Education Endowment Foundation

Impact of Covid-19-related school closures in Key Stage 1 on attainment and social skills of pupils in Year 2 and Year 3 in academic year 2021/2022

Report

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NFER
National Foundation for Educational Research

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Contents

About the evaluator

NFER

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Executive summary

About the study

This longitudinal observational study follows a group of the youngest school-aged children during the Covid-19 partial school closures in 2020. The study aims to understand the long-term impact of covid and closures on pupils' attainment and social skills. The youngest children in this study had not completed their reception year before the first set of partial school closures. Similarly, Year 1 children moving into Year 2 missed much of their first year of formal education. The study builds on findings from a previous study (Rose et al., 2021) and tracks the same pupils for a two further years, once in 2021/2022 when they were in Year 2 and Year 3 and will again in 2022/2023 when they are in Year 3 and Year 4. This report covers the results from the first year of the two-year follow up.

This research aims to estimate the 'Covid-19 gap' and the 'disadvantage attainment gap' and track these changes over time to gain an understanding of how quickly pupils' attainment catches up to where it might be expected to be, had the pandemic not happened.

Attainment outcomes of pupils in Year 2 and Year 3 in spring 2022, measured by NFER assessments of reading and maths, are compared with attainment outcomes for a representative sample of pupils assessed in 2019 and 2017 for Year 2 and Year 3, respectively—before the Covid-19 pandemic. Additionally, the study utilises a repeated measures design such that the reading and maths outcomes from pupils in Year 2 and Year 3 are compared with their outcomes from the previous academic year, when the same pupils were assessed as part of the previous study while in Year 1 and Year 2 (Rose et al., 2021). The study is truly longitudinal, rather than cross-sectional. The Covid- and disadvantage-gap results, therefore, reflect outcomes for the same pupils and cannot be attributed to differences in composition of the sample.

A total of 6,029 pupils in Year 2 and Year 3 in 81 schools were followed up. This represented only around half of the 168 schools who participated in the baseline study. Many schools did not take part in this longitudinal study due to continuing Covid-19-related pressures. The analysis was weighted to school-level Key Stage 2 performance to ensure that the retained sample remained representative and comparable to the standardised sample and the general population in terms of attainment. In addition to measuring reading and maths attainment, the study also included a teacher measure of pupils' social skills for a sub-sample of twelve pupils within each year group in each school. Contextual information about school practices and any catch-up activities being undertaken with the pupils were also collected though a survey completed by 67 headteachers.

Findings

Table 1 highlights the key findings from the study relating to the impact of partial school closures on the Covid-19 attainment gap, disadvantage gap, children's social skills, and schools' strategies to support pupils.

Key terminology

- **Covid-19 gap**: The difference between the mean scores of pupils in the 2021/2022 academic year and those of pre-pandemic samples.
- **Disadvantage gap**: The difference between the mean scores of pupils eligible for free school meals and those of their ineligible peers.

Table 1: Summary of study findings

Research question	Finding
To what extent does pupils' attainment in reading and maths recover by spring 2022?	Overall, a Covid-19 gap of around three months less progress remains for Year 2 reading (ES = -0.21) but this has closed for Year 2 maths (ES = -0.05) and Year 3 reading (ES = 0.06) and maths (ES = 0.11). Year 2 pupils have caught up in maths but are behind where they would be expected to be in reading; Year 3 pupils have caught up in both reading and maths compared with pupils before Covid-19. However, the proportion of very low attaining pupils has increased. In Year 2 reading, the proportion rose from 2.6% to 9.1% and for maths, from 2.6% to 5.5% compared with before the pandemic. In Year 3 reading, the proportion rose from 2.5% to 6.5% and for maths, from 2.4% to 3.9% compared with before the pandemic.
To what extent do different groups recover by spring 2022; in particular, how is the gap between disadvantaged children and their peers changing over time?	The disadvantage gap that was shown in 2021 to have widened in this cohort has not widened further, but neither has it narrowed. In terms of progress, in Year 2, the disadvantage gap was around six months for reading and around five months for maths. It was comparatively wide for Year 3: a difference of around nine months for reading and around eight months for maths. Although disadvantaged pupils across both year groups scored significantly higher in reading and maths than in spring 2021, the change in scores was at the same rate as for pupils ineligible for free school meals.
Is attainment in some domains in reading and maths changing or recovering at a different rate from others?	Compared with before the pandemic, Year 2 pupils performed lower on three reading domains assessing retrieval and inference of texts. No differences were observed for maths. Year 3 pupils performed similarly or better than expected across all domains for reading and in all but one domain in maths compared to where they would be expected to be if the pandemic had not happened. FSM pupils (those eligible for free school meals) performed significantly lower than non-FSM pupils for all domains of reading and maths across both year groups. Our earlier findings in 2021 also found children from disadvantaged backgrounds had lower attainment in all curriculum areas in reading and mathematics.
What practices have been adopted and what learning opportunities have been provided by schools to help pupils catch up; and what challenges have been faced by staff?	The vast majority of schools retained in the sample increased wellbeing support and provision for home learning, which most schools felt they were able to support 'quite' or 'very' well. Academic catch-up and additional support for wellbeing and home learning have contributed to increased workload for teachers. In addition, there have been high levels of staff absences. For both maths and reading, the top three strategies implemented for learning recovery were small-group work, staff redeployment, and a revised curriculum.
Are social skills at or behind expectations?	The wellbeing of pupils was an area of increased focus during 2021/2022. The school survey indicated that headteachers continued to be concerned about Year 2 and Year 3 pupils' wellbeing; as a result, subsequent interventions focused on improving the wellbeing of pupils and reducing the challenges faced by classroom staff.

Implications for schools and teachers

The results of the study indicate that the negative impact of school closures on Year 2 pupils' learning is still evident in relation to reading. Teachers and school leaders may benefit from assessing children in their school and, where warranted, focus on improving reading skills for this group who will be moving into Year 3 in 2022/2023. However, in Year 2 maths, the evidence seen in Rose et al. (2021) of the beginning of a recovery is supported by our findings. Year 3 results show strong signs of recovery suggesting that the strategies implemented by teaching staff to support pupils, in a very challenging year, have been effective at reducing the impact of the disruption to learning of pupils in our study. To note, the analysis was weighted to ensure the current sample is comparable to the standardised sample in terms of attainment but there may be unobserved differences between the schools that chose to participate in the study and those that did not. A risk remains that outcomes in schools that were not followed up may be different.

One significant challenge, for both schools and teachers, is the increased proportion of very low attaining pupils who are unable to access the assessments effectively; this is true of both subjects in both year groups despite the positive results seen overall in Year 3. In Year 2 reading, for example, we saw an increase from 2.6% very low attaining pupils before the pandemic to 9.1% in the spring 2022 sample. To put this in context, in a class of 30 pupils, on average, this is the difference between one pupil not reaching the required standards before the pandemic and three after. This represents a substantial challenge for teachers across the country, particularly for teachers in schools in disadvantaged areas with higher proportions of lower performing pupils.

In addition to this, a significant disadvantage gap remains despite both disadvantaged and non-disadvantaged pupils increasing their scores significantly when compared to the 2021 cohort. While this progress is encouraging, it is clear that disadvantaged pupils have been the worst affected by the disruption caused by the pandemic. Specific targeted approaches are needed in order to close this gap quickly as allowing this gap to persist will have a large impact on these pupils educational outcomes and life-chances.

Implications for policymakers

The signs of recovery seen in Year 3 and in maths in Year 2 suggest that, with suitably funded long-term support for schools, learning recovery is possible. However, key areas remain challenging for schools and it is essential that they are adequately funded and supported in order to ensure that these can be addressed. Children moving into Year 3 in 2022/2023 need continued support with reading recovery. The widening of the disadvantage gap evident before the pandemic and the increase in the proportion of very low attaining pupils are likely to prove particularly challenging for teachers and schools. Alongside this, schools are having to deal with increased levels of absence, of both teachers and pupils. This, inevitably, will impact on school budgets and has resource implications in terms of adequate levels of staffing to support recovery strategies. Our evidence suggests that catch-up support seems to be having an effect on pupil attainment, but that the focus should be on very low attaining pupils and closing the disadvantage gap. It is essential that schools are both adequately funded and supported to ensure that the required long-term support can be delivered.

Schools and teachers have dedicated additional resources to ensure that pupils are able to recover from the disruption to their learning. It is important to recognise that the challenges they have faced, and continue to face, add considerably to the workload of teachers and school leaders. Schools report an increase in support for the wellbeing of pupils but it is important that the wellbeing of all staff is also a priority given the key role they play in helping children to recover.

Introduction

Background and policy relevance

In this report, we analyse attainment and social skills of pupils in Year 2 and Year 3 in the 2021/2022 academic year; the youngest school-age children affected by the pandemic. This longitudinal study, with a baseline established during the pandemic and comparisons to pre-pandemic standardisation samples, aims to understand how quickly pupils catch up to the level where they might be expected to be had the pandemic not happened. The pupils in the sample were in reception and Year 1 when schools in England were closed to most children from March until June 2020 and in Year 1 and Year 2 when schools were closed again to most pupils from January until March 2021.

As a result of the disruption caused by the pandemic, pupils' opportunities for formal learning and social interaction were reduced for a significant part of two school years. NFER was appointed by the EEF to conduct research on the impact of Covid-19 school closures and subsequent support strategies on attainment and socio-emotional wellbeing in Key Stage 1 during 2020/2021 (Rose et al., 2021). This baseline study found that the disruption to Key Stage 1 pupils' education during the pandemic resulted in significantly lower achievement in reading and maths compared with pupils before the pandemic. In addition, the partial closures of schools led to an increase in the disadvantage gap. However, there was some evidence of the first steps of recovery in maths towards the end of 2020/2021 (Rose et al., 2021).

Review and summary of evidence from studies on the impact of Covid-19 on pupil attainment and the disadvantage gap indicate that all age groups had lower attainment due to the disruption to education and there has been a consistent widening of the disadvantage gap. However, the challenges differ for different age groups (Twist et al., 2022; EEF, 2022). Focusing on primary-aged pupils, as discussed above, for Key Stage 1 pupils' reading attainment was most affected compared with attainment before the pandemic (Rose et al., 2021; Blainey and Hannay, 2021), with the gap widest for Year 1 pupils (Blainey and Hannay, 2021); maths attainment, however, was most affected in Key Stage 2 pupils, compared with attainment before the pandemic (Blainey and Hannay, 2021; Renaissance Learning and Education Policy Institute, 2021), with evidence of a decrease in writing attainment (Christodoulou, 2021). The Key Stage 2 headline attainment results from 2021/2022 show a persistence of these findings from 2020/2021 and that attainment in reading, writing, and maths decreased compared with 2019, with a one percentage point fall in reading compared with falls of nine points in writing and eight points in maths (DfE, 2022). The pandemic has affected disadvantaged pupils disproportionately: the disadvantage gap—wide before the pandemic—has widened further (Rose et al., 2021; Blainey and Hannay, 2021). Weidmann et al. (2021) also found a widening of the disadvantage gap in maths but not reading in Key Stage 2. There was some evidence from the baseline study (Rose et al., 2021) that the disadvantage gap reduced between spring and summer 2021.

The 2021/2022 academic year has continued to present challenges for schools with high levels of pupil and staff absences persisting (Morton, 2022) indicating that 2021/2022 remains unlike the pre-pandemic school experience for children in education.

The children involved in this longitudinal study missed an important time at school when they would have learned about how school works and a stage when phonics is a focus of learning (as part of the Early Years Foundation Stage Framework and Key Stage 1 national curriculum) and covered rapidly; and they have continued to have their education disrupted due to sickness. Their gaps in attainment compared with pupils before the pandemic, the increase in the disadvantage gap, and concern about the impact of the pandemic on children's wellbeing highlight the importance of continuing to track the pupils involved in this study so that interventions and resources based on the learning they have missed are appropriately targeted as they move through school.

Research objectives

The longitudinal study is based on a combination of quantitative research looking at pupil attainment derived from NFER assessments completed in the spring term 2022 supplemented with evidence of school practices (collected through a headteacher survey) and teachers' perspectives of pupils' social skills (teacher-scored measure of a subsample of pupils). The same pupils will be assessed again in spring 2023 when they are in Year 3 and Year 4.

The focus of this report is the measurement of two attainment gaps:

- The ‘Covid-19 gap’: the extent of the impact on pupils’ attainment in reading and maths by partial school closures. This is measured by the difference between pupil performance in spring 2022 compared with the performance of the pre-Covid-19 standardisation sample of the equivalent year group.

- The ‘disadvantage gap’: the extent to which FSM pupils show lower reading and maths performance compared to their non-FSM peers. This is measured by the difference in attainment between pupils who are eligible those ineligible for free school meals (FSM). The analysis in this report compares the gap in spring 2022 with spring 2021.

This study provides a deeper understanding of the long-term impact of school closures on pupil attainment and the support this cohort needs.

Research questions

The report seeks to answer the following research questions (RQs).

1. To what extent does pupils’ attainment in reading and maths recover by spring 2022?
2. To what extent do different groups recover by spring 2022; in particular, how is the gap between disadvantaged children and their peers changing over time?
3. Is attainment in some domains in reading and maths changing or recovering at a different rate from others?
4. What practices have been adopted and what learning opportunities have been provided by schools to help pupils catch up; and what challenges have been faced by staff?
5. Are social skills at or behind expectations, and to what extent do they improve between subsequent academic years?

In this report, we provide analysis to answer these research questions with data collected in spring 2022, when pupils were in Year 2 and Year 3.

Ethics and data protection

This research project received ethical approval during NFER’s standard project start-up procedures and from the Code of Practice group. The study was conducted following NFER’s data protection principles. NFER was responsible for all communications with schools, data collection, and analysis of the data. Further details are in Appendix A.

Methods

Study design

This is an observational study that follows a sample of pupils who have been affected by Covid-19 partial school closures. It compares their reading and maths attainment outcomes with a representative sample assessed before Covid-19 over three academic years between 2020/21 to 2022/23, as well as looking at the change over this time period. This report focuses on the assessment data from the first two years.

NFER assessment data for reading and maths was collected for Year 1 and Year 2 pupils in spring 2021 and for pupils in Year 2 and Year 3 in the same schools in spring 2022. These were compared against a standardisation sample from before the Covid-19 pandemic to estimate the 'Covid-19 gap'. A standardisation sample is a large group of individuals that is representative of the entire population of potential test-takers. The performance of this group on the test being standardised is used to estimate the average performance level and its distribution. Any difference between the scores in 2021/2022 and the standardisation sample for that test is the Covid-19 gap and will be referred to as such throughout the report. The standardisations were carried out in 2019 for Year 2 spring assessments and 2017 for Year 3 spring assessments.[1] The standardisation sample was restricted to state schools; independent schools were removed. More information about the tests used (including their duration and number of marks available) can be found in Appendix C.

Further analysis compared the scores of pupils eligible for FSM and those ineligible (non-FSM pupils) to determine whether the disadvantage gap between these two groups narrowed, remained stable, or increased. We compared the gap in 2020/2021 and in 2021/2022. Our estimates of the disadvantage gap for each assessment are contextualised with a best estimate for before the pandemic (as FSM identifiers are not available for the standardisation sample). We can then estimate the effect of the pandemic on the size of this gap.

Additionally, a repeated measures analysis was undertaken to identify and quantify how the Covid-19 and disadvantage gaps changed between spring 2021 and spring 2022. A significant reduction or increase between 2021 and 2022 can be taken to indicate a change in the Covid-19 gap. A significant reduction or increase in the difference between the mean scores of FSM pupils and non-FSM pupils between terms indicates a significant reduction or increase in the disadvantage gap.

All cross-sectional analyses report both standardised scores and raw scores. Standardised scores are reported because their original means of 100 and standard deviations of 15 points make them more interpretable and comparable across year and subject and because they are more familiar for educators. More importantly, standardised scores allow for the reporting of the number of pupils unable to access the assessment (those receiving a score of 69). The proportion of pupils unable to access the assessment is an important indicator of differences between samples. Nevertheless, since standardised scores restrict the score range from a minimum of 69 to a maximum of 141 points for the lowest and highest achievers, there is a risk that this restriction can distort group mean comparisons, particularly when the proportion of students below or above the thresholds of 69 and 141 differ between the groups being compared. In a deviation from the original study plan, to address the potential effect of censoring, all statistical significance tests for the Covid-19 and disadvantage gaps are generated using raw test scores. Raw test scores are simple summations of the number of questions responded correctly. Consequently, when assessing, for example, whether the 2022 Year 2 maths pupil sample differed significantly from the 2019 benchmarking sample used to standardise the test (the Covid-19 gap), the statistical significance is based on the comparison of the mean raw scores for these two samples. Moreover, the significance of the t-tests for the raw scores incorporates the effect of school clustering, in a deviation from the original study plan. It should be noted that the method used in the standardisation means that comparisons are with estimated raw scores for each pupil in the standardisation rather than their actual score for the assessment. Mean group comparisons that do not incorporate the clustering effect that result from sampling schools versus sampling pupils directly overestimate the p-values of comparisons when intracluster correlations are high. The significance and confidence intervals of raw scores is obtained using complex

[1] As the NFER suite of tests is large, it is not possible to standardise all of the tests at the same time. It is for this reason that the Year 2 and Year 3 NFER assessments were standardised in different years.

survey analysis methodology, which uses inverse-probability weighting and design-based standard errors (Lumley, 2004).

Whereas cross-sectional analyses report both standardised and raw scores, longitudinal analyses report only standardised scores. Since the psychometric properties of the assessments are different, raw scores cannot be used. Consequently, there is no way of avoiding the potential effects of standardised score censoring when comparing the performance of pupils across time. Nevertheless, all repeated measures analyses were produced using multilevel modelling regressions: this takes into account the effect of school clustering and thus the significance of regression coefficients is robust against the effect of sampling schools instead of sampling students directly.

Besides assessments measuring reading and maths attainment, teachers completed a measure of social skills development for a randomly selected subsample of pupils within each school. The measure used was different from that used in 2021 as the original measure was not suitable for use with older children (see the section on RQ 5: Are social skills at or behind expectations?). Subsequently, comparisons could not be made between the social skills development of pupils in 2022 and 2021 but could be made with the pre-pandemic validation sample of the measure.

Additional contextual information was also collected to identify school practices and any catch-up activities being undertaken with the pupils. The study design is described in Table 2 below.

Table 2: Study design

Design		Longitudinal observational study
Unit of analysis		Schools, pupils, and timepoint
Number of units included in analysis		81 schools and all pupils in Years 2 and 3 in 2021/2022; 6,029 pupils and 2 timepoints (spring 2021 and spring 2022)
Primary outcome 1	Variable	Maths attainment
	Measure (instrument, scale, source)	NFER standardised test scores, 69–141
Primary outcome 2	Variable	Reading attainment
	Measure (instrument, scale, source)	NFER standardised test scores, 69–141
Secondary outcome	Variable	Social skills and wellbeing
	Measure (instrument, scale, source)	Peer Social Maturity Scale (PSMAT), 1–7 for each scale

Participants

All 168 schools that participated in the baseline research into the impact of school closures in 2020/2021 were invited to take part in this study in October 2021. The 168 schools were a self-selecting sample from 1,775 schools invited to participate in the baseline study. The invited schools were state schools in England that were NFER test customers. School engagement was very good during the 2020/2021 academic year; 155 of the 168 schools that took part in the autumn 2020 data collection were involved in the summer 2021 data collection. The autumn term 2021 was very challenging for schools as they faced high staff and pupil absences. A total of 81 schools agreed to take part in the study and submitted attainment data. To note, the analysis compared only those schools involved in 2021 and 2022, ensuring that the smaller sample of schools involved in the longitudinal analysis (compared with the baseline assessment) did not have an impact on the representativeness. We included all pupils in the schools in the analyses, even if they had left or were new to the school. There is not good national data on pupil mobility, but it is because mobility may be associated with particular pupil characteristics that we included these pupils. The participants were all pupils in Year 2 (six to seven years old) and Year 3 (seven to eight) in participating schools. Further details about the sample can be found in the section on Pupil and School Characteristics.

