2,746,641	307,612	11.2
2017/18	2,796,119	334,498	12
2018/19	2,835,516	356,047	12.6
Type of SEND			
No SEND	9,415,692	809,162	8.6
ASD	186,507	27,519	14.8
MLD	396,015	91,562	23.1
SLD	44,743	2,175	4.9
PMLD	12,111	184	1.5
Other SEND	1,036,459	342,913	33.1
Sex			
Female	5,425,590	385,577	7.1
Male	5,665,937	887,938	15.7
Age (years)			
11	2,334,642	182,901	7.8
12	2,274,397	266,228	11.7
13	2,211,459	311,540	14.1
14	2,160,215	319,916	14.8
15	2,110,814	192,930	9.1
Region of residence			
EAST MIDLANDS	965,652	105,637	10.9
EAST OF ENGLAND	1,273,644	117,679	9.2
INNER LONDON	458,712	50,624	11
NORTH EAST	533,317	99,845	18.7
NORTH WEST	1,547,585	171,769	11.1
OUTER LONDON	1,093,606	94,502	8.6
SOUTH EAST	1,783,155	172,493	9.7
SOUTH WEST	1,023,739	124,574	12.2
WEST MIDLANDS	1,271,282	133,806	10.5
YORKSHIRE AND THE HUMBER	1,140,835	202,586	17.8
School type			
Mainstream	10,875,440	1,228,868	11.3
Special	216,087	44,647	20.7
Quintile of Index of Multiple Deprivation 2015 score			
Q1: most deprived	1,801,998	224,659	12.5
Q2	1,826,003	296,768	16.3
Q3	1,968,456	231,380	11.8
Q4	2,877,146	290,906	10.1
Q5: least deprived	2,617,924	229,802	8.8

There was substantial regional variation in school exclusions, with highest rates in the North East (18.7/100 pupils) and Yorkshire and the Humber (17.8/100 pupils) and lowest rates in Outer London (8.6/100 pupils). Crude exclusion rates were higher in special schools compared to mainstream (20.7/100 compared to 11.3/100); 82% of exclusions from special schools were for pupils with other SEND. Local authorities with higher proportion of pupils allocated any SEND support had on average higher rates of school exclusion rates and higher rates of basic per-pupil allowance, but there was no correlation with the other two funding variables (Table 8).

Table 8 - Table of correlation coefficients for school exclusion rates, proportion of pupils with any SEND support and the three funding variables

	School exclusion rates		Proportion of pupils with any SEND support	
	Pearson correlation coefficient	p-value	Pearson correlation coefficient	p-value
Proportion of pupils with any SEND support	0.15	<0.0001		
Basic per-pupil allowance	-0.04	0.3	0.31	<0.0001
Notional SEND funding per pupil with any SEND support in mainstream schools	0	0.98	-0.09	0.03
High-needs funding (per pupil with EHCP)	-0.04	0.38	0.01	0.83

EHCP: Education, Health and Care Plan, SEND: special educational needs or disability

Adjusted school exclusion rates

The best fitting model (before adding funding variables) included age, sex, SEND type, school type, calendar year, proportion of children in low income families (per local authority), and quintile of Index of Multiple Deprivation 2015 score. Overall, school exclusion rates were 2 times higher for boys than girls, increased with age and peaked at ages 13-14 years old. Children with ASD had 42% higher rate of school exclusion, children with MLD had 2.3 times

higher school exclusion rates and children with other SEND had 4.7 times higher school exclusion rates compared to children with no SEND. Children with SLD/PMLD (grouped together for models due to small numbers) had 30% lower school exclusion rates than children with no SEND (Table 9).