There were some changes to the experience for participating schools compared with the 2020/2021 year to make the study more cost-effective: teachers were asked to mark and upload test data to the NFER progress tool. In the

baseline study, researchers at NFER marked the assessments but we decided that the change to teacher marking was not a big risk to the reliability; the NFER mark schemes are designed to be used by teachers. We provided a webinar to support teachers with the marking and provided a helpdesk in case of any queries. We scheduled reminder strategies where completed assessments were not forthcoming and offered additional support if schools needed it, such as marking assessments or inputting their data to the progress tool. Additionally, the following factors were employed to incentivise participation:

- The provision of free spring assessments to schools as a pre-incentive;
- a discount for future NFER tests if schools successfully uploaded item-level data; and
- summary results and recommendations for teaching practice based on schools' item-level domain analysis disseminated through a school feedback leaflet.

This is a different incentive package from the baseline study, which provided diagnostic information, and required NFER to mark the assessments in order to do that. Part of the rationale for the package for schools in 2020/2021 was so that any additional burdens on schools were minimised. The additional burden in 2021/2022 of marking and providing their data may have contributed to schools being unable to participate, however, all schools in the sample had been approached as NFER test users and so had previous experience of marking the tests. The recruitment for the study occurred during the autumn term of 2021 when schools were facing high staff and pupil absences and there was uncertainty about further school closures. The most common reasons for not participating were capacity and Covid-19-related reasons (nine schools), but it was incredibly difficult to engage with schools and a further 56 schools provided no reason for their decision not to participate.

Participating schools received sets of NFER assessments (maths and reading) to be used during the second half of the spring term. Schools were asked to administer the assessments to all pupils in each year within the testing window. Where a pupil missed a paper through absence they were not included.

Measures

Outcome measures

The main outcome measures were attainment data from NFER tests in reading and maths for individual pupils.[2] Test data was collected during the second half of the spring term for Year 2 and Year 3 pupils in 2022 (2 March to 8 April 2022). Schools were provided with spring Year 2 and spring Year 3 assessment papers from the NFER Key Stage 1 and Key Stage 2 suite of assessments. All assessments were marked by teachers in their schools using the mark schemes provided. All of these mark schemes were designed, alongside the assessments, specifically for use by teachers. In two instances, NFER was asked to assist schools with their marking. NFER marked all assessments for one school and the Year 2 assessments for a second school. This is a change in procedure from the original Covid-19 baseline study (Rose et al., 2021) where NFER marked and coded all responses. The assessments are designed to be marked by teachers and, to provide additional support on how to apply mark schemes, we ran a webinar in advance of marking and a helpdesk for any queries.

The NFER assessments have a strong alignment to the English national curriculum in reading and maths and have robust technical properties,[3] including good reliability (for example, the Year 2 spring tests all have Cronbach's alphas between 0.86 and 0.91 and the Year 3 spring tests between 0.83 and 0.92). Outcomes include standardised scores and age standardised scores (that is, scores based on large, nationally representative samples). Standardised scores compare a pupil's performance to that of a nationally representative sample of pupils from the relevant year group, who will have all taken the same assessment at the same time of year. Raw scores on NFER assessments were transformed to produce standardised scores ranging from 69 to 141 using look-up tables from the pre-pandemic

[2] Information on NFER assessments can be found here for KS1 assessments (Year 2): **https://www.nfer.ac.uk/for-schools/products-services/nfer-tests/key-stage-1-assessments/** and here for KS2 assessments (Year 3) **https://www.nfer.ac.uk/for-schools/products-services/nfer-tests/key-stage-2-assessments/**

[3] Technical manuals, which include steps taken to ensure the standardisation sample was nationally representative, can be found here: https://www.nfer.ac.uk/for-schools/products-services/nfer-tests/technical-manuals/

standardisation. NFER assessments were standardised so that the average, nationally standardised score is 100 and the standard deviation is 15. This means that a pupil scoring 100 on NFER assessments is obtaining the national average score. [4]

Each NFER assessment used in our study was previously standardised on a representative sample of schools (in terms of Key Stage 2 overall performance, primary school type, school governance, urban/rural classification, and region for NFER tests) following the introduction of the new (2014) national curriculum and at the same time of the academic year as the study assessments were scheduled. This was 2019 for Year 2 spring assessments and 2017 for Year 3 spring assessments

These historical reference points allowed us to assess the Covid-19 gap by comparing the performance of pupils with the performance of other pupils in previous standardisation years. However, since no independent schools were included in this study's sample, the historical reference point was recalculated excluding independent schools, which resulted in a slight reduction of the expected mean of 100. Furthermore, similar comparisons for the disadvantage gap in reference to previous standardisation years was not possible as no data was available on the performance of FSM and non-FSM pupils in those earlier standardisation years. Nevertheless, attainment of FSM and non-FSM pupils was compared with spring 2021 to analyse the change in the disadvantage gap.

Non-attainment outcomes—survey of social skills development

Alongside attainment outcomes, pupils' social skills and level of wellbeing are important to capture. This is particularly relevant for pupils in Key Stage 1 during partial school closures as they may have missed opportunities for communication, social skills, and emotional development: school staff did report challenges with pupil wellbeing over the course of 2020/2021 (Rose et al., 2021; Lucas et al., 2020; Nelson et al., 2021).

In the 2020/2021 baseline study (Rose et al., 2021), the Child Self-Regulation and Behaviour Questionnaire (CSBQ: Howard and Melhuish, 2017) was used to measure the social skills of pupils. The CSBQ was designed for use with children aged three to six years, which is younger than the cohort included in the present study. A number of alternatives were considered, with the criteria that the scale should not be burdensome to complete, not require training to complete, be completed by an adult rather than self-report (due to the age of the pupils involved), should not collect special category data (which has implications for gaining consent), have an appropriate granular scale, and should be validated with an appropriately aged cohort for this study.

Peterson et al.'s (2007) Peer Social Maturity Scale (PSMAT) was selected. The PSMAT, like the CSBQ, included items examining group entry, interactive social play, self-assertion, tolerance, leadership, social sensitivity, and overall skill maturity. However, unlike the CSBQ, the PSMAT did not include items covering attention or focus, interactions with relevant adults, independence, persistence, and emotional regulation. It was decided therefore to supplement the seven items of the PSMAT with a further seven bespoke items written by NFER. Table 3 shows the PSMAT items and the supplementary items and includes the constructs that the new items were designed to measure.

Table 3: Items of the PSMAT and supplementary items

PSMAT items
The child's skill and willingness to make social overtures, join groups, or welcome others into own activities.
The child's skill at asserting him/herself appropriately to express opinions or convince peers.
The child's leadership skills with peers.
The maturity of the child's everyday modes of playing sociably with peers.
The child's skills in coping with peers who frustrate or interfere with the group's goals and activities.
The child's ability to understand the needs of peers who differ from the norm.
The overall maturity of the child's social skills.

[4] In order to make the standardisation sample comparable to the study sample, the standardisation sample was restricted to state schools and thus it slightly differed from 100.

Supplementary items	Related construct
The child's ability to focus on an activity or task.	Attention/focus
The child's ability to deal with minor conflict and disappointment.	Emotional regulation
The child's ability to initiate and maintain appropriate interactions with relevant adults in school.	Interactions with relevant adults
The child's ability to undertake appropriate tasks independently.	Independence
The child's willingness to persist with a task or activity after a setback.	Persistence
The child's ability to make choices for themselves.	Independence
The child's ability to manage their own feelings.	Emotional regulation

The validation of the PSMAT (Fink et al., 2013) is two-fold: one study based on a sample of 145 pupils in Australia and another longitudinal study based on 114 pupils in Australia starting in kindergarten and tracking to Grade 2. Details on the validation, including age of pupils, along with the results for Year 2 and Year 3 pupils in this study and the performance of the bespoke items can be found in the section RQ 5: Are Social Skills at or Behind Expectations?.

As with the baseline study, to minimise burden, we selected a subsample of 12 pupils per year group for whom teachers completed the questionnaire. The subsample was randomly selected by NFER from the full pupil list.

Survey data—contextual factors

In addition to attainment outcomes and social skills outcomes, we collected data about recovery approaches, support, and challenges.

The school-level survey (see Appendix E) was sent to headteachers for completion during March 2022. The survey was different from the one used in the baseline study, though it had similar themes. The results from it were intended to be used cross-sectionally and it collected information about:

- remote learning, including how schools are supporting vulnerable children not in school or those missing large periods of school-based learning;
- new practices following partial school closures (divided into):
    - enforced practices and their impact; and
    - practices schools have chosen to retain because they have found they are a better way of working;
- challenges for staff, for instance, coping with staff absences and any additional CPD requirements as a result of the pandemic;
- social and emotional support for pupils;
- how schools are approaching tutoring;
- an overview of catch-up strategies and recovery actions;
- parental engagement and whether it has been sustained (both in terms of capability and willingness); and
- an open question to allow headteachers to tell us about anything additional happening in their school which they think is relevant.

The online survey software Questback was used for developing and hosting the school-level survey.

Additional data collections

Pupil background data

Schools were asked to provide basic pupil background data, which included name, DOB, UPN, gender, year group, and FSM status.

The baseline study asked schools to provide the FSM status of the pupils in the January census before lockdown (January 2020) as well as at each academic term during 2020/2021. We therefore have a pre-pandemic FSM status, FSM spring 2021, and FSM spring 2022. The aim of the planned analysis on the change in the disadvantage gap over the 2021/2022 academic year was to identify the impact of school closure on those pupils who were considered disadvantaged prior to school closure. However, the analysis undertaken at each term considered FSM status as it was in that specific term.

School background data

School background characteristics such as the proportion of children eligible for FSM, the proportion of pupils meeting the expected standard in reading, writing, and maths at Key Stage 2 in 2019, the proportion of pupils with special educational needs (SEND), the proportion of pupils with English as an additional language (EAL), the academy status of the school, whether the school is in an urban or rural area, and the geographical region in which a school is located were obtained from the DfE website.

Sample size

To estimate the power of the study to detect standardised mean difference effect sizes, a power analysis by simulation was undertaken (Arnold et al., 2011). Power was calculated separately for the Covid-19 gap and the disadvantage gap for all combinations of 80 to 150 schools (after attrition) and effect sizes between 0.01 and 0.3 in intervals of 0.01 (that is, 0.01, 0.02, 0.03 … 0.28, 0.29, 0.3). For each of the N/effect size combinations, 1,000 data sets were simulated in the proposed longitudinal design of three timepoints (baseline, plus year 1 and year 2 of the current project) and 38 pupils per school. The ICC was taken to be 0.12. The number of pupils per school and the ICC were calculated from a preliminary analysis of the baseline (Rose et al., 2021) data as this was considered to most closely represent the future data that would be collected. Setting the sum of the school-level and residual variances to be 1 meant that the school-level and residual variances used to simulate the variability in the data were the ICC and 1-ICC respectively. This also ensured that the coefficients of models were on the effect size scale.

For the Covid-19 gap, a difference of the desired size was induced at one of the post-baseline timepoints. A linear mixed effects model was fitted to each of the simulated datasets with school as the random effect and timepoint as the fixed effect. All between-timepoint contrasts were tested for significance at a 5% significance threshold. For the disadvantage gap, 16% of simulated pupils were labelled as FSM and the desired effect size was induced in the FSM pupils at one of the timepoints. A linear mixed effects model was fitted to each of the simulated datasets with school as the random effect and timepoint, FSM, and their interaction as the fixed effects. The difference between FSM and non-FSM pupils was compared between all pairwise combinations of timepoints and tested for significance at a 5% significance threshold. Although the national FSM percentage in the sample is slightly higher, our previous study indicated an FSM of 19%. Moreover, for simulation purposes, assuming a slightly smaller FSM percentage is more conservative for purposes of statistical power calculation.

For both the Covid-19 gap and the disadvantage gap, the power for a given combination of number of schools and effect size was calculated as the proportion of the 1,000 simulated datasets where all comparisons involving the timepoint where the effect was induced were declared as significant. The minimal detectable effect size (MDES) for a particular number of schools was the smallest effect size where the power was greater than 80%.

The simulations indicated that, even with 80 schools, the project would allow the detection of educationally relevant changes in the Covid-19 gap—the MDES for the Covid-19 gap is smaller than that seen in the previous study. But we are unlikely to detect the *changes* we expect to see in the disadvantage gap, not because they were comparably smaller, but due to the imbalance between FSM and non-FSM pupils and thus the loss in effective sample size. To note, the baseline study saw changes over a four- to six-month period, while this study will look at changes over 12 months.

At the analysis stage, for the repeated measures analysis looking at the change in attainment over 2021/2022, an overall number of 81 schools and 6,029 pupils were analysed. Such figures varied by both subject (maths or reading) and academic term (autumn, spring, or summer). In terms of the analysis looking at the social and self-regulation skills of pupils, 1,540 pupils from 74 schools were analysed. These 74 schools were those that had pupils sitting assessments at at least one timepoint. Power calculations were limited to the attainment outcomes.

Of the 81 schools that provided assessment data, 67 headteachers completed the school questionnaire (83% of the sample).

Table 4: Minimum Detectable Effect Size for the Covid-19 gap analysis at protocol stage (anticipated number of schools, number of pupils, and ICC) and analysis stage (actual number of schools, number of pupils, and ICC)

	Protocol	Analysis, reading	Analysis, maths
MDES	0.08	0.09	0.09
Number of schools	80	75	75
Average number of pupils per school	38	34.7	34.6
ICC	0.12	0.13	0.13

Sample representativeness

When estimating national population parameters of attainment, such as the Covid-19 gap, representativeness of the study sample and standardisation sample is critical so that outcomes can be generalised. The longitudinal sample comprises 81 schools which took part in the Covid-19 baseline study. In the 81 schools which took part in the 2021 and 2022 waves of the project, approximately 14% of pupils were FSM-eligible in 2021/2022. Given that FSM eligibility changed after the pandemic, we decided to use pre-closure school FSM percentages to assess representativeness. Representativeness of the sample is less critical for the attainment gap between disadvantaged and non-disadvantaged pupils as it is a relative measure, and we are interested in seeing how this gap changes between the two timepoints of assessment.

It is important to check the representativeness of our achieved sample of schools for Key Stage 2 performance,[5] in particular, for our estimation of the Covid-19 gap. Other school-level variables were also investigated, including characteristics such as school type, geographical location, and academy status. If and when required, we weighted the results by Key Stage 2 performance, which is discussed in the Statistical Analysis section below.

Statistical analysis

Weighting

Particular attention was given to ensuring our sample was as close to the standardisation sample, which is nationally representative, and accounting for that, particularly for the analysis which estimated the Covid-19 gap. We wanted to ensure the sample of participating schools was representative based on school-level performance at Key Stage 2 in 2019. The variable 'KS2rwmExp_19'—the proportion of pupils meeting the expected standard in reading, writing, and maths available from the DFE website[6]—was used to determine the representativeness of the sample of the population of primary schools.[7] To address the issue of analysis being undertaken at pupil-level but information on the sample being at school-level, the analysis to determine representativeness was also weighted by the number of pupils in the school. Therefore, for Year 2, the population was weighted by the number of pupils on roll in Year 2 in the spring census of 2019 and the schools in our sample were weighted by the number of pupils who took the test within each school. While not producing analysis ensuring the sample of pupils is representative of pupil population characteristics, this ensured the sample did not introduce bias because of too many pupils from schools with particular characteristics, for example, too many pupils from high-performing schools. This procedure was replicated for the Year 3 assessments.

The Covid-19 gap (RQ1)

We estimated the Covid-19 gap (RQ1) counterfactual using the standardisation sample for the spring Year 2 and Year 3 assessments. By taking the weighted mean raw score for our sample along with its standard error, we determined

[5] Key Stage 2 was used here as the Department for Education does not release school-level Key Stage 1 data. Key Stage 2, therefore, remains the best way to differentiate schools by the performance of pupils in these schools.
[6] https://www.compare-school-performance.service.gov.uk/download-data
[7] The KS2 variable has been put into quintiles of school performance with a further category that identifies schools with missing data.

whether the sample mean was different from the mean of the standardisation sample having excluded independent schools. Independent sample t-tests accounting for school-level clustering effects were run to compare the mean of the sample at each timepoint for each subject to the corresponding mean in previous standardisation years. T-tests were carried out to calculate the statistical significance, and the effect size estimates were converted to additional months' progress using the EEF toolkit.[8]

The disadvantage gap (RQ2)

We calculated the disadvantage gap by comparing the mean raw scores for FSM pupils with their non-FSM peers. T-tests were carried out to calculate the statistical significance and the effect size estimates were converted into months of progress using the EEF toolkit.[8]

The Covid-19 and disadvantage gap over time (RQ1 and RQ2)

In order to monitor change in both the Covid-19 and disadvantage gaps between 2020/2021 and 2021/2022 we used a multilevel structure to the models and a repeated-measures design. The models had three levels: time, pupil, and schools, and these were run separately for each year group (Year 2 or Year 3) and subject (reading or maths), resulting in four individual models. These were run to identify how any Covid-19 gap at the first timepoint changed between spring 2021 and spring 2022. The outcome variable was the reading or maths standardised score. The predictors entered into the model were *time* to identify whether there was a significant difference in the change in standardised score between the spring 2021 baseline and spring 2022 (indicated with values 0 and 1, respectively) and *FSM status 2020*. An interaction between time and FSM status would indicate whether the disadvantaged pupils are changing at a different rate than their non-disadvantaged peers.

The repeated measures analysis used the FSM status of a pupil prior to school closures (FSM2020) as the FSM eligibility indicator variable. The analysis was also weighted by pupil headcount at school and Key Stage 2 performance for the population and sample at the start of the study in autumn 2020. The percentage of FSM pupils, gender, percentage EAL pupils, percentage of SEND pupils, academy status, and the geographical region of the school were included as covariates in the disadvantage gap models. Percentage of FSM pupils, academy status, and the geographical region of the school were included as covariates in the Covid-19 gap models. The 2021 means were recalculated to include only those schools that took part in 2022. Therefore, changes to the sample composition are not a limitation to the findings.

All analyses were run in R (R Core Team, 2021) and using the lme4 package (Bates et al., 2015).

Analysis of reading and maths domain performance (RQ3)

The reading and maths items are grouped within particular domains for each subject. Each domain contains a number of individual items that can provide greater information on a particular area of learning.

Analysis looked to identify differences in performance between domains and whether pupil factors (that is, gender and FSM eligibility) were associated with variation in domain scores. The analysis compared domain performance of the standardisation sample and the baseline in spring 2021 with spring 2022 to determine whether particular domains had seen a bigger change than other domains. The significance tests used to identify differences in performance between domains took into account the clustering effect resulting from sampling schools.

Analysis of contextual data (RQ4)

Analysis of contextual data from the headteacher survey was descriptive in order to give an indication of what schools focused on in the 2021/2022 academic year.

[8] https://educationendowmentfoundation.org.uk/evidence-summaries/about-the-toolkits/attainment/

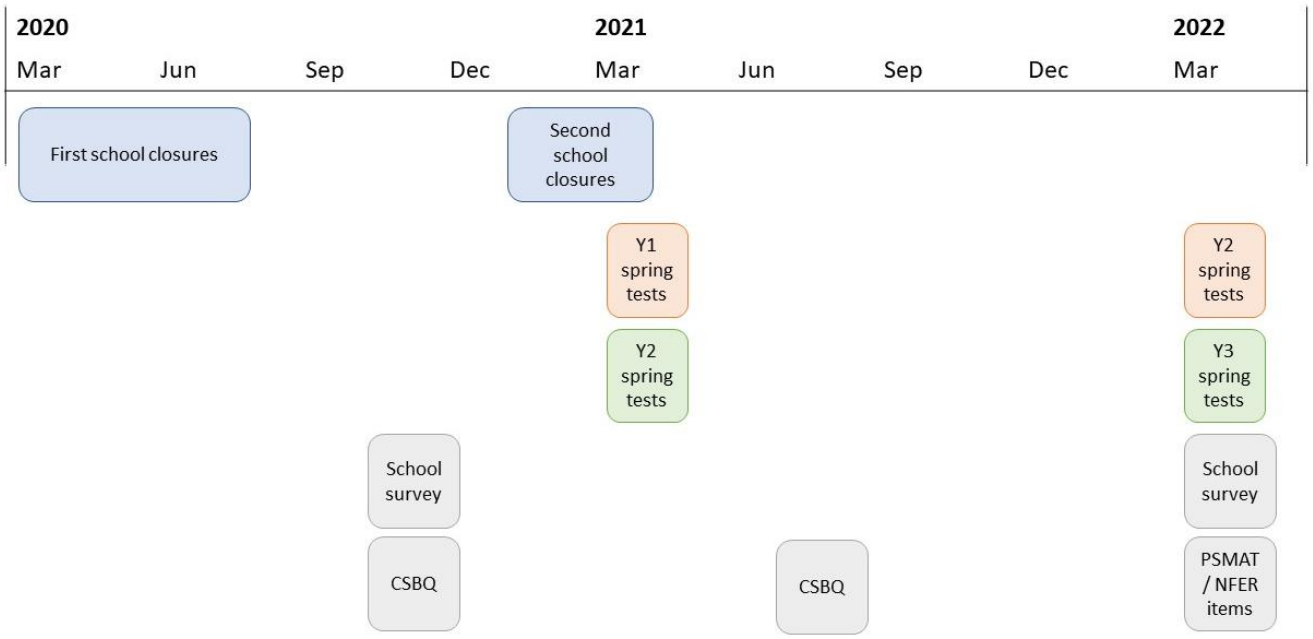
Analysis of social skills development (RQ5)

We report descriptive information on social skills development for the Peer Social Maturity Scale (PSMAT) and additional bespoke items from a subsample of approximately 12 pupils from Year 2 and 12 pupils from Year 3 in each school, and report by pupils eligible for FSM and those ineligible. FSM eligibility is considered at January 2020 (before school closures). The results were compared to the results from the original measure validation. The bespoke items were assessed for reliability using Cronbach's alpha using the absolute cut-off score of at least 0.7 ('acceptable'; Bland and Altman, 1997). The mean of the total score for these items was also reported. The means of the total score were sufficiently reliable that they will form a baseline which can be referred back to when the pupils progress to Years 3 and 4, to track social skills and wellbeing recovery and development.

Timeline

The figure below shows the timeline of events for this study.

Figure 1: Timeline of school closures and data collections for analysis in this longitudinal study



Note that during the partial school closures, schools were open to key workers and vulnerable children.

Research findings

Participant flow and attrition

The recruitment to the longitudinal study took place during a very challenging time for schools. The 168 schools which had participated in the baseline study were approached in September 2021. Schools were facing very high rates of staff and pupil absence and were providing online learning, and many felt unable to commit to the study. For Year 2, we had an attrition rate of 51.0% for maths from spring 2021 (when in Year 1) to spring 2022, and an attrition rate of 48.9% for reading. For Year 3, we had an attrition rate of 50.6% for maths from spring 2021 (when in Year 2) to spring 2022, and an attrition rate of 51.4% for reading. As noted previously, the analysis was weighted to Key Stage 2 attainment and only compared schools involved in 2021 and 2022 ensuring that the smaller sample of schools involved in the longitudinal analysis (compared with the baseline assessment) did not have an impact on the representativeness.

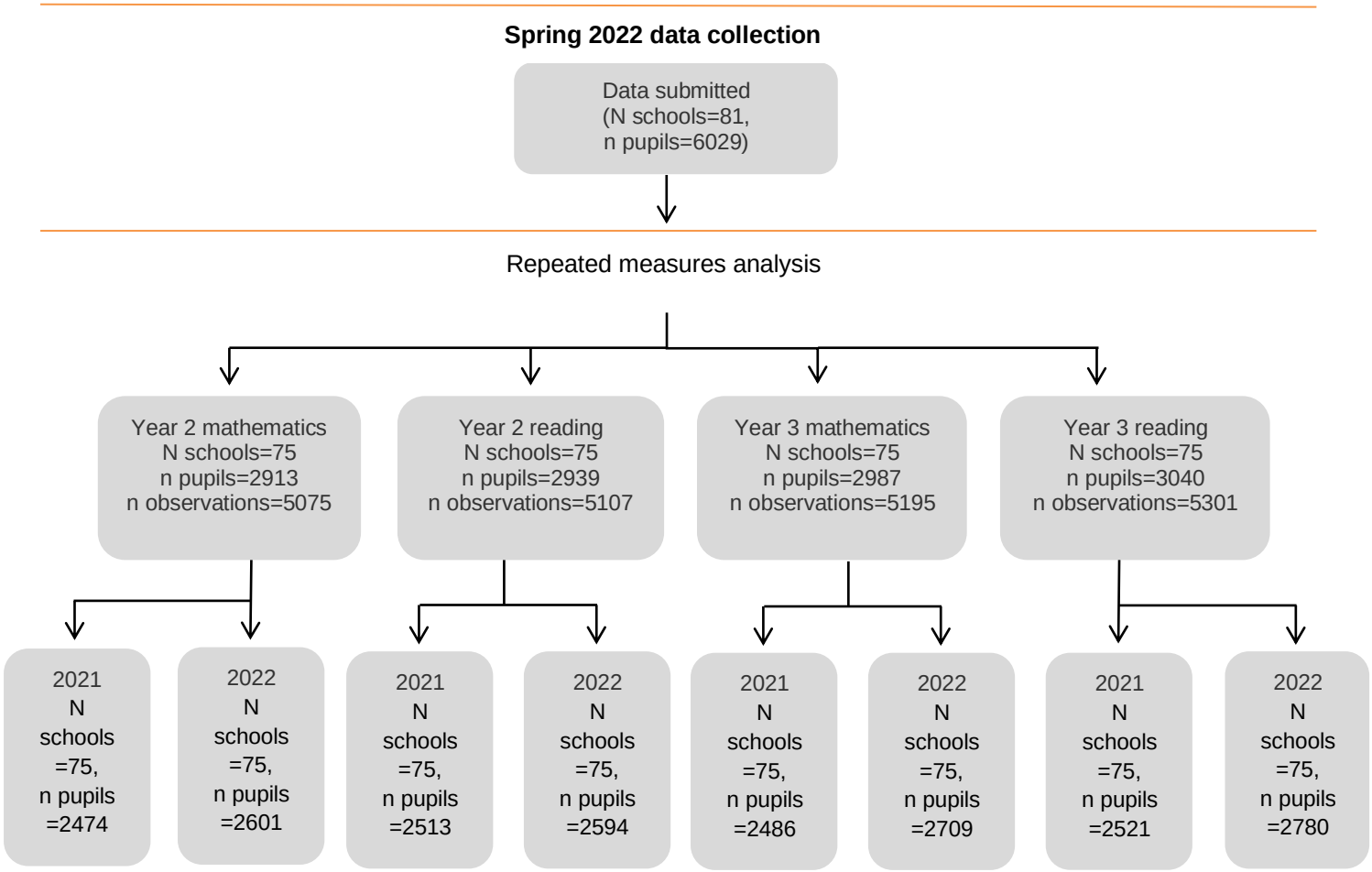
Table 5 shows the number of schools and pupils involved at the two timepoints.

Table 5: Number of schools and pupils analysed for each subject and year group in spring 2021 and spring 2022

Academic year	Year group	Subject	Number of schools	Number of pupils
Spring 2021	Year 1	Maths	148	5101
		Reading	150	5303
	Year 2	Maths	152	5349
		Reading	155	5408
Spring 2022	Year 2	Maths	75	2601
		Reading	75	2594
	Year 3	Maths	75	2709
		Reading	75	2780

Figure 2 shows the number of pupils included in the attainment outcome analysis looking at the change of the Covid-19 and disadvantage gaps over time (that is, repeated measures analysis).

Figure 2: Participant flow diagram for the repeated measures attainment outcome analysis



Only pupils with a total raw score were included. A total of 81 schools participated in both 2021 and 2022. However, for each subject/cohort combination, 75 of the 81 schools provided data in both 2021 and 2022.

Pupil and school characteristics

Here we present the characteristics of the samples entered for the repeated measures analysis. In Table 6, the differences between the population (standardisation sample) and the repeated measures samples can be seen under the ‘differences’ column as well as in the ‘averaged differences’ column for each characteristic—FSM percentage in a school, 2019 Key Stage 2 attainment, academy/non-academy status, urban/rural classification, percentage SEN, percentage EAL, and region. For all the samples (Year 2 maths, Year 2 reading, Year 3 maths, and Year 3 reading), weighting was successful in reducing the 2019 Key Stage 2 attainment differences between the general population and the study samples. Weighting also reduced the averaged differences between the population and the FSM and EAL school percentages. Although weighting increased some differences between the population and samples in regard to academy/non-academy status, urban/rural, EAL and region, most differences stayed close to the unweighted differences or only slightly increased.

Further details of each sample by school characteristics can be found in Appendix F.

Table 6: Averaged differences in school characteristics (in percentage points) between the weighted and unweighted study sample and the general population in 2019

Variable	Average differences (percentage points)							
	Year 2 reading		Year 3 reading		Year 2 maths		Year 3 maths	
	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted	Unweighted	Weighted
FSM %	5.1	4.2	3.2	3.1	5.1	4.2	3.2	3.1
2019 Key Stage 2 attainment	**5.6**	**0.4**	**6.1**	**2.7**	**5.6**	**0.4**	**5.8**	**3.0**
Academy status	7.1	9.2	8.8	10.0	7.1	9.3	9.5	10.1
Rural/urban classification	7.0	5.9	5.9	6.4	6.9	5.8	6.9	7.4
SEN %	3.0	2.0	3.9	2.3	3.0	2.0	3.8	2.2
EAL %	4.4	5.9	5.1	6.2	4.4	5.9	5.5	6.3
Region	3.0	3.2	3.9	3.6	3.0	3.1	3.7	3.5

Results

The results are presented here covering each research question in turn.

Research question 1: To what extent does pupils' attainment in reading and maths recover by spring 2022?

Summary

Year 2

- The overall performance of pupils in reading in spring 2022 was significantly lower than the standardisation sample in 2019, representing a Covid-19 gap of around three months less progress.
- There was no significant difference in the overall performance of pupils in maths in spring 2022 and the standardisation sample in 2019.
- On both reading and maths assessments in spring 2022, the proportion of pupils who scored below the lowest standardised score was greater than the standardisation sample in 2019. For reading, this rose from 2.6% to 9.1% and, for maths, from 2.6% to 5.5%.
- The repeated measures analysis shows that on both the reading and maths assessments, pupils scored significantly higher, in terms of standardised scores, in spring 2022 (when in Year 2) when compared to their 2021 performance (when in Year 1). Since standardised scores reflect age-related expectations, this is evidence of a narrowing of the Covid-19 gap and thus of recovery.

Year 3

- There was no significant difference in the overall performance of pupils in reading in spring 2022 and the standardisation sample in 2017.
- There was no significant difference in the overall performance of pupils in maths in spring 2022 and the standardisation sample in 2017.
- On both reading and maths assessments in spring 2022, the proportion of pupils who scored below the lowest standardised score was greater than the standardisation sample in 2017. For reading, this rose from 2.5% to 6.5% and, for maths, from 2.4% to 3.9%.
- The repeated measures analysis shows that on both the reading and maths assessments pupils scored significantly higher, in terms of standardised scores, in spring 2022 (when in Year 3) when compared to their 2021 performance (when in Year 2). This is evidence of a narrowing of the Covid-19 gap and thus of recovery.

Pupils' raw scores from the spring 2022 assessments were converted into standardised scores using the NFER conversion table,[9] which was created during the 2019 standardisation for Year 2 and the 2017 standardisation for Year 3. This enables their performance to be compared with the standardisation sample.

Almost all pupils fall within the standardised score range of 70 and 140 and scores outside of this range can be considered exceptional. Pupils who score fewer raw marks than that required to be awarded a standardised score using the conversion tables are therefore awarded a score of 69. This is due to the fact that their standardised scores cannot be calculated with the necessary statistical reliability and a score of 0 would distort the mean unduly.

[9] This table is provided to schools using NFER assessments.

Year 2 attainment in reading and maths—Covid-19 gap

Year 2 attainment in reading—Covid-19 gap

In Year 2, the reading assessments consisted of two papers. Following the model of Key Stage 1 national tests, both papers are intended to be taken by all pupils and the majority of pupils sat both papers. However, as paper two is slightly more difficult than paper one, it is expected that the former may be unsuitable for some pupils and the NFER teacher guide advises that the second paper should not be administered in such cases. A small number of pupils who sat only paper one were therefore also included in the study and their score from that paper represents their total score. The total number of Year 2 pupils included in the reading analysis was 2,594 from 75 schools.

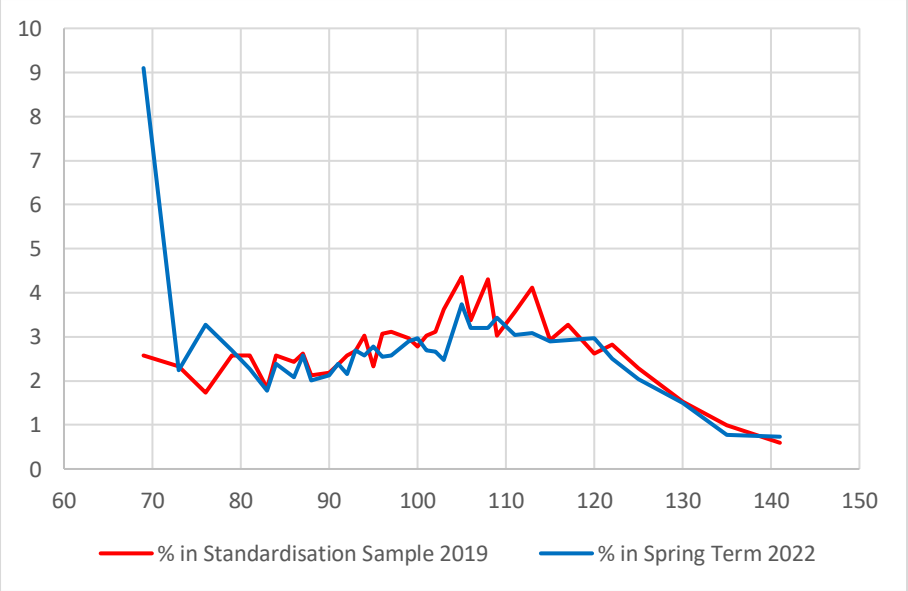
Table 7: Year 2 reading standardised scores

Measure	Standardised scores	
	Standardisation sample 2019	Spring term 2022
Mean	100.02	97.17
95% confidence interval	99.38–100.66	96.54–97.80
Standard deviation	14.69	16.47
N pupils*	2019	2594

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed.

The standard deviation of the study sample is larger, at 16.47, than that of the standardisation sample. This is due in part to a larger proportion of pupils scoring at the lower end of the range. Figure 3 shows a large proportion of the pupils in our sample scored at the lowest end of the possible standardised scores.

Figure 3: Distribution of reading standardised scores for the spring 2022 sample of Year 2 pupils



It is noteworthy that a higher-than-expected proportion of pupils (9.1%) scored too few marks on the reading assessment to achieve a standardised score of 70, resulting in a standardised score of 69. This indicated that a large number of pupils were unable to engage effectively with the assessment. In the standardisation sample, the percentage of pupils being awarded this standardised score was 2.6%. In a class of 30 pupils, this is the difference between one pupil lacking the skills to access the assessment, on average, before the Covid-19 pandemic and three children after. This represents a different and substantial challenge for teachers in each class and across the country, particularly for teachers in schools in disadvantaged areas with higher proportions of lower performing pupils.

The standardised score analysis has allowed us to identify the large number of pupils who are unable to engage effectively with the assessment. However, in order to test whether the mean differences in performance are significant—without the use of potentially inflated scores for these low achievers and in order to account for the clustering of the sample—we also carried out analysis of the raw scores.

Table 8: Year 2 reading raw scores

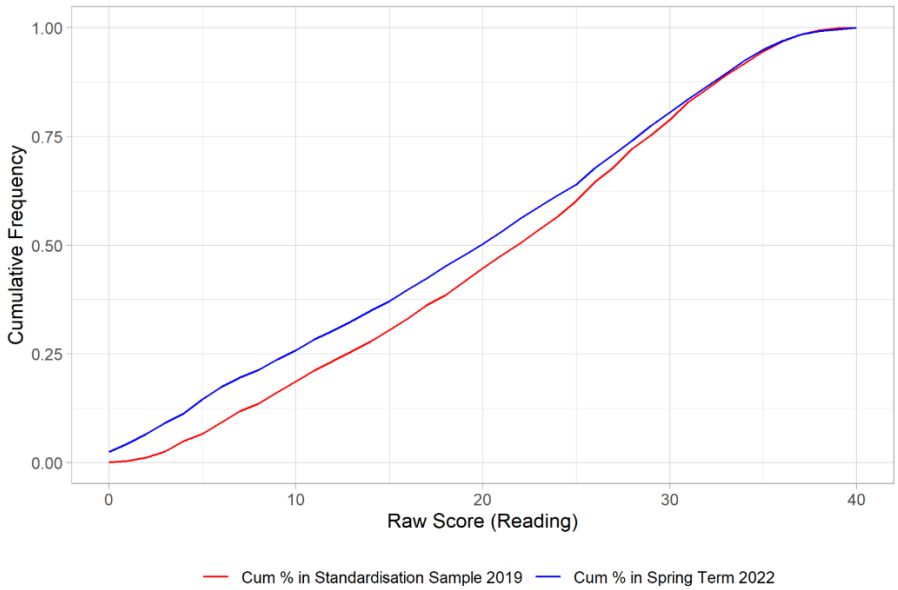
Measure	Raw scores	
	Standardisation sample 2019	Spring term 2022
Mean	21.26	19.21
95% confidence interval	20.27–22.25	17.95–20.48
Standard deviation	9.82	10.93
N pupils*	2019	2594

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed

The overall performance of Year 2 pupils in reading in spring 2022 was significantly lower than the standardisation sample. The mean raw score across the spring 2022 sample was 19.21, compared to 21.26 at standardisation. This equates to an effect size[10] of -0.2088 or around months less progress using the EEF's conversion table in the Teaching and Learning Early Years Toolkit Guide (p.6).[11]

Figure 4 clearly shows a large proportion of pupils scoring at the lower end of the range as indicated in our standardised score analysis.

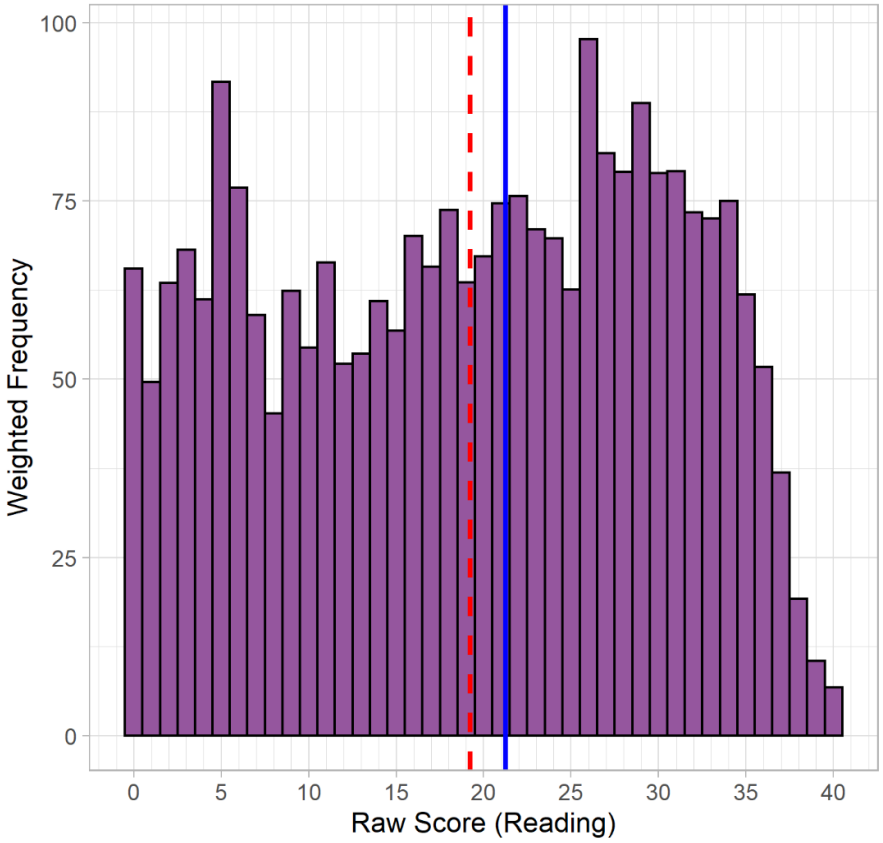
Figure 4: Cumulative distribution of reading raw scores for 2019 standardisation sample and spring 2022 sample of Year 2 pupils



In Figure 5, the blue line represents the expected mean, that is, the mean had the sample performed exactly as the standardisation sample. The red dotted line represents the observed mean for the sample in spring 2022. The distribution shows a positive skew, that is, more lower scores and fewer high scores than expected compared to the standardisation sample.