Table 9 – Rate ratios for fixed-period school exclusions from multilevel negative binomial regression model

	Incidence rate ratios	95% confidence interval	
Intercept (rate at baseline)	3.29	2.78	3.89
Age			
11	1		
12	1.51	1.46	1.56
13	1.78	1.72	1.84
14	1.79	1.74	1.85
15	1.08	1.05	1.12
Sex			
Female	1		
Male	2.07	2.02	2.11
SEND Type			
No SEND	1		
ASD	1.42	1.37	1.47
MLD	2.34	2.27	2.41
SLD/PMLD	0.66	0.63	0.7
Other SEND	4.72	4.58	4.86
School year			
2015/16	1		
2016/17	1.07	1.04	1.1
2017/18	1.13	1.1	1.17
2018/19	1.13	1.1	1.17
School Type			
Mainstream	1		
Special	0.59	0.58	0.61
SES Indicator			
proportion of children in low income families per local authority	1	0.99	1.01
Quintile of Index of Multiple Deprivation 2015 score			
Q1: most deprived 20% of local authorities	1.07	0.83	1.37
Q2	1.43	1.14	1.79
Q3	1.03	0.83	1.29
Q4	1.07	0.86	1.32
Q5: least deprived 20% of local authorities	1		

ASD: Autistic Spectrum Disorders, MLD: moderate learning difficulty, PMLD: profound and multiple learning difficulty, SEND: special educational needs or disability, SLD: severe learning difficulty

Association between school exclusion rates and SEND funding

Next, we added the three funding variables to the model (results from models including funding variables are presented in Table 10). In model 1, one standard deviation increase in basic per-pupil funding (approximately £390 per pupil) was associated with 7% lower school exclusion rates for all pupils in mainstream schools. One standard deviation increase in notional SEND funding per pupil with SEND (approximately £1,400 per pupil) was associated with 4% lower school exclusion rates; one standard deviation increase in high-needs funding per pupil with EHCP (approximately £5,700 per pupil) was associated with 5% lower school exclusion rates.

Allowing for an interaction between SEND status and funding variables in models 2 and 3 showed that increases in basic per-pupil allowance were associated with 9% lower school exclusion rates for pupils with SEND; there was no effect on exclusions for pupils with no SEND. Higher notional SEND funding was associated with 4% and 3% lower school exclusion rates for pupils with and without SEND, respectively. Higher high-needs funding was associated with 5% lower school exclusion rates for pupils with no SEND and 6% lower rates for pupils with SEND. This effect was likely driven by exclusions for pupils with SEND in mainstream schools (model 3). The estimates did not change when we excluded SEND status from the model (model 4). Models 2 and 3 which included interaction terms had smallest AIC, suggesting better model fit than for model 1 without an interaction term.

Table 10 – Association between one standard deviation increase in funding variables and fixed-period school exclusions from multilevel negative binomial regression models; all estimates are school exclusion rate ratios

	Model 1*	Model 2*	Model 3*	Model 4** (Sensitivity analysis)
Basic per-pupil allowance	0.93 (0.88, 0.98)	Pupils with no SEND: 1.01 (0.95, 1.07)	Pupils with no SEND: 1.01 (0.95, 1.07)	0.93 (0.87, 0.99)
		Pupils with SEND: 0.91 (0.86, 0.96)	Pupils with SEND: 0.91 (0.86, 0.96)	
Notional SEND funding	0.96 (0.92, 1.00)	Pupils with no SEND: 0.97 (0.93, 1.01)	Pupils with no SEND: 0.97 (0.93, 1.01)	0.96 (0.92, 1.00)
		Pupils with SEND: 0.96 (0.92, 0.99)	Pupils with SEND: 0.96 (0.92, 0.99)	
High-needs funding	0.95 (0.91, 0.98)	Pupils with no SEND: 0.95 (0.92, 0.99)	Pupils with no SEND: 0.95 (0.92, 0.99)	0.96 (0.92, 0.99)
		Pupils with SEND: 0.94 (0.91, 0.98)	Pupils with SEND in mainstream schools: 0.93 (0.90, 0.97)	
			Pupils with SEND in special schools: 0.97 (0.93, 1.01)	