[10] Covid-19 gap effect sizes were calculated by dividing the difference in standardised score points between the samples by the standard deviation of the standardisation sample.
[11] https://d2tic4wvo1iusb.cloudfront.net/documents/toolkit/EEF-Toolkit-guide.pdf?v=1667303107

Figure 5: Distribution of reading raw scores for Year 2 in spring 2022



Year 2 reading repeated measures analysis

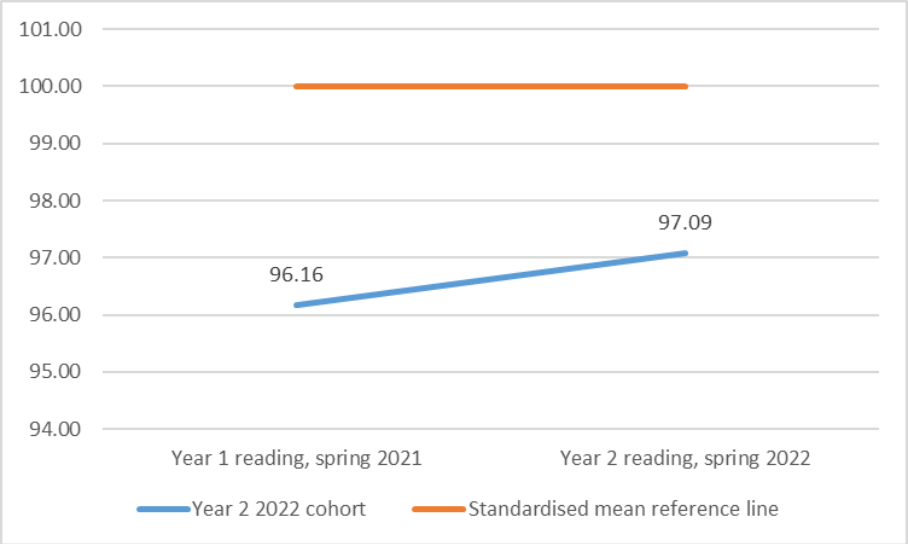
In order to assess the longitudinal change in the Covid-19 gap, we compared Year 2 pupils' 2022 reading scores with their scores in 2021 (when in Year 1). A total of 2,939 pupils were entered into the Year 2 reading repeated measures multilevel models. Of these, 278 took the Year 1 spring reading assessment in 2021 but not the Year 2 spring reading assessment in 2022, 501 took the Year 2 reading assessment in spring 2022 but not the Year 1 reading assessment in 2021, and 2,168 pupils took both.

Table 9 presents the standardised means of the Year 2 reading responses in spring 2021 and spring 2022. Reading results are higher in 2022 than in 2021. These are further displayed in Figure 6 below.

Table 9: Reading standardised means

	Standardised means							
	Spring 2021				Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)	SD	n	Weighted n	Mean (95% CI)	SD
Year 2 reading	2513	2508	96.16 (95.51, 96.82)	15.70	2594	2515	97.09 (96.41, 97.77)	16.61

Figure 6: Year 2 reading scores



Year 2 reading Covid-19 gap model

The analysis of the Year 2 reading scores used a three-level multilevel model (school, pupil, timepoint) in which spring 2021 and 2022 scores were regressed on time, FSM quintiles, academy status, and region. Table 10 presents the results from the model, which measures the impact of time on pupil outcomes. The Covid-19 gap is represented as the difference in the measured reading attainment from the standardised average of 100. The model ascertains whether there was a significant change in this gap between the spring 2021 and 2022 terms.

There was a significant positive impact of time on Year 2 pupils' reading scores, with an effect size of 0.07 (0.05, 0.09). This means that between 2021 and 2022, reading scores significantly increased. Consequently, the Covid-19 reading attainment gap was reduced. This significant increase was found while controlling for FSM quintiles, academy status, and region. Effect size and confidence intervals are presented in Table 10.

It is worth noting that being in a school in the top 40% for FSM level—the highest proportion of FSM pupils—was associated with a very large negative effect on attainment .

Table 10: Year 2 reading Covid-19 gap model

	Model coefficients				Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	99.20 93.19 105.20	3.06	60.01	<0.001	
Spring 2022	**1.92** **1.46 2.38**	**0.23**	**2305.73**	**<0.001**	**0.07** **0.05 0.09**
FSM 2nd lowest 20%	-2.87 -7.87 2.14	2.55	60.64	0.266	-0.11 -0.29 0.08
FSM middle 20%	-3.09 -7.65 1.46	2.32	56.19	0.189	-0.12 -0.29 0.05
FSM 2nd highest 20%	**-8.21** **-12.93 -3.50**	**2.41**	**56.36**	**0.001**	**-0.31** **-0.48 -0.13**
FSM highest 20%	**-10.18** **-16.38 -3.98**	**3.16**	**53.94**	**0.002**	**-0.38** **-0.61 -0.15**
FSM missing	2.53 -7.38 12.44	5.06	50.88	0.619	0.09 -0.28 0.46
Non-academy	1.58 -2.14 5.31	1.90	57.98	0.408	0.06 -0.08 0.20
East of England	0.58 -5.86 7.03	3.29	61.65	0.860	0.02 -0.22 0.26
London	-1.51 -8.26 5.25	3.45	54.44	0.664	-0.06 -0.31 0.20
North East	4.91 -9.02 18.85	7.11	51.02	0.493	0.18 -0.34 0.70
North West	-1.34 -6.79 4.10	2.78	58.51	0.631	-0.05 -0.25 0.15
South East	0.37 -6.11 6.86	3.31	58.36	0.910	0.01 -0.23 0.26
South West	-0.35 -6.59 5.89	3.18	60.55	0.914	-0.01 -0.25 0.22
West Midlands	1.85 -4.53 8.23	3.26	56.19	0.573	0.07 -0.17 0.31
Yorkshire and the Humber	-0.19 -7.03 6.65	3.49	55.66	0.957	-0.01 -0.26 0.25

The reference group for this model was spring 2021 scores, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75, the number of pupils is 2,939. The ICC was 0.13 at school and 0.64 at pupil level. Significant effects are in bold.

Year 2 attainment in maths—Covid-19 gap

In Year 2, maths assessments consisted of two papers, one in arithmetic and the other in reasoning. All papers are suitable for, and should be taken by, all pupils. Pupils needed to sit all of the papers in order to be included in the study. The total number of Year 2 pupils included in the maths analysis was 2,601 from 75 schools.

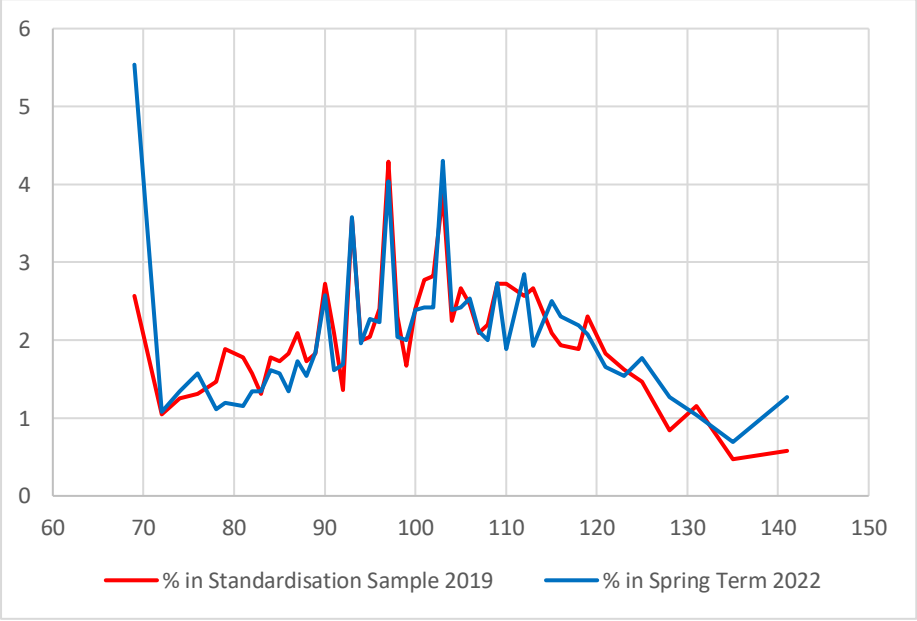
Table 11: Year 2 maths standardised scores

Measure	Standardised scores	
	Standardisation sample 2019	Spring term 2022
Mean	99.48	99.18
95% confidence interval	98.84 – 100.13	98.57 – 99.78
Standard deviation	14.48	15.69
N pupils*	1911	2601

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed.

The standard deviation of the study sample is slightly larger, at 15.69, than that of the standardisation sample. This is due in part to a larger proportion of pupils scoring at the lower end of the range. Figure 7 shows a large proportion of the pupils in our sample scored towards the lowest end of the possible standardised scores, but a slightly larger proportion also scored at the very highest range of the scores.

Figure 7: Distribution of maths standardised scores for the spring 2022 sample of Year 2 pupils



It is noteworthy that a higher-than-expected proportion of pupils (5.5%) scored too few marks on the maths assessment to achieve a standardised score of 70, resulting in a standardised score of 69. A large number of pupils were therefore unable to engage effectively with the assessments. In the standardisation sample, the percentage of pupils being awarded this score was 2.6%; the percentage of pupils unable to engage with the maths assessment has, therefore, more than doubled.

The standardised score analysis has allowed us to identify the large number of pupils who are unable to engage effectively with the assessment. A raw score analysis was also carried out in order to test whether the mean differences in performance are significant, without the use of potentially inflated scores for these low achievers, and in order to account for the clustering of the sample.

Table 12: Year 2 maths raw scores

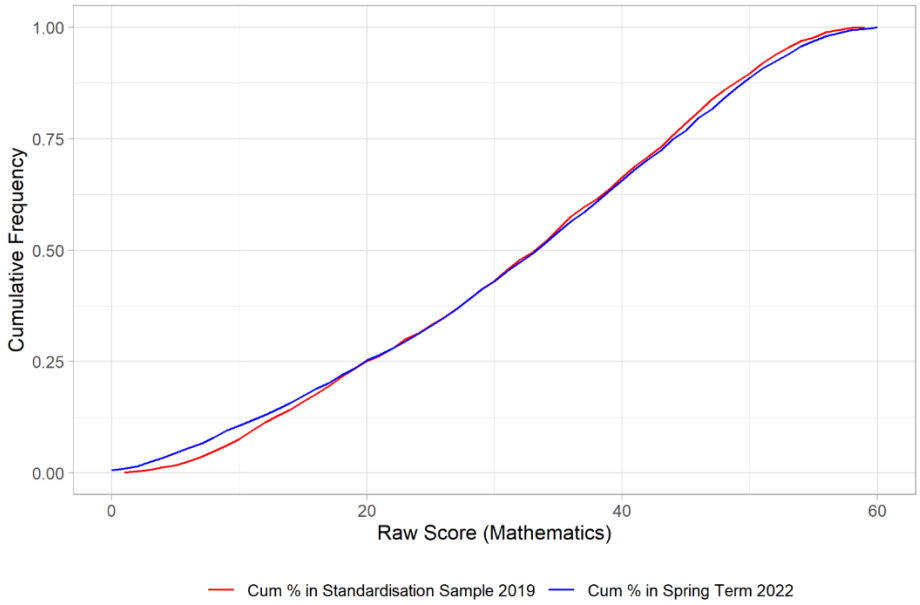
Measure	Raw scores	
	Standardisation sample 2019	Spring term 2022
Mean	32.26	31.62
95% confidence interval	31.15 – 33.38	29.60 – 33.64
Standard deviation	14.15	15.10
N pupils*	1911	2601

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed.

There was no significant difference between the overall performance of Year 2 pupils in maths in spring 2022 and the standardisation sample. The mean raw score across the spring 2022 sample was 31.62, compared to 32.26 at standardisation. This equates to an effect size of -0.0452 or around 0 months' progress using the EEF's conversion table in the Early Years Toolkit.[12]

Figure 8, which shows the cumulative percentage of maths standardised scores distribution in both spring 2022 and the standardisation sample, clearly shows the larger proportion of pupils scoring at the lower end of the range as indicated in our standardised score analysis.

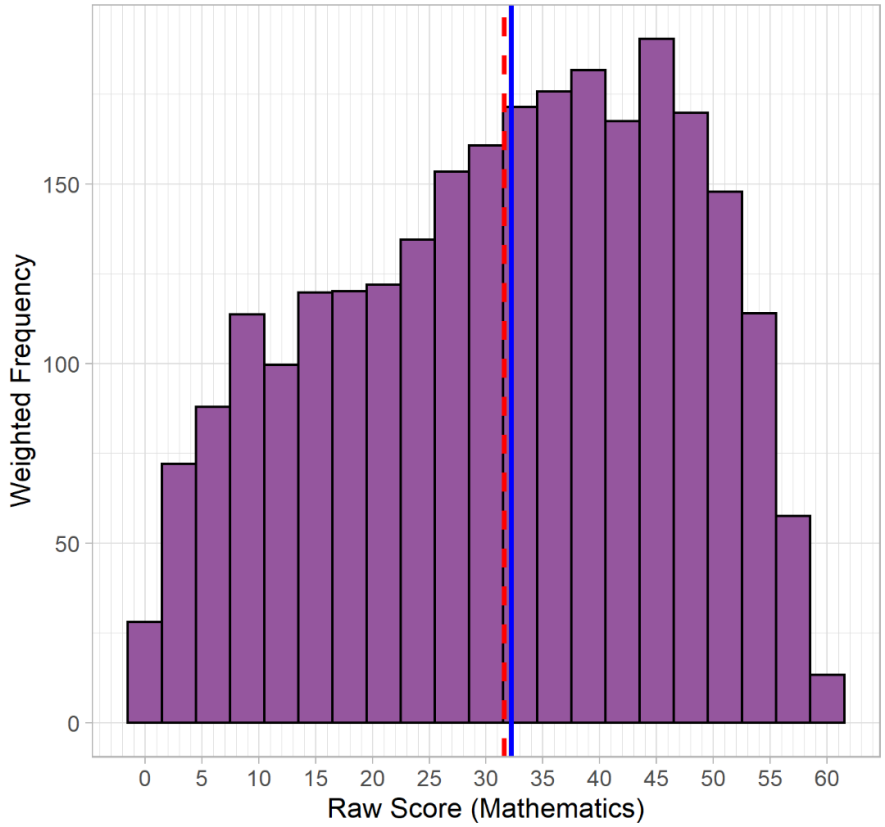
Figure 8: Cumulative distributions of maths raw scores for 2019 standardisation sample and spring 2022 sample of Year 2 pupils



In Figure 9, the blue line represents the expected mean, that is, the mean had the sample performed exactly as the standardisation sample. The red dotted line represents the observed mean for the sample in spring 2022.

[12] Covid-19 gap effect sizes were calculated by dividing the difference in standardised score points between the samples by the standard deviation of the standardisation sample. The Toolkit may be found here: https://educationendowmentfoundation.org.uk/education-evidence/using-the-toolkits

Figure 9: Distribution of Year 2 maths raw scores for spring 2022 sample



Year 2 maths repeated measures analysis

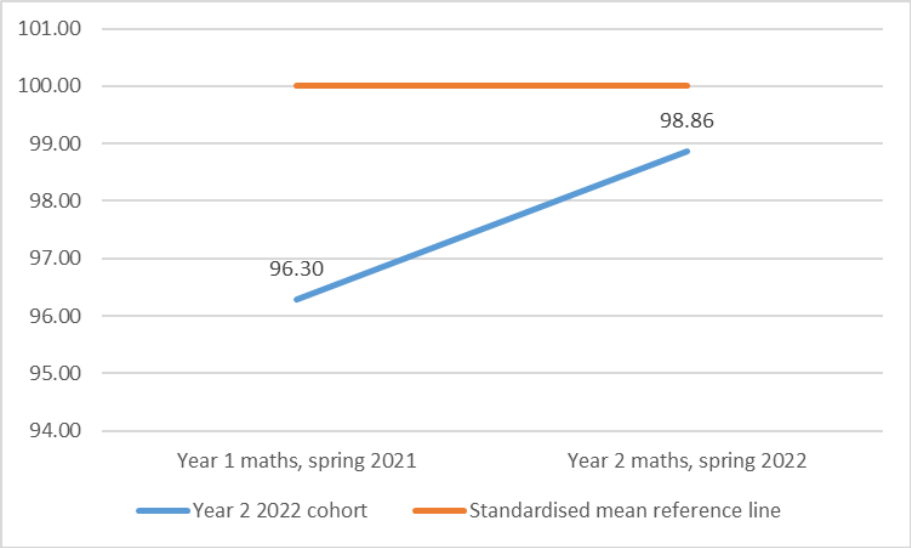
In order to assess the longitudinal change in the Covid-19 gap, we compared Year 2 pupils' 2022 maths scores with their scores in 2021 (when in Year 1). A total of 2,931 pupils were entered into the Year 2 maths repeated measures multilevel model. Of these, 330 took the 2021 spring maths assessment but not the 2022 one, 457 took the 2022 spring maths assessment but not the 2021 spring one, and 2,144 pupils took both.

Table 13 presents the standardised means of the Year 2 maths responses split by term. For pupils overall, Year 2 maths results are higher in the spring 2022 term than in the spring 2021 term. These are further displayed in Figure 10 below.

Table 13: Year 2 maths standardised means

	Standardised means							
	Spring 2021				Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)	SD	n	Weighted n	Mean (95% CI)	SD
Year 2 maths	2474	2476	96.30 (95.68, 96.91)	14.62	2601	2532	98.86 (98.22, 99.51)	15.83

Figure 10: Year 2 maths scores



Year 2 maths Covid-19 gap model

The analysis of the Year 2 maths scores used a three-level multilevel model (school, pupil, timepoint) in which spring 2021 and 2022 scores were regressed on time, FSM quintiles, academy status, and region. Table 14 presents the results from the model, which measures the association between time and pupil outcomes. The Covid-19 gap is represented as the difference between the measured maths attainment and the standardised average of 99.48. The model ascertains whether there was a significant change in this gap between the spring 2021 and 2022 terms.

There was a significant positive impact of time on Year 2 pupil's maths scores, with an effect size of 0.13 (0.12, 0.15). This means that between 2021 and 2022, maths scores improved and there was a reduction in the Covid-19 maths attainment gap. It is worth noting that being in a school in the top 40% for FSM level—the highest proportion of FSM pupils—was associated with a very large negative effect on attainment. This effect was significant while controlling for FSM quintiles, academy status, and region. Effect size and confidence intervals are presented in Table 14.

Table 14: Year 2 maths Covid-19 gap model

	Model coefficients				Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	100.55 94.78 106.31	2.94	60.48	<0.001	
Spring 2022	**3.35** **2.94 3.76**	**0.21**	**2259.55**	**<0.001**	**0.13** **0.12 0.15**
FSM 2nd lowest 20%	-4.13 -8.94 0.68	2.45	61.28	0.097	-0.16 -0.35 0.03
FSM middle 20%	-3.42 -7.80 0.96	2.23	56.78	0.132	-0.13 -0.31 0.04
FSM 2nd highest 20%	**-10.29** **-14.82 -5.75**	**2.31**	**56.99**	**0.000**	**-0.40** **-0.58 -0.23**
FSM highest 20%	**-10.84** **-16.80 -4.87**	**3.04**	**54.66**	**0.001**	**-0.42** **-0.66 -0.19**
FSM missing	1.92 -7.61 11.46	4.86	51.52	0.694	0.08 -0.30 0.45
Non-Academy	2.41 -1.17 5.99	1.83	58.59	0.191	0.09 -0.05 0.23
East of England	-0.25 -6.44 5.93	3.16	62.04	0.936	-0.01 -0.25 0.23
London	-1.93 -8.43 4.57	3.32	55.17	0.562	-0.08 -0.33 0.18
North East	7.30 -6.10 20.70	6.84	51.58	0.291	0.29 -0.24 0.81
North West	-3.06 -8.29 2.17	2.67	59.11	0.256	-0.12 -0.32 0.09
South East	-1.40 -7.64 4.83	3.18	59.10	0.660	-0.06 -0.30 0.19
South West	-0.42 -6.42 5.58	3.06	61.16	0.891	-0.02 -0.25 0.22
West Midlands	0.88 -5.25 7.02	3.13	56.81	0.779	0.03 -0.21 0.27
Yorkshire and the Humber	0.91 -5.68 7.49	3.36	56.49	0.788	0.04 -0.22 0.29

The reference group for this model was spring scores, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75, the number of pupils is 2,931. The ICC was 0.13 at school level and 0.66 at pupil level. Significant effects are in bold.

Year 3 attainment in reading and maths—Covid-19 gap

Year 3 attainment in reading—Covid-19 gap

In Year 3, the reading assessment consists of one paper suitable for all pupils. The total number of Year 3 pupils included in the reading analysis was 2,780 from 74 schools.

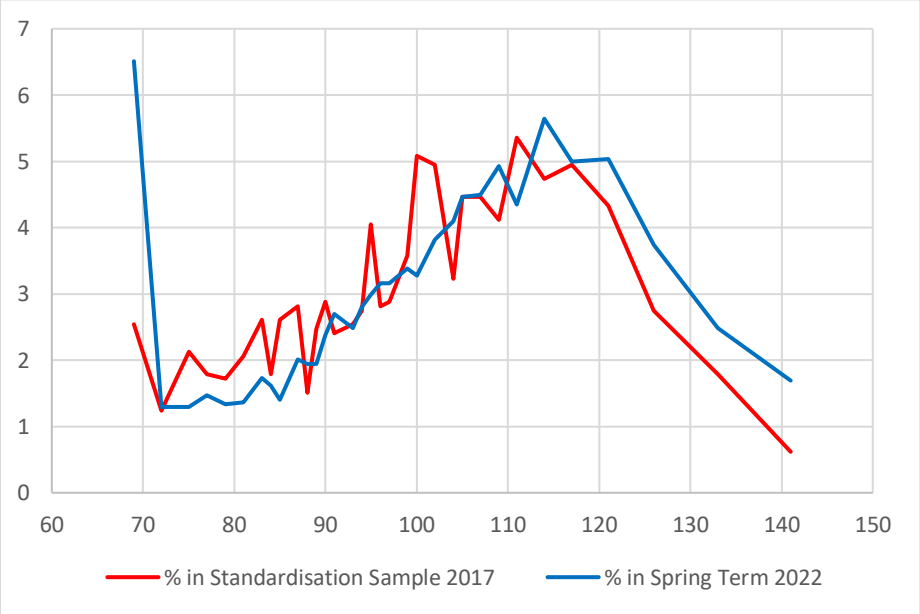
Table 15: Year 3 reading standardised scores

Measure	Reading	
	Standardisation sample 2017	Spring term 2022
Mean	99.64	100.99
95% confidence interval	98.89 – 100.39	100.38 – 101.61
Standard deviation	14.61	16.43
N pupils*	1456	2780

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed.

The standard deviation of the study sample is larger, at 16.43, than that of the standardisation sample. This is mostly due to a larger proportion of pupils scoring at both the lower and upper end of the range. Figure 11 shows that although the proportion of pupils scoring below 85—more than one standard deviation—is relatively similar, a large proportion of pupils were given the lowest possible score of 69. However, it also shows a larger proportion of pupils achieving at the higher end of the range of scores.

Figure 11: Distribution of reading standardised scores for spring 2022 sample of Year 3 pupils



It is noteworthy that a higher-than-expected proportion of pupils, 6.5%, scored too few marks on the reading assessment to achieve a standardised score of 70, resulting in a standardised score of 69. This indicated that a large number of pupils were unable to engage effectively with the assessments. In the standardisation sample, the percentage of pupils being awarded this score was 2.5%. In a class of 30 pupils, this is the difference between fewer than one pupil lacking the skills to access the assessment, on average, before the Covid-19 pandemic and two children after. This represents a significant challenge for teachers in each class and across the country.

The standardised score analysis has allowed us to identify the large number of pupils who are unable to engage effectively with the assessment. A raw score analysis was also carried out in order to test whether the mean differences in performance are significant, without the use of potentially inflated scores for these low achievers, and in order to account for the clustering of the sample.

Table 16: Year 3 reading raw scores analysis for spring 2022 sample and 2017 standardisation sample

Measure	Raw scores	
	Standardisation sample 2017	Spring term 2022
Mean	20.96	21.50
95% confidence interval	20.19–21.74	20.50–22.49
Standard deviation	8.71	9.45
N pupils*	1456	2780

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed.

The overall performance of Year 3 pupils in reading in spring 2022 was slightly higher than the standardisation sample however the difference was not significant. The mean raw score across the spring 2022 sample was 21.50 compared to 20.96 at standardisation. This equates to an effect size of +0.0620 or around +1 months' progress using the EEF's conversion table in the Early Years Toolkit.[13]

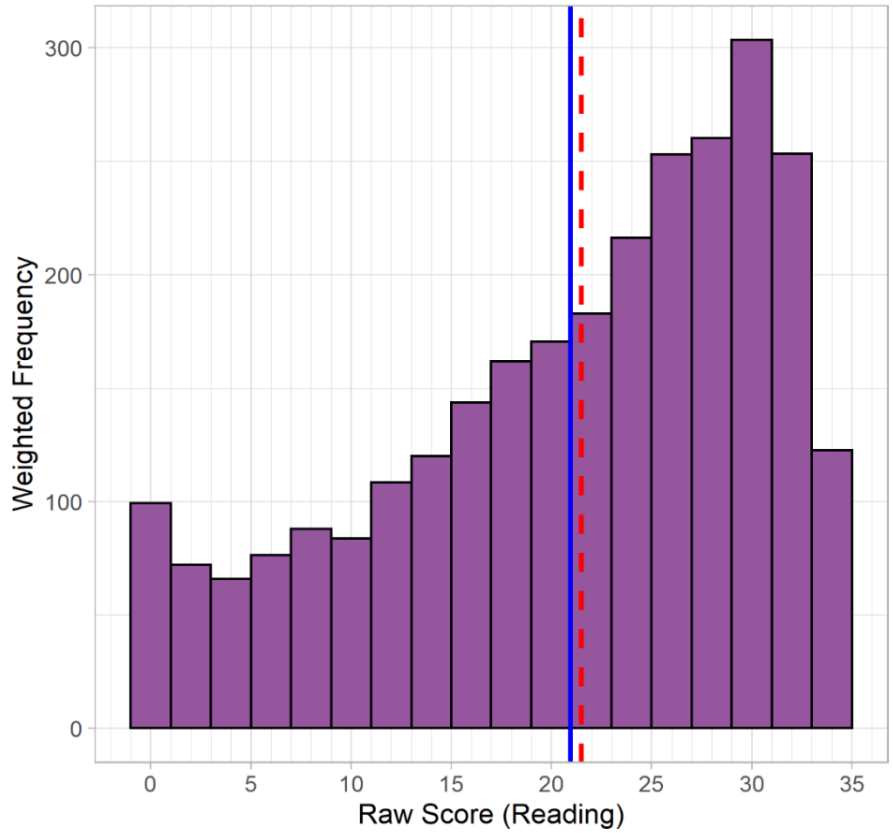
Figure 12 clearly shows the larger proportion of pupils scoring at the lower end of the range as indicated in our standardised score analysis. However, it also shows that a slightly larger proportion scored at the very top end of the range.

[13] See note 12.

Figure 12: Cumulative distributions of reading raw scores for 2017 standardisation sample and spring 2022 sample of Year 3 pupils

In Figure 13, the blue line represents the expected mean, that is, if the sample had performed exactly as the standardisation sample. The red dotted line represents the observed mean for the sample in spring 2022. The distribution shows that there is a larger proportion of pupils scoring at the very lowest end of the range.

Figure 13: Distribution of reading raw scores for Year 3 pupils



Year 3 reading repeated measures analysis

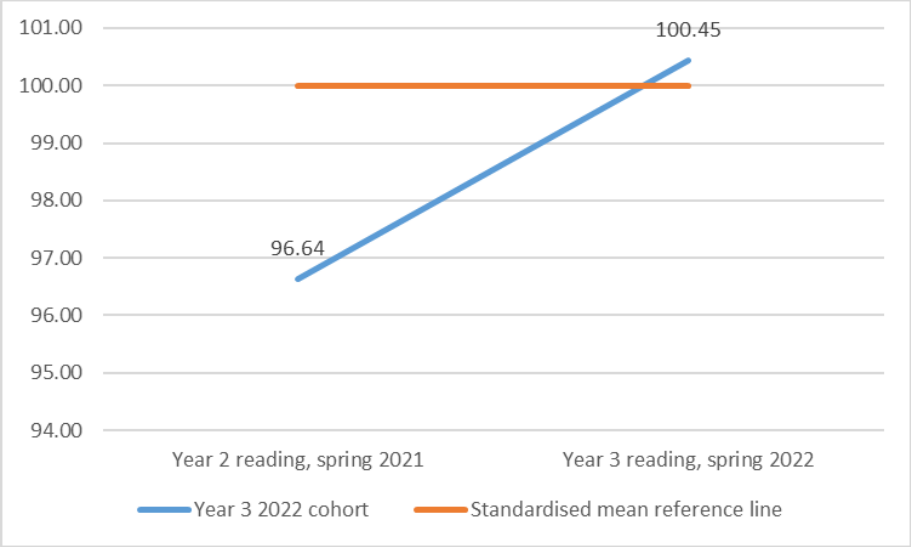
In order to assess the longitudinal change in the Covid-19 gap, we compared Year 3 pupils' 2022 reading scores with their scores in 2021 (when in Year 2). A total of 3,040 pupils were entered into the Year 3 reading repeated measures multilevel models; of these, 260 took the 2021 spring reading assessment but not the spring 2022 one, 519 took the 2022 spring reading assessment but not the 2021 one, and 2,261 pupils took both.

Table 17 presents the standardised means of the Year 3 reading scores split by year. For all pupils, 2022 reading results are higher than in the 2021. These are further displayed in Figure 14 below.

Table 17: Year 3 reading standardised means

	Standardised means								
	Spring 2021					Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)		SD	n	Weighted n	Mean (95% CI)		SD
Year 3 reading	2521	2470	96.64		15.86	2780	2726	100.45		16.47
			95.98	97.30				99.80	101.10	

Figure 14: Year 3 reading scores



Year 3 reading Covid-19 gap model

The analysis of the Year 3 reading scores was a three-level multilevel model (school, pupil, timepoint) in which autumn and spring scores were regressed on time, FSM quintiles, academy status, and region. Table 18 presents the results from the model, which measures the impact of time on pupil outcomes. The Covid-19 gap is represented as the difference between the measured reading attainment and the standardised average of 100. The model ascertains whether there was a significant change in this gap between the spring 2021 and spring 2022 terms.

There was a significant positive impact of time on Year 3 pupils' reading scores, with an effect size of 0.18 (0.16, 0.20). This means that between spring 2021 and 2022, reading scores increased, and there was a decrease in the Covid-19 reading attainment gap. This effect was significant while controlling for FSM quintiles, academy status, and region. It is worth noting that being in a school in the top 40% for FSM level—the highest proportion of FSM pupils—was associated with a medium to large negative effect on attainment. Effect size and confidence intervals are presented in Table 18.

Table 18: Year 3 reading Covid-19 gap model

	Model coefficients				Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	95.63 90.45 100.81	2.64	61.63	<0.001	
Spring 2022	**4.78** **4.33 5.22**	**0.23**	**2390.85**	**<0.001**	**0.18** **0.16 0.20**
FSM 2nd lowest 20%	1.30 -2.85 5.45	2.12	60.10	0.541	0.05 -0.11 0.21
FSM middle 20%	-2.88 -6.75 0.99	1.97	57.22	0.150	-0.11 -0.25 0.04
FSM 2nd highest 20%	**-5.96** **-10.27 -1.65**	**2.20**	**56.27**	**0.009**	**-0.22** **-0.39 -0.06**
FSM highest 20%	**-11.38** **-16.72 -6.05**	**2.72**	**53.61**	**0.000**	**-0.43** **-0.63 -0.23**
FSM missing	5.07 -3.09 13.23	4.16	50.55	0.229	0.19 -0.12 0.50
Non-academy	1.55 -1.60 4.70	1.61	60.15	0.338	0.06 -0.06 0.18
East of England	0.65 -4.44 5.74	2.60	60.53	0.803	0.02 -0.17 0.22
London	3.20 -2.58 8.98	2.95	53.77	0.282	0.12 -0.10 0.34
North East	**12.28** **0.88 23.68**	**5.81**	**50.27**	**0.040**	**0.46** **0.03 0.89**
North West	1.60 -2.73 5.94	2.21	58.65	0.471	0.06 -0.10 0.22
South East	2.04 -3.49 7.58	2.82	59.31	0.472	0.08 -0.13 0.29
South West	2.25 -2.87 7.38	2.61	63.26	0.392	0.08 -0.11 0.28
West Midlands	2.83 -2.14 7.81	2.54	56.64	0.269	0.11 -0.08 0.29
Yorkshire and the Humber	2.54 -3.39 8.48	3.03	52.44	0.404	0.10 -0.13 0.32

The reference group for this model was autumn scores, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75 and the number of pupils is 3,040. The ICC was 0.08 at school level and 0.69 at pupil level. Significant effects are in bold.

Year 3 attainment in maths—Covid-19 gap

In Year 3, maths assessments consist of three papers, one in arithmetic and two in reasoning. All three papers are suitable for, and should be taken by, all pupils. Pupils needed to sit all of the papers in their respective assessments in order to be included in the study. The total number of Year 3 pupils included in the maths analysis was 2709 from 74 schools.

Table 19: Year 3 maths standardised scores

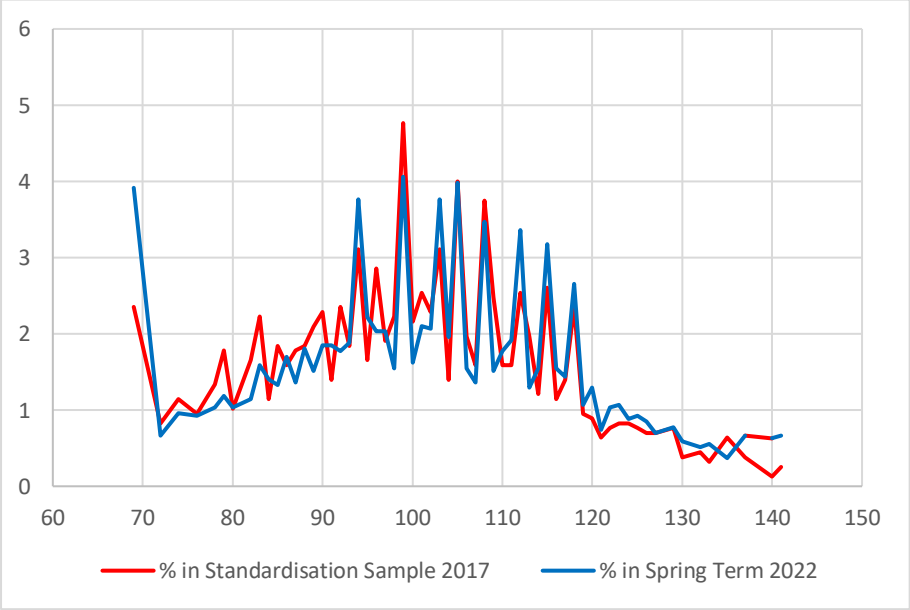
Measure	Maths	
	Standardisation sample 2017	Spring term 2022
Mean	99.59	101.14
95% confidence interval	98.87 – 100.31	100.55 – 101.72
Standard deviation	14.60	15.54
N pupils*	1574	2709

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed.

The standard deviation of the study sample is slightly larger, at 15.54, than that of the standardisation sample. This is due in part to a larger proportion of pupils scoring at the very lowest end of the range. However, in the spring 2022 sample, a slightly lower proportion of children scored below 85 and a slightly higher proportion scored above 115.

In Figure 15, the distribution of scores is relatively similar for both the standardisation sample and the spring 2022 sample, however, a larger proportion of the spring 2022 pupils were awarded the lowest possible score of 69.

Figure 15: Distribution of maths standardised scores for the spring 2022 sample of Year 3 pupils



It is noteworthy that a higher-than-expected proportion of pupils, 3.9%, scored too few marks on the maths assessment to achieve a standardised score of 70 resulting in a standardised score of 69. A number of pupils were therefore unable to engage effectively with the assessments. In the standardisation sample, the percentage of pupils being awarded this score was 2.4%.

The standardised score analysis allowed us to identify the larger number of pupils who were unable to engage effectively with the assessment. However, in order to test whether the mean differences in performance are significant, without the use of potentially inflated scores for these low achievers and in order to account for the clustering of the sample, we also carried out analysis of the raw scores.

Table 20: Year 3 maths raw score analysis for spring 2022 sample and 2017 standardisation sample

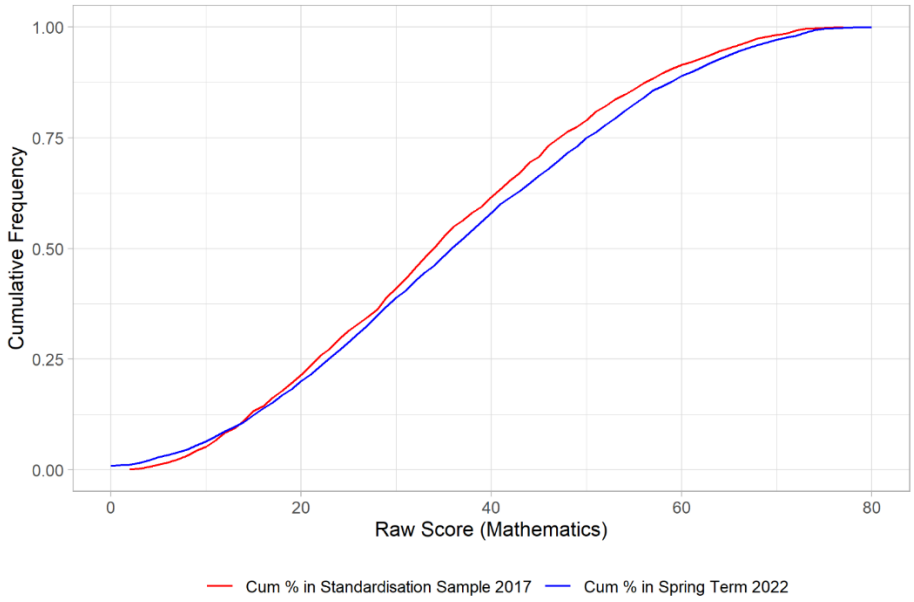
Measure	Raw scores	
	Standardisation sample 2017	Spring term 2022
Mean	35.57	37.35
95% confidence interval	33.95 – 37.20	35.42 – 39.28
Standard deviation	16.73	17.75
N pupils*	1574	2709

* The mathematics and reading spring 2022 samples were weighted by Key Stage 2 performance. Data relating to pupils from independent schools in the 2019 standardisation sample for Year 2 and the 2017 standardisation sample for Year 3 were removed.