* adjusted for age, sex, SEND type, school type, calendar year, proportion of children in low income families and quintile of Index of Multiple Deprivation 2015 score, allowing for a random intercept for local authority; adjusted school exclusion rate ratios for all of these covariates were consistent with those presented in Table 9 from the model without funding variables

** adjusted for age, sex, school type, calendar year, proportion of children in low income families and quintile of Index of Multiple Deprivation 2015 score, allowing for a random intercept for local authority;

SEND: special educational needs or disability

Subgroup analyses: type of SEND

Results from subgroup analyses by type of SEND are presented in Table 11. Higher levels of basic per-pupil allowance were generally associated with lower school exclusion rates for all pupils. Increased notional SEND funding was associated with lower school exclusion rates only for pupils with MLD. High-needs funding was generally associated with lower school exclusion rates, but most results were not statistically significant (according to Wald test p -value <0.05).

	Other SEND	SLD/PMLD	MLD	ASD	NO SEND
Funding					
Basic per-pupil funding	0.92 (0.86, 0.99)	0.90 (0.77, 1.05)	0.85 (0.79, 0.92)	0.95 (0.87, 1.04)	0.91 (0.86, 0.96)
Notional SEND	0.99 (0.93, 1.04)	0.95 (0.83, 1.09)	0.91 (0.85, 0.97)	0.98 (0.92, 1.06)	0.98 (0.94, 1.01)
High-needs funding	0.97 (0.93, 1.03)	0.94 (0.82, 1.08)	0.94 (0.88, 1.00)	0.99 (0.92, 1.06)	0.95 (0.92, 0.98)
Intercept (rate at baseline)	13.18 (10.70, 16.24)	5.63 (3.40, 9.33)	5.86 (4.65, 7.40)	9.90 (7.69, 12.74)	1.58 (1.33, 1.89)
Age (years)					
11	1	1	1	1	1
12	1.38 (1.32, 1.45)	1.42 (1.11, 1.82)	1.69 (1.59, 1.81)	1.27 (1.16, 1.39)	1.81 (1.76, 1.87)
13	1.60 (1.52, 1.68)	1.42 (1.11, 1.82)	2.13 (2.00, 2.27)	1.30 (1.19, 1.42)	2.43 (2.36, 2.50)
14	1.53 (1.46, 1.61)	1.43 (1.11, 1.84)	2.18 (2.05, 2.33)	1.26 (1.15, 1.38)	2.65 (2.57, 2.73)
15	0.89 (0.84, 0.93)	1.02 (0.78, 1.33)	1.34 (1.26, 1.44)	0.78 (0.71, 0.86)	1.62 (1.58, 1.67)
Sex					
Female	1	1	1	1	1
Male	2.19 (2.12, 2.27)	2.19 (1.85, 2.60)	1.93 (1.85, 2.01)	1.61 (1.51, 1.72)	2.09 (2.05, 2.13)
Year					
2015	1	1	1	1	1
2016	1.03 (0.98, 1.07)	1.07 (0.85, 1.35)	1.07 (1.01, 1.13)	1.08 (1.00, 1.18)	1.13 (1.10, 1.16)
2017	1.03 (0.98, 1.08)	1.31 (1.05, 1.64)	1.14 (1.08, 1.21)	1.19 (1.10, 1.29)	1.24 (1.21, 1.27)
2018	1.04 (0.99, 1.08)	1.25 (0.99, 1.56)	1.14 (1.08, 1.21)	1.17 (1.08, 1.27)	1.32 (1.29, 1.36)
School Type					
Mainstream	1	1	1	1	
Special	1.15 (1.11, 1.19)	0.06 (0.05, 0.08)	0.34 (0.32, 0.36)	0.33 (0.31, 0.36)	NA
SES Indicator					
proportion of children in low income families per local authority	1.00 (0.99, 1.02)	1.01 (0.97, 1.05)	0.98 (0.97, 1.00)	1.02 (1.00, 1.04)	0.99 (0.98, 1.00)
Quintile of Index of Multiple Deprivation 2015 score					
Q1: most deprived 20% of local authorities	1.13 (0.81, 1.58)	0.97 (0.44, 2.16)	1.81 (1.24, 2.63)	0.62 (0.41, 0.94)	2.07 (1.59, 2.70)
Q2	1.43 (1.08, 1.90)	1.96 (1.07, 3.60)	1.95 (1.43, 2.66)	0.96 (0.69, 1.34)	2.19 (1.72, 2.80)
Q3	1.00 (0.77, 1.30)	0.67 (0.39, 1.17)	1.40 (1.05, 1.86)	0.72 (0.54, 0.97)	1.60 (1.27, 2.02)
Q4	1.00 (0.78, 1.28)	1.21 (0.76, 1.92)	1.19 (0.91, 1.54)	0.93 (0.72, 1.21)	1.24 (0.99, 1.55)
Q5: least deprived 20% of local authorities	1	1	1	1	1