The overall performance of Year 3 pupils in maths in spring 2022 was higher than in the standardisation sample but not significantly so. The mean raw score across the spring 2022 sample was 37.35 compared to 35.57 at standardisation. This equates to an effect size of +0.1064 or around two months' progress using the EEF's conversion table in the Early Years Toolkit.[14]

Figure 16 shows the higher proportion of pupils scoring at the very lowest end of the range, in spring 2022, along with improved performance across the assessment overall.

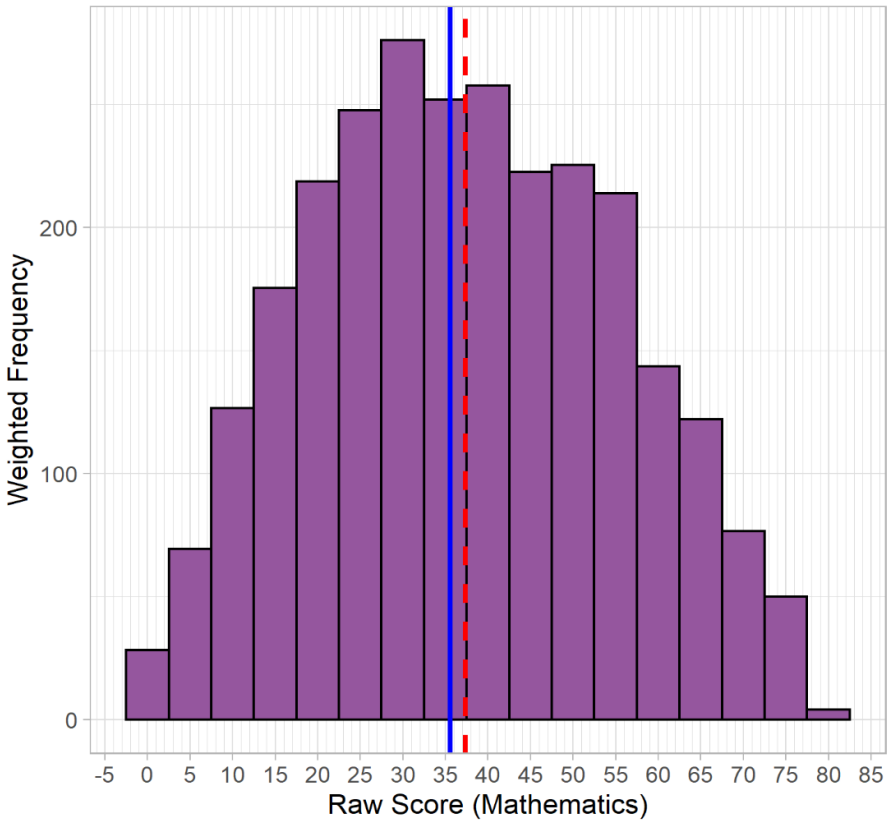
Figure 16: Cumulative distributions of maths raw scores for 2017 standardisation sample and spring 2022 sample of Year 3 pupils



In Figure 17, the blue line represents the expected mean, that is, if the sample had performed exactly as the standardisation sample. The red dotted line represents the observed mean for the sample in spring 2022. The distribution shows that the raw scores are normally distributed.

[14] See note 12.

Figure 17: Distribution of maths raw scores in spring 2022 for Year 3 pupils



Year 3 maths repeated measures analysis

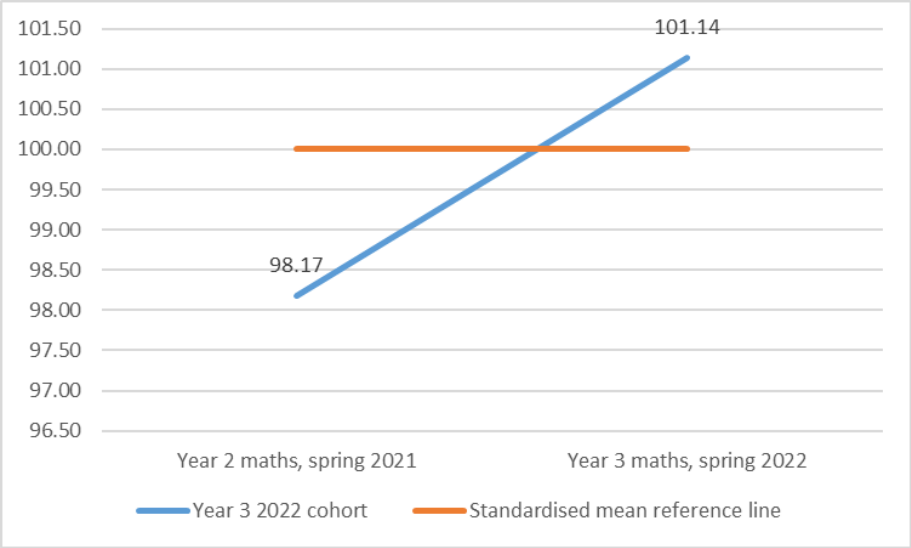
In order to assess the longitudinal change in the Covid-19 gap, we compared Year 3 pupils' 2022 maths scores with their scores in 2021 (when in Year 2). A total of 2,987 pupils were entered into the Year 3 maths repeated measures multilevel models; of these, 278 took the spring 2021 maths assessment but not the spring 2022 one, 501 took the 2022 spring maths assessment but not the spring 2021 one, and 2,208 pupils took both.

Table 21 presents the standardised means of the Year 3 maths responses split by year. For all pupils, 2022 maths results are higher than in 2021. These are further displayed in Figure 18 below.

Table 21: Year 3 maths standardised means

	Standardised means							
	Spring 2021				Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)	SD	n	Weighted n	Mean (95% CI)	SD
Year 3 maths	2486	2462	98.17 (97.54, 98.81)	15.20	2709	2633	101.14 (100.55, 101.72)	15.54

Figure 18: Year 3 maths scores



Year 3 maths Covid-19 gap model

The analysis of the Year 3 maths scores was a three-level multilevel model (school, pupil, timepoint) in which spring 2021 and 2022 scores were regressed on time, FSM quintiles, academy status, and region. Table 22 presents the results from the model, which measures the impact of time on pupil outcomes. The Covid-19 gap is represented as the difference between the measured maths attainment and the standardised average of 100. The model ascertains whether there was a significant change in this gap between the spring 2021 and 2022 terms.

There was a significant positive impact of time on Year 3 pupils' maths scores, with an effect size of 0.14 (0.13, 0.16). Between 2021 and 2022, maths standardised scores increased and there was a decrease in the Covid-19 maths attainment gap. This means that Year 3 pupils' maths attainment was closer to a mean of 100 in 2022 than in 2021. It is worth noting that being in a school in the top 40% for FSM level—the highest proportion of FSM pupils—was associated with a medium to large negative effect on attainment. This effect was significant while controlling for FSM quintiles, academy status, and region. Effect size and confidence intervals are presented in Table 22.

Table 22: Year 3 maths Covid-19 gap model

		Model coefficients			Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	96.88 92.09 101.67	2.45	63.77	<0.001	
Spring 2022	**3.51** **3.16 3.86**	**0.18**	**2292.88**	**<0.001**	**0.14** **0.13 0.16**
FSM 2nd lowest 20%	-0.11 -4.00 3.78	1.99	62.30	0.957	0.00 -0.16 0.15
FSM middle 20%	-1.83 -5.49 1.83	1.87	59.83	0.331	-0.07 -0.22 0.07
FSM 2nd highest 20%	**-7.20** **-11.14 -3.25**	**2.01**	**59.41**	**0.001**	**-0.29** **-0.45 -0.13**
FSM highest 20%	**-9.81** **-14.78 -4.83**	**2.54**	**56.22**	**<0.001**	**-0.40** **-0.60 -0.20**
FSM missing	3.12 -4.71 10.95	3.99	51.48	0.438	0.13 -0.19 0.44
Non-academy	**3.42** **0.45 6.40**	**1.52**	**62.81**	**0.028**	**0.14** **0.02 0.26**
East of England	0.59 -4.27 5.46	2.48	61.87	0.812	0.02 -0.17 0.22
London	0.76 -4.78 6.29	2.82	55.10	0.790	0.03 -0.19 0.25
North East	**16.58** **5.76 27.39**	**5.52**	**49.83**	**0.004**	**0.67** **0.23 1.11**
North West	0.06 -4.09 4.21	2.12	59.91	0.979	0.00 -0.17 0.17
South East	1.57 -3.72 6.86	2.70	60.81	0.562	0.06 -0.15 0.28
South West	1.26 -3.65 6.17	2.51	64.68	0.616	0.05 -0.15 0.25
West Midlands	1.60 -3.26 6.45	2.48	57.56	0.522	0.06 -0.13 0.26
Yorkshire and the Humber	1.36 -4.01 6.72	2.74	57.00	0.621	0.05 -0.16 0.27

The reference group for this model was autumn scores, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75 and the number of pupils is 2,987. The ICC was 0.08 at school level and 0.77 at pupil level. Significant effects are in bold.

Research question 2: To what extent do different groups recover by spring 2022; in particular, how is the gap between disadvantaged children and their peers changing over time?

Summary

- In spring 2022, the disadvantage gap for Year 2 reading was around six months' progress and for Year 2 maths around five months' progress.
- In spring 2022, the disadvantage gap for Year 3 reading was around nine months' progress and for Year 3 maths around eight months' progress.
- FSM pupils scored significantly higher in 2022 when compared to 2021. Scores for both reading and maths increased for both Year 2 and Year 3 pupils. Nevertheless, since the change in scores was not steeper for FSM pupils than for non-FSM pupils, the disadvantage gap remained the same.

Year 2 attainment in reading and maths—the disadvantage gap

Within the spring 2022 sample, approximately 19% of pupils in Year 2 were classed as disadvantaged (that is, eligible for FSM as reported by schools). For a small number of pupils—159 in reading, which corresponds to 6.13% of the sample, and 157 in maths, which corresponds to 6.04%—no FSM eligibility was provided and these pupils have been excluded from the following calculations. The standardisation sample does not provide data on the performance of disadvantaged and non-disadvantaged pupils.

Analysis of the Covid-19 gap showed that for both year groups in reading and in maths, there was an increase in the proportion of pupils who were unable to engage effectively with the assessments. In analysing the disadvantage gap, the use of standardised scores, with the potentially inflated scores for these lowest achievers, would not have been appropriate given that it may have a greater impact on the performance of disadvantaged pupils than their peers. Analysis of the disadvantage gap in spring 2022 was therefore carried out with raw scores. However, it was necessary to work with standardised scores in the repeated measures analysis to allow comparison between different assessments and timepoints.

Year 2 reading attainment—the disadvantage gap

Table 23: Performance of Year 2 pupils in reading for spring 2022

Table 23 shows a summary of the performance of disadvantaged pupils compared to those those within the cohort who are not disadvantaged (ineligible for FSM).

Table 23: Performance of Year 2 pupils in reading for spring 2022

Measure	Standardisation sample 2019	Spring 2022 all pupils	Spring 2022 FSM	Spring 2022 non-FSM
Mean	21.26	19.21	15.18	20.53
95% Confidence interval	20.27 – 22.25	17.95 – 20.48	13.73 – 16.63	19.34 – 21.73
Standard deviation	9.82	10.93	10.38	10.70
N pupils	2019	2594	469	1966

For the Year 2 reading assessments, 19.3% of the cohort were classed as being disadvantaged. The difference between the mean raw scores of disadvantaged pupils and non-disadvantaged is large at 5.35 points and represents

a significant difference in performance. The effect size for this data is 0.4895, which, using the EEF's conversion table, equates to six months of learning.[15]

Year 2 reading repeated measures analysis

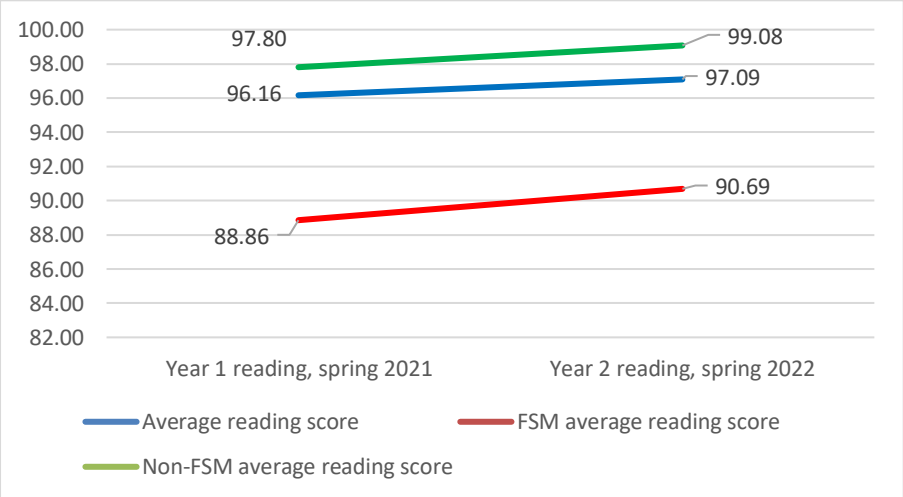
In order to assess the longitudinal change in the disadvantage gap, we compared how Year 2 FSM and non-FSM pupils' reading scores changed from spring 2021 (when in Year 1) to spring 2022. A total of 2,939 pupils were entered into the Year 2 reading repeated measures multilevel models; of these, 278 took the 2021 spring reading assessment but not the 2022 one, 501 took the 2022 spring reading assessment but not the 2021 one, and 2,168 pupils took both.

Table 24 presents the standardised mean reading scores of the Year 2 group as a whole, for the non-FSM pupils, and for the FSM pupils. Each group's scores are split by term. For pupils overall and non-FSM pupils, 2022 reading results are higher than in 2021. Following the common trend, non-FSM pupils have higher scores at both timepoints than FSM pupils. These mean differences are further displayed in Figure 19 below.

Table 24: Reading standardised score mean

	Standardised means							
	Spring 2021				Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)	SD	n	Weighted n	Mean (95% CI)	SD
Year 2 reading	2513	2508	96.16 (95.51, 96.82)	15.70	2594	2515	97.09 (96.41, 97.77)	16.61
Year 2 reading (FSM only)	464	459	88.86 (87.47, 90.24)	14.17	469	443	90.69 (89.20, 92.17)	15.43
Year 2 reading (non-FSM only)	2048	2049	97.80 (97.08, 98.52)	15.57	1966	1900	99.08 (98.31, 99.85)	16.37

Figure 19: Year 2 reading scores



[15] Disadvantage gap effect sizes were calculated by dividing the standardised score point difference between FSM and non-FSM pupils by the overall spring 2022 standard deviation. The EEF conversion table may be found here: https://educationendowmentfoundation.org.uk/evidence-summaries/about-the-toolkits/attainment/

Year 2 reading disadvantage gap model

The analysis of the Year 2 reading scores was a three-level multilevel model (school, pupil, timepoint) in which spring 2021 and 2022 standardised scores were regressed on time, FSM eligibility of pupils in January 2020 (before school closures), FSM quintiles of schools, EAL status, gender, academy status, and region. Table 29 presents the results from the model, which measures the impact on FSM pupil outcomes as a function of time. The disadvantage gap is represented as the difference in the measured reading attainment between FSM and non-FSM pupils. The model ascertains whether there was a significant change in this gap between the spring 2021 and 2022 terms.

There was no significant positive interaction between time and FSM eligibility on Year 2 pupils' reading scores, with an effect size of 0.04 (-0.01, 0.09). This means that between 2021 and 2022, FSM pupils' scores did not improve more or less than those of non-FSM pupils. Consequently, although reading attainment improved between 2021 and 2022 for both groups, there was not a reduction in the disadvantage gap for reading attainment. This result was obtained while controlling for FSM quintiles, gender, EAL status, academy status, and region. It is worth noting that being in a school in the highest two quintiles of FSM—the highest proportion of FSM pupils—was associated with a medium effect on lowering attainment. Effect size and confidence intervals are presented in Table 25.

Table 25: Year 2 reading disadvantage gap model

	Model coefficients				Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	99.49 (93.81, 105.18)	2.90	61.87	0.000	
Spring 2022	**1.98 (1.48, 2.49)**	**0.26**	**2244.24**	**0.000**	**0.07 (0.06, 0.09)**
FSM2020 yes	**-6.14 (-7.86, -4.43)**	**0.87**	**3484.33**	**0.000**	**-0.23 (-0.29, -0.17)**
FSM2020 missing	6.25 (-11.03, 23.52)	8.81	4906.88	0.478	0.23 (-0.41, 0.88)
Spring 2022*FSM2020 yes	1.11 (-0.17, 2.39)	0.65	2264.86	0.089	0.04 (-0.01, 0.09)
Spring 2022*FSM2020 missing	-2.19 (-17.17, 12.79)	7.64	3749.32	0.775	-0.08 (-0.64, 0.48)
Gender female	**3.33 (2.30, 4.35)**	**0.52**	**2859.33**	**0.000**	**0.12 (0.09, 0.16)**
EAL yes	**-1.89 (-3.77, -0.02)**	**0.96**	**2907.19**	**0.048**	**-0.07 (-0.14, 0.00)**
EAL missing	-12.85 (-25.70, 0.00)	6.56	3099.71	0.050	-0.48 (-0.96, 0.00)
FSM 2nd lowest 20%	-3.14 (-7.86, 1.58)	2.41	61.44	0.197	-0.12 (-0.29, 0.06)
FSM middle 20%	-3.10 (-7.40, 1.20)	2.19	56.92	0.163	-0.12 (-0.28, 0.04)
FSM 2nd highest 20%	**-8.19 (-12.64, -3.73)**	**2.27**	**57.38**	**0.001**	**-0.31 (-0.47, -0.14)**
FSM highest 20%	**-7.99 (-13.84, -2.14)**	**2.98**	**54.65**	**0.010**	**-0.30 (-0.52, -0.08)**

	Model coefficients				Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	99.49 93.81 105.18	2.90	61.87	0.000	
FSM missing	1.22 -8.09 10.53	4.75	50.73	0.799	0.05 -0.30 0.39
Non-academy	0.94 -2.57 4.44	1.79	58.31	0.603	0.03 -0.10 0.17
East of England	0.89 -5.19 6.97	3.10	62.29	0.775	0.03 -0.19 0.26
London	0.33 0.00 0.00	3.27	56.53	0.920	0.01 -0.23 0.25
North East	4.56 0.00 0.00	6.68	50.89	0.498	0.17 -0.32 0.66
North West	-0.32 0.99 0.00	2.62	58.97	0.904	-0.01 -0.20 0.18
South East	0.99 0.00 0.00	3.11	58.64	0.753	0.04 -0.19 0.26
South West	-0.74 0.00 0.00	3.00	61.01	0.807	-0.03 -0.25 0.19
West Midlands	1.66 -4.35 0.00	3.06	56.43	0.590	0.06 -0.16 0.29
Yorkshire and the Humber	0.72 0.00 0.00	3.28	55.92	0.827	0.03 -0.21 0.27

The reference group for this model was spring 2021 scores, non-FSM pupils, males, non-EAL pupils, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75, the number of pupils is 2,936. The ICC at school level was 0.12 and 0.64 at pupil level. Significant effects are in bold.

Year 2 maths attainment—the disadvantage gap

Table 26 shows a summary of the performance of disadvantaged pupils—as indicated by FSM eligibility reported by schools—compared to those pupils within the cohort who are not disadvantaged.

Table 26: Performance of Year 2 pupils in maths for spring 2022

Measure	Standardisation sample 2019	Spring 2022 all pupils	Spring 2022 FSM	Spring 2022 non-FSM
Mean	32.26	31.62	27.25	33.24
95% confidence interval	31.15–33.38	29.60–33.64	24.90–29.61	31.41–35.08
Standard deviation	14.15	15.10	14.58	14.66
N pupils	1911	2601	476	1968

For the Year 2 maths assessments, 19.5% of the cohort were classed as being disadvantaged. The difference between the mean raw scores of disadvantaged pupils and non-disadvantaged pupils is large at 5.99 points and

represents a significant difference in performance. The effect size for this data is 0.3967 which, using the EEF's conversion table in the Teaching and Learning Early Years Toolkit Guide, equates to five months of learning.[16]

Year 2 maths repeated measures analysis

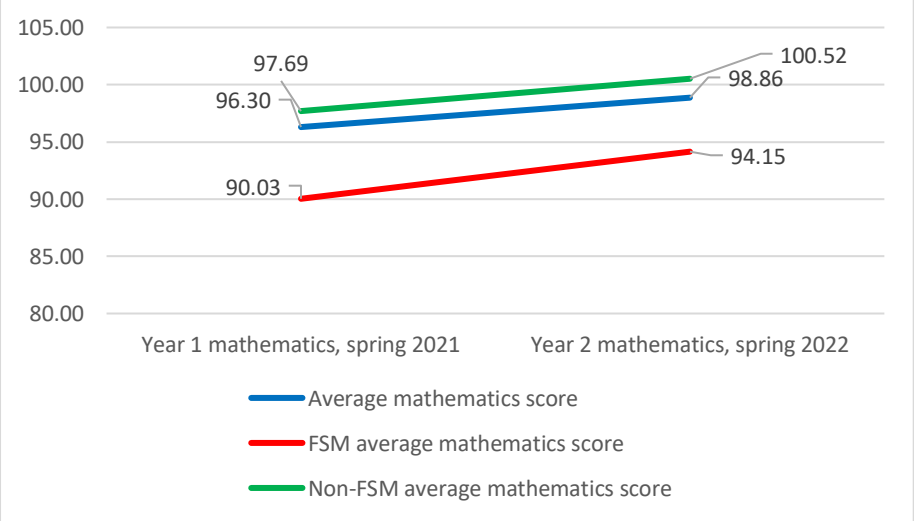
In order to assess the longitudinal change in the maths disadvantage gap, we compared how Year 2 FSM and non-FSM pupil's scores changed from spring 2021 (when in Year 1) to spring 2022. A total of 2,931 pupils were entered into the Year 2 maths repeated measures multilevel model; of these, 330 took the 2021 spring maths assessment but not the 2022 one, 457 took the 2022 spring maths assessment but not the 2021 spring one, and 2,144 pupils took both.

Table 27 presents the standardised maths mean scores of the Year 2 group as a whole, for the non-FSM pupils, and for the FSM pupils. Each group's scores are split by term. For pupils overall, Year 2 maths results are higher in the spring 2022 term than in the spring 2021 term and non-FSM pupils have higher scores at both timepoints than FSM pupils. These mean differences are further displayed in Figure 20 below.

Table 27: Year 2 maths standardised means

	Standardised means							
	Spring 2021				Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)	SD	n	Weighted n	Mean (95% CI)	SD
Year 2 maths	2474	2476	96.30 (95.68, 96.91)	14.62	2601	2532	98.86 (98.22, 99.51)	15.83
Year 2 maths (FSM only)	451	450	90.03 (88.67, 91.39)	13.75	476	455	94.15 (92.70, 95.59)	15.16
Year 2 maths (non-FSM only)	2022	2025	97.69 (97.02, 98.36)	14.45	1968	1910	100.52 (99.79, 101.24)	15.44

Figure 20: Year 2 maths scores



[16] See note 15.

Year 2 maths disadvantage gap model

The analysis of the Year 2 maths scores used a three-level multilevel model (school, pupil, timepoint) in which spring 2021 and 2022 scores were regressed on time, FSM eligibility of pupils in January 2020 (before school closures), FSM quintiles of schools, EAL status, gender, academy status, and region. Table 28 presents the results from the model, which measures the impact on FSM pupil outcomes as a function of time. The disadvantage gap is represented as the difference in the measured maths attainment between FSM and non-FSM pupils. The model ascertains whether there was a significant change in this gap between the spring 2021 and 2022.

There was no significant interaction between time and FSM eligibility on Year 2 pupils' maths scores, with an effect size of 0.04 (0.00, 0.09). This means that, although between 2021 and 2022 pupils' scores improved, there was no reduction in the disadvantage gap for maths attainment. This result was obtained controlling for FSM quintiles, gender, EAL status, academy status, and region. It is worth noting that being in a school in the highest two quintiles of FSM—the highest proportion of FSM pupils—was associated with a very large effect on lowering attainment. Effect size and confidence intervals are presented in Table 28.

Table 28: Year 2 maths disadvantage gap model

		Model coefficients			Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	102.83 97.22 108.44	2.86	62.29	0.000	
Spring 2022	**3.34** **2.90 3.79**	**0.23**	**2201.07**	**0.000**	**0.13** **0.11 0.15**
FSM2020 yes	**-5.09** **-6.72 -3.46**	**0.83**	**3372.83**	**0.000**	**-0.20** **-0.26 -0.14**
FSM2020 missing	11.06 -4.82 26.93	8.10	4831.00	0.172	0.43 -0.19 1.05
Spring 2022*FSM2020 yes	1.11 -0.01 2.22	0.57	2210.42	0.053	0.04 0.00 0.09
Spring 2022*FSM2020 missing	-0.12 -13.52 13.28	6.84	3600.25	0.986	0.00 -0.53 0.52
Gender female	**-1.67** **-2.64 -0.70**	**0.50**	**2850.50**	**0.001**	**-0.07** **-0.10 -0.03**
EAL yes	-0.46 -2.24 1.32	0.91	2897.85	0.614	-0.02 -0.09 0.05
EAL missing	-17.40 -29.31 -5.48	6.08	2869.37	0.004	-0.68 -1.15 -0.21
FSM 2nd lowest 20%	-4.29 -8.95 0.37	2.38	62.15	0.076	-0.17 -0.35 0.01
FSM Middle 20%	-3.72 -7.96 0.53	2.16	57.56	0.091	-0.15 -0.31 0.02
FSM 2nd highest 20%	**-10.38** **-14.78 -5.99**	**2.24**	**58.10**	**0.000**	**-0.41** **-0.58 -0.23**
FSM highest 20%	**-9.55** **-15.33 -3.77**	**2.95**	**55.54**	**0.002**	**-0.37** **-0.60 -0.15**
FSM missing	0.87	4.70	51.64	0.853	0.03

		Model coefficients			Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	102.83 97.22 108.44	2.86	62.29	0.000	
	-8.33 10.08				-0.33 0.39
Non-academy	2.01 -1.45 5.47	1.77	59.03	0.260	0.08 -0.06 0.21
East of England	0.03 -5.96 6.01	3.05	62.67	0.993	0.00 -0.23 0.24
London	-0.60 0.00 0.00	3.23	57.26	0.854	-0.02 -0.27 0.22
North East	7.64 0.00 0.00	6.60	51.68	0.252	0.30 -0.21 0.81
North West	-2.16 -1.00 0.00	2.58	59.61	0.407	-0.08 -0.28 0.11
South East	-1.00 0.00 0.00	3.07	59.43	0.745	-0.04 -0.28 0.20
South West	-0.71 0.00 0.00	2.96	61.60	0.812	-0.03 -0.25 0.20
West Midlands	0.90 -5.03 0.00	3.03	57.14	0.768	0.04 -0.20 0.27
Yorkshire and the Humber	1.59 0.00 0.00	3.25	56.83	0.625	0.06 -0.19 0.31

The reference group for this model was spring scores, non-FSM pupils, males, non- EAL pupils, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75, the number of pupils is 2,931. The ICC at school level was 0.13 and 0.66 at pupil level. Significant effects are in bold.

Year 3 attainment in reading and maths—the disadvantage gap

Within the spring 2022 sample, approximately 20% of pupils in Year 3 were classed as disadvantaged. For a small number of pupils—100 in reading, which corresponds to 3.60% of the sample and 104 in maths, which corresponds to 3.84%—no FSM data was provided; these pupils have been excluded from the following calculations. The standardisation sample does not provide data on the performance of disadvantaged and non-disadvantaged pupils.

Year 3 reading attainment—the disadvantage gap

Table 29 shows a summary of the performance of disadvantaged pupils compared with those pupils in the cohort who are not disadvantaged.

Table 29: Performance of Year 3 pupils in reading for spring 2022

Measure	Standardisation sample 2017	Spring 2022 all pupils	Spring 2022 FSM	Spring 2022 Non-FSM
Mean	20.96	21.50	16.21	22.97
95% Confidence interval	20.19 – 21.74	20.50 – 22.49	14.97 – 17.45	22.13 – 23.82
Standard deviation	8.71	9.45	9.52	8.88
N pupils	1456	2780	546	2134

For the Year 3 reading assessments, 20.4% of the cohort were classed as being disadvantaged. The difference between the mean raw scores of disadvantaged pupils and non-disadvantaged pupils is large at 6.76 points and represents a significant difference in performance. The effect size is 0.7153 which—using the EEF's conversion table in the Teaching and Learning Early Years Toolkit Guide—equates to nine months of learning.[17]

Year 3 reading repeated measures analysis

In order to assess the longitudinal change in the reading disadvantage gap of Year 3 pupils, we compared how Year 3 FSM and non-FSM pupils' reading scores changed from spring 2021 (when in Year 2) to spring 2022. A total of 3,040 pupils were entered into the Year 3 reading repeated measures multilevel models; of these, 260 took the 2021 spring reading assessment but not the spring 2022 one, 519 took the 2022 spring reading assessment but not the 2021 one, and 2,261 pupils took both.

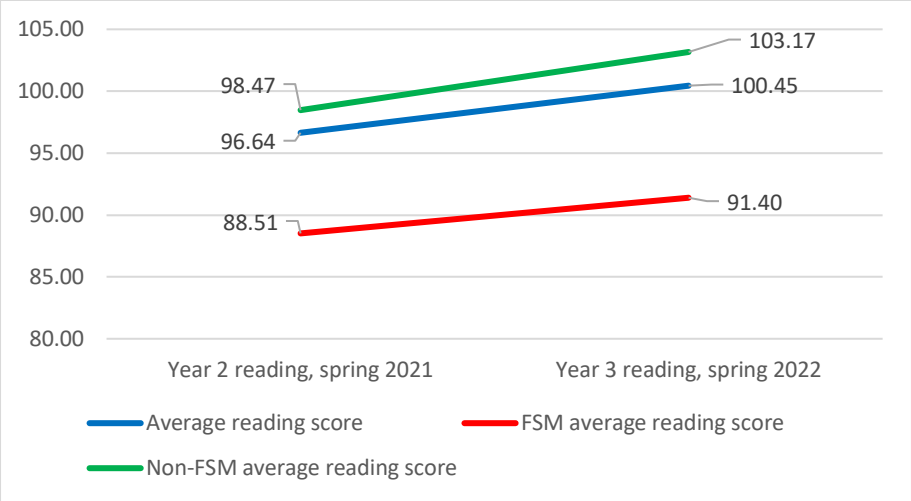
Table 30 presents the standardised means of the Year 3 reading responses for the group as a whole, for the non-FSM pupils, and for the FSM pupils. Each group's scores are split by term. For all pupils, 2022 reading results are higher than in the 2021. Furthermore, non-FSM pupils have higher scores at both timepoints than FSM pupils. These mean differences are further displayed in Figure 21 below.

Table 30: Year 3 reading standardised mean scores

	Standardised means							
	Spring 2021				Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)	SD	n	Weighted n	Mean (95% CI)	SD
Year 3 reading	2521	2470	96.64 (95.98, 97.30)	15.86	2780	2726	100.45 (99.80, 101.10)	16.47
Year 3 reading (FSM only)	459	451	88.51 (87.12, 89.91)	14.31	546	545	91.40 (90.10, 92.69)	14.58
Year 3 reading (non-FSM only)	2060	2016	98.47 (97.75, 99.19)	15.60	2134	2081	103.17 (102.45, 103.89)	15.99

[17] See note 15.

Figure 21: Year 3 reading scores



Year 3 reading disadvantage gap model

The analysis of the Year 3 reading scores was a three-level multilevel model (school, pupil, timepoint) in which spring 2021 and spring 2022 scores were regressed on time, FSM eligibility of pupils in January 2020 (before school closures), FSM quintiles of schools, EAL status, gender, academy status, and region. Table 31 presents the results from the model, which measures the impact on FSM pupil outcomes as a function of time. The disadvantage gap is represented as the difference in the measured reading attainment between FSM and non-FSM pupils. The model ascertains whether there was a significant change in this gap between 2021 and 2022.

There was no significant interaction between time and FSM eligibility on Year 3 pupils' reading scores, with an effect size of -0.04 (-0.08, 0.01). This means that between 2021 and 2022, the disadvantage gap for reading attainment remained stable. This analysis controlled for FSM quintiles, gender, EAL status, academy status, and region. It is worth noting that being in a school in the highest two quintiles of FSM was associated with a medium effect on lowering attainment. Effect size and confidence intervals are presented in Table 31.

Table 31: Year 3 reading disadvantage gap model

		Model coefficients			Effect size
Coefficients	Estimate (95% CI)	Std. Error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	97.05 92.35 101.75	2.40	62.49	0.000	
Spring 2022	**5.19** **4.70 5.67**	**0.25**	**2330.18**	**0.000**	**0.20** **0.18 0.21**
FSM2020 yes	**-7.73** **-9.41 -6.04**	**0.86**	**3593.25**	**0.000**	**-0.29** **-0.35 -0.23**
FSM2020 missing	26.05 -4.91 57.00	15.79	4166.34	0.099	0.98 -0.18 2.15
Spring 2022*FSM2020 yes	-0.95 -2.20 0.30	0.64	2353.85	0.137	-0.04 -0.08 0.01
Spring 2022*FSM2020 missing	19.08 -8.54 46.70	14.09	2833.97	0.176	0.72 -0.32 1.76
Gender female	**3.10** **2.08 4.12**	**0.52**	**2959.28**	**0.000**	**0.12** **0.08 0.16**

		Model coefficients			Effect size
Coefficients	Estimate (95% CI)	Std. Error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	97.05 92.35 101.75	2.40	62.49	0.000	
EAL yes	**-2.46** **-4.15 -0.77**	**0.86**	**2816.01**	**0.004**	**-0.09** **-0.16 -0.03**
EAL missing	**-55.30** **-96.76 -13.83**	**21.16**	**3542.74**	**0.009**	**-2.08** **-3.64 -0.52**
FSM 2nd lowest 20%	1.14 -2.58 4.86	1.90	58.28	0.550	0.04 -0.10 0.18
FSM middle 20%	-2.38 -5.84 1.08	1.77	55.06	0.183	-0.09 -0.22 0.04
FSM 2nd highest 20%	**-5.22** **-9.08 -1.36**	**1.97**	**54.46**	**0.011**	**-0.20** **-0.34 -0.05**
FSM highest 20%	**-8.46** **-13.24 -3.68**	**2.44**	**51.90**	**0.001**	**-0.32** **-0.50 -0.14**
FSM missing	2.94 -4.32 10.19	3.70	47.52	0.432	0.11 -0.16 0.38
Non-academy	0.80 -2.02 3.63	1.44	58.27	0.579	0.03 -0.08 0.14
East of England	0.47 -4.09 5.02	2.32	58.58	0.842	0.02 -0.15 0.19
London	4.06 0.00 0.00	2.65	52.71	0.131	0.15 -0.04 0.35
North East	**10.62** **0.00 0.00**	**5.17**	**47.65**	**0.046**	**0.40** **0.02 0.78**
North West	1.60 2.00 0.00	1.98	56.33	0.421	0.06 -0.09 0.21
South East	2.00 0.00 0.00	2.53	56.93	0.433	0.08 -0.11 0.26
South West	0.78 0.00 0.00	2.35	61.39	0.741	0.03 -0.14 0.20
West Midlands	2.30 -2.15 0.00	2.27	54.25	0.315	0.09 -0.08 0.25
Yorkshire and the Humber	2.79 0.00 0.00	2.69	49.63	0.306	0.10 -0.09 0.30

The reference group for this model was spring 2021 scores, non-FSM pupils, males, non-EAL pupils, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75, the number of pupils is 3,040. The ICC at school level was 0.07 and 0.68 at pupil level. Significant effects are in bold.

Year 3 maths attainment—the disadvantage gap

Table 32: Performance of Year 3 pupils in maths for spring 2022

Table 32 shows a summary of the performance of disadvantaged pupils compared to those within the cohort who are not disadvantaged.

Table 32: Performance of Year 3 pupils in maths for spring 2022

Measure	Standardisation sample 2017	Spring 2022 all pupils	Spring 2022 FSM	Spring 2022 non-FSM
Mean	35.57	37.35	27.86	40.14
95% Confidence interval	33.95 – 37.20	35.42 – 39.28	25.40 – 30.31	38.38 – 41.89
Standard deviation	16.73	17.75	16.62	17.08
N pupils	1574	2709	528	2077

For the Year 3 maths assessments, 20.3% of the cohort were classed as being disadvantaged. The difference between the mean standardised scores of disadvantaged pupils and non-disadvantaged is large at 12.28 and represents a significant difference in performance. The effect size for this data is 0.6918 which—using the EEF's conversion table in the Teaching and Learning Early Years Toolkit Guide—equates to eight months of learning.[18]

Year 3 maths repeated measures analysis

In order to assess the longitudinal change in the maths disadvantage gap of Year 3 pupils, we compared how Year 3 FSM and non-FSM pupil's reading scores changed from spring 2021 (when in Year 2) to spring 2022. A total of 2,987 pupils were entered into the Year 3 maths repeated measures multilevel models; of these, 278 took the spring 2021 maths assessment but not the spring 2022 one, 501 took the 2022 spring maths assessment but not the spring 2021 one, and 2,208 pupils took both.

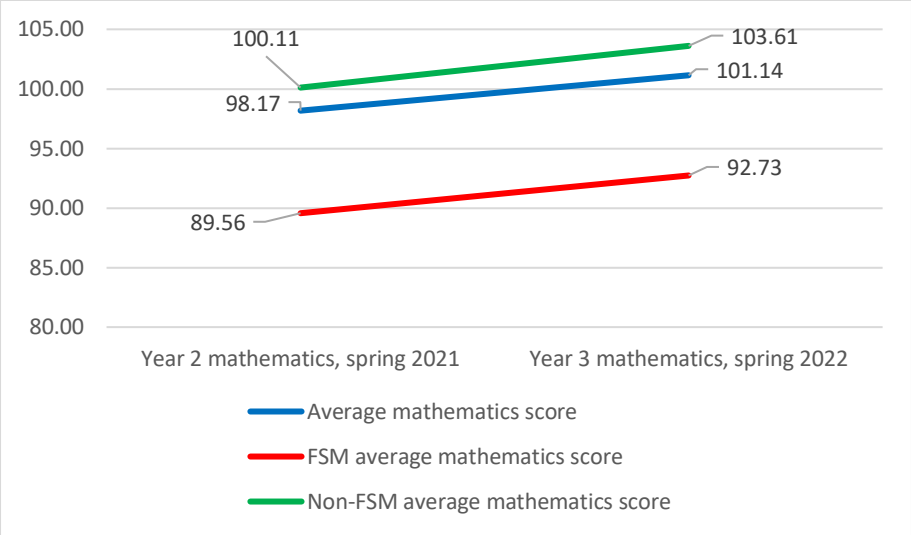
Table 33 presents the standardised maths mean scores of the Year 3 group as a whole, for the non-FSM pupils, and for the FSM pupils. Each group's scores are split by term. For all pupils, 2022 maths results are higher than in 2021. Furthermore, non-FSM pupils have higher scores at both timepoints than FSM pupils. These mean differences are further displayed in Figure 22 below.