Table 11 - Fixed-period school exclusion rates from multilevel negative binomial regression models (model were run separately for pupils with each type of SEND)

ASD: autism spectrum disorder, MLD: moderate learning difficulties, NA: not applicable, PMLD: profound and multiple learning difficulties, SEND: special educational needs or disability, SLD: severe learning difficulties.

Discussion

Key findings

The overall aim of this project was to explore whether higher levels of funding per pupil in need of SEND support can lead to better school outcomes for children with SEND. We carried out ecological analyses using aggregated local authority level data to examine the association between level of funding on education and support for pupils with SEND and school exclusion rates. We found that school exclusion rates increased over time, while components of funding per-pupil remained stable or decreased. Higher levels of basic per-pupil allowance, notional SEND and high-needs funding were associated with lower school exclusion rates, particularly for children with SEND in mainstream schools.

Strengths and limitations

This exploratory study used aggregated data to describe association between funding for SEND provision and school exclusions. We chose a simple ecological study design using publicly available aggregate data. We were able to obtain data on the population of interest in a timely manner from DfE through a Freedom of Information request (data available on <https://github.com/UCL-CHIG/funding-for-SEND-provision>). Local authority-level data on funding was also obtained from publicly available sources and we developed a dashboard which brings all these data together (available on CPRU website). However, an ecological study design comes with limitations.

First, we had only a limited number of pupil-level and school-level characteristics. For example, we did not request an indicator of level of support – SEND support or EHCP – as we were concerned that the number of pupils per category might be too small to be released. We also needed to group children with SLD and PMLD into one category due to small numbers, although young people with these two types of needs have different education and health care needs and are likely to be excluded for different reasons. Further, we were not able to examine the data longitudinally, for example to determine what came first – receiving SEND support or school exclusion. Children who are excluded from school might be

more likely to be subsequently assessed for SEND. We also only examined fixed-term school exclusions. However, pupils with SEND are also more likely to be permanently excluded and to experience off-rolling (an illegal practice of removing pupils from school without a formal exclusion).¹ Further work overcoming these limitations could be carried out using individual-level data from the National Pupil Database (NPD).²⁹

Secondly, we used funding data per local authority, averaging out any variation in funding between schools within each local authority. This may attenuate the effects of funding on school exclusion rates. Alternatively, the effects might be very small or there could be no effect. Further, funding data was available per local authority of residence, while data on the number of pupils and exclusions was available per local authority where pupil attends school, which may have biased estimates of per-pupil funding for local authorities with high levels of cross-border movement. We also used average funding per pupil (in primary or secondary school) as local authority level data on funding was not available separately by school type. This might attenuate the effect of funding, as funding is higher in secondary than primary schools (e.g., the minimum per-pupil funding set by DfE in 2018 was £4,600 per pupil in secondary school vs £3,300 per pupil in primary school).¹⁵ Further work should use school-level data on funding, provision and pupil characteristics, and account for variation in number and type of special schools available across local authorities.

Further, we used data on funding rather than actual expenditure. Multiple reports have shown that funding for SEND provision is insufficient and local authorities tend to overspend their budgets, in particular the high needs budget. In 2017/18, over 80% of local authorities overspent against their high-needs budgets.¹ This is driven by increased numbers of pupils attending special schools (due to rising population of pupils, as well as supporting pupils with EHCP for longer, until 25th birthday). Local authorities were forced to use DSG reserves from past years, raising concerns about sustainability of funding in the long run.^{1,7}

We also did not examine non-education funding for SEND support which includes costs of educational psychology teams, central staff that support administration of SEND process, and costs of transport for young people with SEND (the latter has been shown to increase in recent years). Further work examining SEND expenditure and other associated costs is covered in the Section 251 statement, which sets out planned budget and actual expenditure. However, these data did not enable separation of notional SEND funding from the overall school budget, which covers 40% of total SEND funding.¹ Further studies incorporating non-education funding should also consider input from health and social care services, in particular for children with ASD or LD who are likely to receive care from multiple healthcare professionals in primary, secondary, mental health and community settings, and account for pupils' health needs (such as presence of other comorbidities). This could be carried out by linking school census to health and social care data, which is now available in the ECHILD database.³⁰

Lastly, our analyses focussed on pupils with LD and ASD, although exclusion rates were highest for children with other SEND. This was likely driven by pupils with social, emotional and mental health needs, who accounted for 18% of all pupils with SEND and over half of fixed-period exclusions in 2018/19.²⁵ We found that a small proportion of pupils with other SEND attended special schools (6.4% vs 28% of pupils with ASD and 17% with LD). Unlike pupils with ASD or LD, however, they were more likely to be excluded from special than mainstream schools. This highlights that pupils with SEND have a broad and diverse range of needs and the optimal support varies between children with different types of need. Further research focusing on outcomes for pupils with other types of SEND is needed.

Implications

Identifying data on total funding on SEND is challenging, as funding comes from multiple sources. We collated information about total SEND funding from a number of UK government published datasets in a dashboard available on the [CPRU website](https://www.cpru.ac.uk/). The dashboard will therefore be a valuable resource for future research. Our work highlights that transparency

of funding needs to be improved to support monitoring against service provision and outcomes. Data on funding per local authority should be published in a regularly updated dashboard, along with appropriate counts of pupils resident in each local authority to enable derivation of per-pupil funding.

Our findings suggest that higher levels of basic per-pupil allowance, notional SEND funding and high-needs funding are associated with lower school exclusion rates, in particular in pupils with SEND attending mainstream schools. With more funding, mainstream schools may be able to create a more inclusive environment and better integrate pupils with SEND, leading to fewer exclusions. Alternatively, these findings could reflect more pupils with SEND being placed in special schools, which would lead to higher spending from the high-needs budget and more funding available in the schools budget. Consistently with previous reports, we found that the proportion of pupils in special schools increased over time. These increases have been attributed to increases in the pupil population, parents being better informed about available options for support, and more children with complex health needs surviving into adulthood.¹ They may also partially reflect a change in provision due to funding pressures, as some mainstream schools may struggle to meet the expectation to cover the first £6,000 of cost of SEND support from schools budget, making them more reluctant to admit pupils with SEND.^{1,7} Further, mainstream schools are not incentivised to be inclusive, with league tables creating perverse incentives to exclude or off-roll children considered to be “disruptive”.¹⁶ This is indicated by a peak in exclusion rates at age 14. Local authorities are therefore under increasing pressure to provide placements in special schools and alternative provision (often requiring additional places in independent schools to meet the demand, raising the costs for high-needs provision).¹

Our ecological analyses were too limited to determine why more pupils with SEND attend special schools. Further work using pupil-level and school-level data (including information about resourced provision and SEN Units in mainstream schools, and the type of special schools) and school-level data on funding

are needed to explore this further. Such analyses should also adjust for differences in complexity of pupils' health and other needs. This could be carried out using the novel ECHILD database, which links information on pupils and schools from the National Pupil Database, their health from hospital admissions database (Hospital Episode Statistics) and social care.³⁰

We observed smaller effect for notional SEND funding than for basic per pupil allowance. Although notional SEND is the best available estimate of how much of the schools block will be used to support pupils with SEND, our findings suggest that basic per-pupil funding is more important for school exclusion rates. This could be due to inconsistencies in how local authorities calculate their notional SEND budget, as the funding correlates poorly with reported levels of need in schools,^{1,31} and we found that local authorities with higher notional SEND funding had lower levels of basic per-pupil funding.

Consistent with previous findings, we observed higher rates of school exclusions for pupils with SEND than their peers,¹⁴ and school exclusion rates increased over time. Reasons for exclusions are similar for all children (most commonly, persistent disruptive behaviour, physical assault against a pupil, verbal abuse against an adult).¹⁴ School exclusions are more likely for pupils facing multiple vulnerabilities including family adversity, eligibility for free school meals, being looked after.^{17,25} Being excluded from school can have a long term impact on a young persons' life, increasing the risk of self-harm, substance use and delinquency, and being not in education, employment or training after leaving school.^{16,32,33} Preventing school exclusions by creating incentives for schools to be more inclusive could contribute to reducing long-term inequalities experienced by the most vulnerable children.¹⁶

Conclusions

Higher levels of basic per-pupil allowance, notional SEND and high-needs funding were associated with lower school exclusion rates, particularly for children with SEND in mainstream schools. Young people with SEND are disproportionately more likely to experience school exclusions than their peers with no SEND. Appropriate incentives and higher levels of funding could enable mainstream schools to be more inclusive and lead to lower school exclusion rates in pupils with SEND.

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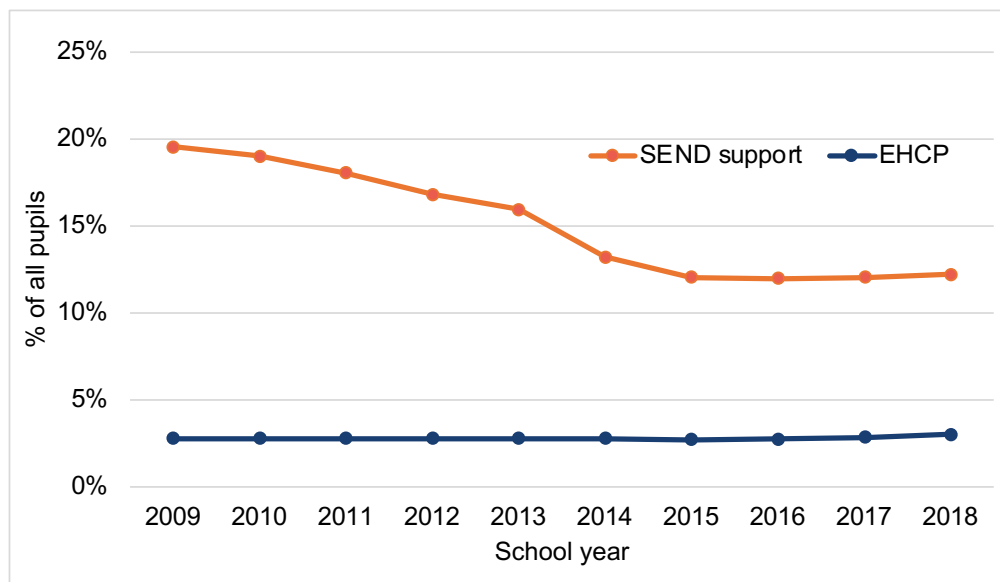
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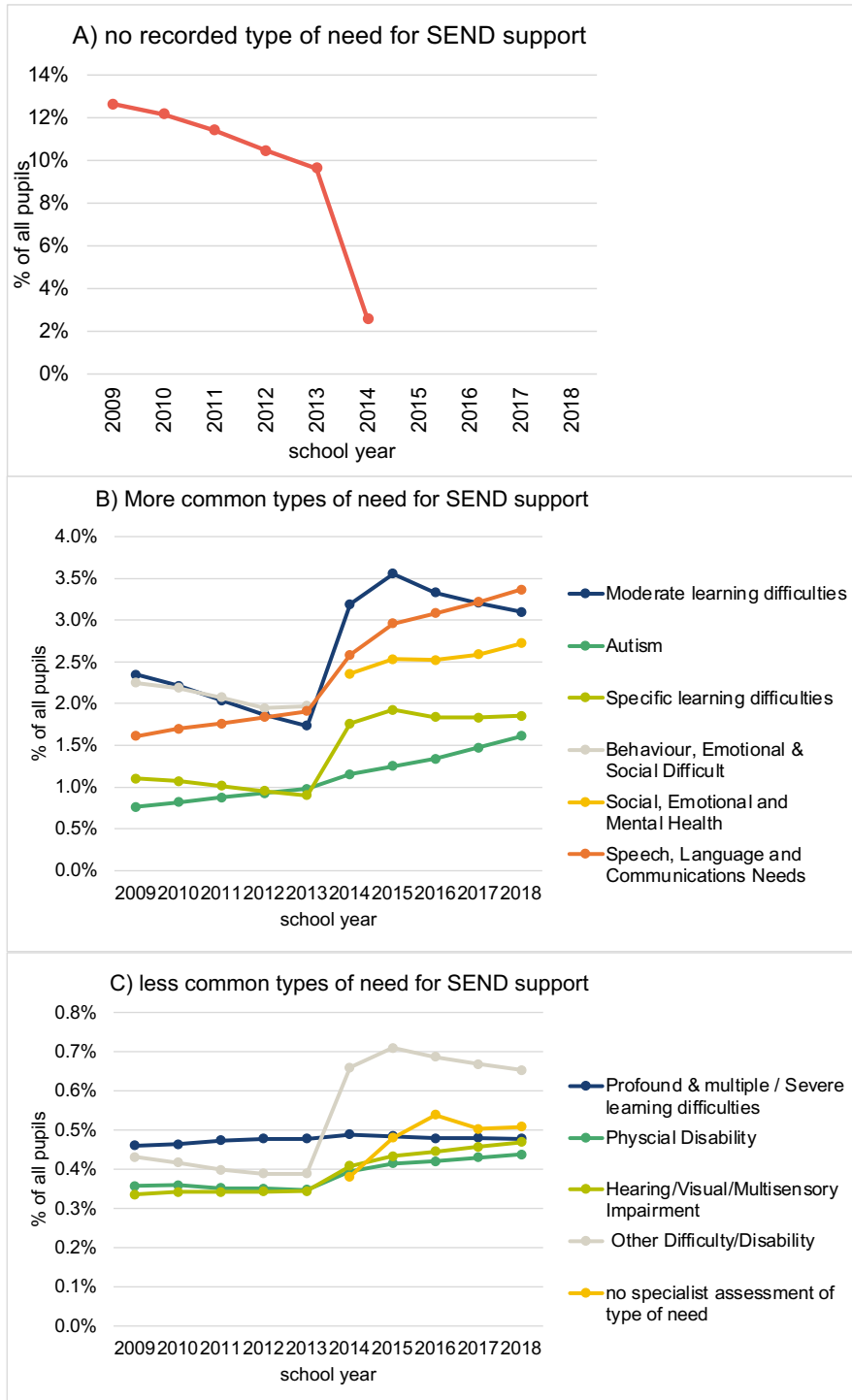
Appendix

Appendix Figure 1 - Proportion of children with lower-level SEND support and EHCPs between 2009-2018



EHCP: Education, Health and Care Plan, SEND: special educational needs or disability

Appendix Figure 2 – Proportion of pupils by primary type of SEND between 2009-2018 (note that the scales of y-axes vary between figures)



Prior to 2014 it was possible for children with "lower level" of SEND support not to have a recorded primary type of SEND need
SEND: special educational needs or disability

Appendix Figure 3 – Distribution of number of pupils and number of fixed-period exclusions by school age