Table 33: Year 3 maths standardised mean scores

	Standardised means							
	Spring 2021				Spring 2022			
Outcome	n	Weighted n	Mean (95% CI)	SD	n	Weighted n	Mean (95% CI)	SD
Year 3 maths	2486	2462	98.17 (97.54, 98.81)	15.20	2709	2633	101.14 (100.55, 101.72)	15.54
Year 3 maths (FSM only)	455	454	89.56 (88.21, 90.91)	13.99	528	518	92.73 (91.45, 94.00)	14.93
Year 3 maths (non-FSM only)	2030	2008	100.11 (99.42, 100.79)	14.85	2077	2015	103.61 (102.98, 104.25)	14.79

[18] See note 15.

Figure 22: Year 3 maths scores



Year 3 maths disadvantage gap model

The analysis of the Year 3 maths scores was a three-level multilevel model (school, pupil, timepoint) in which spring 2021 and spring 2022 scores were regressed on time, FSM eligibility of pupils in January 2020 (before school closures), FSM quintiles of schools, EAL status, gender, academy status, and region. Table 34 presents the results from the model, which measures the impact of FSM pupil outcomes as a function of time. The disadvantage gap is represented as the difference in the measured maths attainment between FSM and non-FSM pupils. The model ascertains whether there was a significant change in this gap between 2021 and 2022.

There was no significant interaction between time and FSM eligibility on Year 3 pupils' maths scores, with an effect size of -0.01 (-0.05, 0.03). This means that between 2021 and 2022, FSM pupils' scores did not change in relation to non-FSM pupils and the disadvantage gap for maths remained stable. This result was obtained while controlling for FSM quintiles, gender, EAL status, academy status, and region. It is worth noting that being in a school in the highest two quintiles of FSM was associated with a medium effect on lowering attainment. Effect size and confidence intervals are presented in Table 34.

Table 34: Year 3 maths disadvantage gap model

		Model coefficients			Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	101.21 96.97 105.46	2.17	66.80	<0.001	
Spring 2022	**3.69** **3.31** **4.07**	**0.19**	**2242.37**	**<0.001**	**0.15** **0.13** **0.16**
FSM2020 yes	**-8.18** **-9.77** **-6.59**	**0.81**	**3310.12**	**<0.001**	**-0.33** **-0.40** **-0.27**
FSM2020 missing	18.99 -9.77 47.74	14.67	3691.28	0.196	0.77 -0.40 1.93
Spring 2022*FSM2020 yes	-0.33 -1.30 0.64	0.49	2256.43	0.500	-0.01 -0.05 0.03
Spring 2022*FSM2020 missing	4.67 -34.75 44.09	20.11	3330.96	0.816	0.19 -1.41 1.78
Gender female	**-4.02** **-5.01** **-3.03**	**0.50**	**2919.47**	**<0.001**	**-0.16** **-0.20** **-0.12**

	Model coefficients				Effect size
Coefficients	Estimate (95% CI)	Std. error	Degrees of freedom	P value	Hedge's *g* (95% CI)
(Intercept)	101.21 96.97 105.46	2.17	66.80	<0.001	
EAL yes	-0.59 -2.22 1.03	0.83	2795.64	0.473	-0.02 -0.09 0.04
EAL missing	**-31.35** **-58.29 -4.41**	**13.74**	**2942.10**	**0.023**	**-1.27** **-2.36 -0.18**
FSM 2nd lowest 20%	0.11 -3.29 3.51	1.73	62.03	0.948	0.00 -0.13 0.14
FSM middle 20%	-0.96 -4.15 2.23	1.63	59.09	0.558	-0.04 -0.17 0.09
FSM 2nd highest 20%	**-5.96** **-9.41 -2.52**	**1.76**	**59.07**	**0.001**	**-0.24** **-0.38 -0.10**
FSM highest 20%	**-6.55** **-10.89 -2.21**	**2.21**	**55.93**	**0.005**	**-0.26** **-0.44 -0.09**
FSM missing	1.03 -5.73 7.79	3.45	49.08	0.766	0.04 -0.23 0.32
Non-academy	**2.71** **0.11 5.32**	**1.33**	**62.70**	**0.046**	**0.11** **0.00 0.22**
East of England	0.27 -3.97 4.52	2.17	61.46	0.900	0.01 -0.16 0.18
London	0.77 -4.06 5.60	2.47	55.32	0.755	0.03 -0.16 0.23
North East	**14.21** **4.89 23.53**	**4.75**	**47.71**	**0.004**	**0.57** **0.20 0.95**
North West	0.04 -3.58 3.65	1.84	58.93	0.984	0.00 -0.14 0.15
South East	1.72 -2.89 6.32	2.35	59.83	0.469	0.07 -0.12 0.26
South West	0.13 -4.16 4.43	2.19	64.52	0.952	0.01 -0.17 0.18
West Midlands	1.02 -3.20 5.24	2.15	56.31	0.636	0.04 -0.13 0.21
Yorkshire and the Humber	0.77 -3.88 5.43	2.38	55.42	0.746	0.03 -0.16 0.22

The reference group for this model was autumn scores, non-FSM pupils, males, non-EAL pupils, lowest FSM quintile, academy schools, and the East Midlands region. The number of schools is 75, the number of pupils is 2,987. The ICC at school level was 0.77 and 0.06 at pupil level. Significant effects are in bold.

Research question 3: Is attainment in some domains in reading and maths changing or recovering at a different rate from others?

Summary

Year 2

- Pupils performed lower than expected on two reading domains assessing retrieval and one domain assessing inference of texts compared to that expected had the pandemic not occurred. The performance of pupils in spring 2022 was not significantly different from that of Year 2 pupils in 2021.
- Pupils performed at the expected level for all maths domains compared with pupils before the pandemic. There were no significant differences in the performance of pupils in spring 2022 compared with Year 2 pupils in spring 2021 in five of the six maths domains, including number and place value and calculations. However, the spring 2022 pupils did score significantly higher in the domain of fractions.
- In spring 2022, FSM pupils performed significantly lower than non-FSM pupils in all domains of reading and maths.

Year 3

- Pupils performed similarly or better than expected across all domains for reading and in all but one domain in maths compared to that expected had the pandemic not happened.
- In spring 2022, FSM pupils performed significantly lower than non-FSM pupils in all domains of reading and maths.

The aim of this research question is to investigate whether certain areas of the curriculum have been affected by the school disruption more than others and, if so, whether the gaps in performance are significant. The items in the Year 2 assessments have been classified in line with the Key Stage 1 test frameworks for reading and for maths and, for Year 3 assessments, with the Key Stage 2 test frameworks for reading and for maths. For each subject in Year 2 we made two comparisons:

- we compared the spring 2022 cohort with the 2019 standardisation sample; and
- the spring 2022 cohort with the spring 2021 cohort.

The tests were standardised before the start of the pandemic with nationally representative samples of pupils in schools in England. The performance of this sample across the different domains is compared with that of pupils taking the same tests in spring 2022. The pupils who were part of the Year 2 spring 2021 cohort and those who are part of the Year 2 spring 2022 cohort have all taken exactly the same assessment at the same point in the school year. Both cohorts taking the assessment experienced disruption to their schooling as a result of the pandemic. For each subject in Year 3 we were only able to compare the spring 2022 cohort to the 2017 standardisation sample. This is because Year 3 was not assessed in spring 2021.

Year 2 reading

The majority of questions in the Year 2 assessment focus on two of the domains of the Key Stage 1 reading test framework: identify/explain key aspects of texts—19 questions testing pupils' retrieval skills—and make inferences from the text (12 questions). One question tests another aspect of retrieval—identifying the sequence of events—with another testing another aspect of inference—predicting what might happen next. In addition to these domains, there are five questions that assess vocabulary skills, drawing on knowledge of vocabulary to understand texts.

Table 35: Comparison between the standardisation sample and the spring 2022 cohort for reading

Mean total mark for domain				
Domain	Standardisation 2019	Spring term 2022	Difference	Significance
Use knowledge of vocabulary to understand texts	2.44	2.27	-0.16	Not significant
Identify/explain key aspects of texts (retrieval)	12.04	10.74	-1.30	Significantly lower
Identify and explain the sequence of events in texts (retrieval)	0.37	0.29	-0.08	Significantly lower
Make inferences from the text	6.18	5.33	-0.85	Significantly lower
Predict what might happen from what has been read (inference)	0.23	0.50	+0.27	Significantly higher

As discussed in the cross-sectional analysis of Year 2 reading, in the chapter on the results of Research Question 1, the overall performance of Year 2 pupils in reading in spring 2022 was significantly lower than that of the standardisation sample. The performance on three of the domains tested in the assessments was also significantly lower in spring 2022. Pupils did not perform significantly differently from the standardisation sample on knowledge of vocabulary and performed higher on predicting what might happen next. However, there are few questions in the assessment that assess these two domains.

Comparison between the spring 2021 cohort and the spring 2022 cohort

In addition to comparing the 2022 Year 2 cohort with the standardisation sample that took the same assessment before the Covid-19 pandemic, we can compare them with the Year 2 cohort from 2021. Unlike the standardisation sample, the schooling of both cohorts of Year 2 children from 2021 and 2022 was impacted by the pandemic. They are different children who have taken exactly the same assessment at the same point in the year in 2021 and 2022 respectively.

Table 36: Comparison between the spring 2021 and the spring 2022 cohorts for reading

Mean total mark for domain				
Domain	Spring term 2021	Spring term 2022	Difference	Significance
Use knowledge of vocabulary to understand texts	2.19	2.27	+0.09	Not significant
Identify/explain key aspects of texts (retrieval)	10.73	10.74	+0.01	Not significant
Identify and explain the sequence of events in texts (retrieval)	0.28	0.29	+0.01	Not significant
Make inferences from the text	5.37	5.33	-0.03	Not significant
Predict what might happen from what has been read (inference)	0.49	0.50	+0.02	Not significant

For all of the reading domains, the performance of Year 2 pupils in spring 2022 was not significantly different from that of Year 2 pupils in 2021. This suggests that the different aspects of reading skills of the Year 2 cohorts in 2021 and 2022 have been similarly affected by the disruption caused by the pandemic.

Table 37: Comparison between pupils eligible and ineligible for free school meals, Year 2 spring 2022 cohort for reading

Mean total mark for domain				
Domain	Non-FSM pupils Spring 2022	FSM pupils spring 2022	Difference	Significance
Use knowledge of vocabulary to understand texts	2.45	1.70	-0.75	Significantly lower
Identify/explain key aspects of texts (retrieval)	11.46	8.39	-3.07	Significantly lower
Identify and explain the sequence of events in texts (retrieval)	0.33	0.17	-0.16	Significantly lower
Make inferences from the text	5.71	4.07	-1.64	Significantly lower
Predict what might happen from what has been read (inference)	0.53	0.43	-0.10	Significantly lower

Year 2 pupils eligible for free school meals performed significantly less well in the spring 2022 reading assessments compared with those ineligible. This difference applies across all of the reading domains. The same disadvantage-related difference was also found for the spring 2021 sample.

We also compared attainment of girls and boys. In both the spring 2022 and spring 2021 reading assessments, on average, girls had significantly higher mean scores on each reading domain than boys. See Appendix G for further details.

Year 2 maths

In Year 2, a large proportion of the assessment is focused on two domains—number and place value and calculations. The remaining four domains have far fewer questions as these are areas that are in the early stages of being introduced to the pupils.

Table 38: Comparison between the standardisation sample and the spring 2022 cohort for maths

Mean total mark for domain				
Domain	Standardisation 2019	Spring term 2022	Difference	Significance
Number and place value	7.68	7.42	-0.26	Not significant
Calculations	18.39	17.79	-0.60	Not significant
Fractions	2.03	2.07	+0.04	Not significant
Measurement	2.67	2.71	+0.04	Not significant
Geometry	1.28	1.40	+0.12	Not significant
Statistics	1.07	1.16	+0.09	Not significant

As discussed in the cross-sectional analysis of Year 2 mathematics in the chapter on the results of Research Question 1, when compared to the 2019 standardisation sample, there was no significant difference in the overall performance of Year 2 pupils in maths. This is reflected in the domain analysis where there are no significant differences in the performance of pupils across the domains.

Unlike the standardisation sample, both of the cohorts of Year 2 children from 2021 and 2022 have had their schooling disrupted by the pandemic. They are different children who have taken exactly the same assessment at the same point in the year in 2021 and 2022 respectively.

Table 39: Comparison between the spring 2021 cohort and the spring 2022 cohort for maths

Mean total mark for domain				
Domain	Spring term 2021	Spring term 2022	Difference	Significance
Number and place value	7.32	7.42	+0.10	Not significant
Calculations	16.92	17.79	+0.87	Not significant
Fractions	1.83	2.07	+0.24	Significantly higher
Measurement	2.64	2.71	+0.07	Not significant
Geometry	1.39	1.40	+0.01	Not significant
Statistics	1.14	1.16	+0.02	Not significant

In five of the six maths domains, the performance of Year 2 pupils in spring 2022 was not significantly difference from that of Year 2 pupils in 2021. This suggests that the maths skills of the Year 2 cohorts in 2021 and 2022 have been similarly affected by the disruption caused by the pandemic. However, the spring 2022 pupils did score significantly higher in the domain of fractions.

Table 40: Comparison between pupils eligible and ineligible for free school meals, Year 2 spring 2022 cohort for maths

Mean total mark for domain				
Domain	Non-FSM pupils spring 2022	FSM pupils spring 2022	Difference	Significance
Number and place value	7.72	6.57	-1.15	Significantly lower
Calculations	18.79	14.69	-4.10	Significantly lower
Fractions	2.19	1.65	-0.54	Significantly lower
Measurement	2.82	2.39	-0.43	Significantly lower
Geometry	1.48	1.14	-0.34	Significantly lower
Statistics	1.21	1.06	-0.15	Significantly lower

FSM pupils performed significantly less well in the spring 2022 maths assessments—in all six domains—compared with non-FSM pupils.

We also compared attainment of girls and boys. Boys performed significantly better than girls in four of the six domains, including the two largest domains of number and place value and calculations. While girls did perform significantly better than the boys in geometry, this domain has a very small number of questions. See Appendix G for further details.

Year 3 reading

There is no Year 3 spring 2021 data with which the Year 3 spring 2022 data can be compared. We have therefore compared it to the 2017 standardisation sample only.

Table 41: Comparison between the standardisation sample and spring 2022 cohort for reading

Mean total mark for domain				
Domain	Standardisation 2017	Spring term 2022	Difference	Significance
Give/explain the meaning of words in context (vocabulary)	2.94	3.30	+0.37	Significantly higher
Retrieve and record information/ identify key details from texts (retrieval)	6.85	7.72	+0.87	Significantly higher
Summarise main ideas from more than one paragraph (retrieval)	1.45	1.47	+0.03	Not significant
Make inferences from the text/explain and justify inferences with evidence from the text	6.66	6.74	+0.09	Not significant
Identify/explain how content is related and contributes to meaning (inference)	1.22	1.13	-0.09	Not significant
Identify/explain how meaning is enhanced through choice of words and phrases (vocabulary)	1.09	1.25	+0.16	Significantly higher

Two curriculum domains were not tested in the Year 3 assessment: predict what might happen from details stated and implied and make comparisons within the text.

There was no overall significant difference in the performance of Year 3 pupils in reading in spring 2022 when compared to the standardisation sample in 2017. There were three domains in which pupils in 2022 performed significantly higher than the standardisation sample. These were retrieving and recording information or key details—one of the key domains in the curriculum, tested by the largest proportion of questions in the assessment—and the two domains related to the assessment of vocabulary. There was no significant difference for the key domain of making inferences from the text nor for the related inference skill, identifying how content is related to meaning.

Table 42: Comparison between pupils eligible and ineligible for free school meals, Year 3 spring 2022 cohort for reading

Mean total mark for domain				
Domain	Non-FSM pupils Spring 2022	FSM pupils Spring 2022	Difference	Significance
Give/explain the meaning of words in context (vocabulary)	7.22	5.07	-2.15	Significantly lower
Retrieve and record information/ identify key details from texts (retrieval)	3.54	2.46	-1.08	Significantly lower
Summarise main ideas from more than one paragraph (retrieval)	8.21	5.96	-2.25	Significantly lower
Make inferences from the text/explain and justify inferences with evidence from the text	1.55	1.21	-0.34	Significantly lower
Identify/explain how content is related and contributes to meaning (inference)	1.23	0.76	-0.47	Significantly lower
Identify/explain how meaning is enhanced through choice of words and phrases (vocabulary)	1.33	0.99	-0.34	Significantly lower

FSM pupils performed significantly less well in the Year 3 spring 2022 reading assessments than non-FSM pupils. This difference applies across all of the reading domains. The same disadvantage-related difference was also found for the spring 2021 sample.

We also compared attainment of girls and boys. There was a consistent difference between Year 3 boys and girls across all reading domains in both the spring 2022 and spring 2021 (in the baseline study). On average, girls had higher mean scores on each reading domain than boys. See Appendix G for further details.

Year 3 maths

There is no Year 3 spring 2021 data with which the Year 3 spring 2022 data can be compared. We have therefore compared it to the 2017 standardisation sample only.

Table 43: Comparison between the standardisation sample and spring 2022 cohort for maths

Mean total mark for domain				
Domain	Standardisation 2017	Spring term 2022	Difference	Significance
Number and place value	9.80	10.80	+1.00	Significantly higher
Calculations	11.78	14.08	+2.30	Significantly higher
Fractions	4.10	4.37	+0.27	Not significant
Measurement	3.01	3.20	+0.19	Not significant
Geometry	1.81	1.53	-0.28	Significantly lower
Statistics	3.33	3.60	+0.27	Significantly higher

In the Year 3 maths assessment, the domains of number and place value and calculations form the majority of the assessment. However, the proportion of questions from the domains of fractions, measurement, and statistics is slightly higher than in Year 2.

When compared to the standardisation sample, the spring 2022 cohort achieved significantly higher mean total point scores in three of the six domains: number and place, calculations, and statistics. Although the score for the domain of geometry was significantly lower, it is the domain assessed by the fewest questions in the assessment. It is

particularly interesting to see the level of progress in the domains of number and place value and calculations as these are key skills that will impact upon the pupils' learning across all domains of the maths curriculum.

Table 44: Comparison between pupils eligible and not eligible for free school meals, Year 3 spring 2022 cohort for maths

	Mean total mark for domain			
Domain	Non-FSM pupils spring 2022	FSM pupils spring 2022	Difference	Significance
Number and place value	11.44	8.57	-2.87	Significantly lower
Calculations	15.26	9.96	-5.30	Significantly lower
Fractions	4.77	2.94	-1.83	Significantly lower
Measurement	3.50	2.18	-1.32	Significantly lower
Geometry	1.61	1.21	-0.40	Significantly lower
Statistics	3.77	2.97	-0.80	Significantly lower

FSM pupils achieved significantly lower mean total point scores in all six of the domains in the spring 2022 assessments compared with non-FSM pupils.

We also compared attainment of girls and boys. In Year 3 maths, in spring 2022, boys scored significantly higher than girls in five of the six domains. There was no difference in the performance of boys and girls in geometry. See Appendix G for further details.

Research question 4: What practices have been adopted and what learning opportunities have been provided by schools to help pupils catch up; and what challenges have been faced by staff?

Summary

- The 2021/2022 academic year continued to be disrupted because of the pandemic, mainly due to absences of staff and pupils because of Covid-19.
- The vast majority of schools have retained increased wellbeing support, provision for home learning, and increased hand-washing since implementation during 2020/2021.
- Year 2 and Year 3 staff had more absence, undertook increased work supporting pupils, and increased work to help pupils to catch up.
- Most schools felt they were well prepared to deliver effective home learning.
- Most schools felt they were able to support home learning 'quite' or 'very' well. The most common support measures were online resources, educational software and apps, and physical resources.
- More than half of all respondents felt they had had challenges with online learning, with increased workload being the most commonly reported challenge.
- For both maths and reading, the top three strategies implemented for learning recovery were small-group work, staff redeployment, and a revised curriculum.
- Over 80% of schools used funding for school tutors as their tutoring catch-up strategy.
- The top three strategies for social or wellbeing support for Year 2 and Year 3 were small-group wellbeing sessions, staff redeployment, and extra PSHE sessions.
- The vast majority of teachers reported that parents were willing to provide support, but only half of teachers said that parents had the capability to so.

The headteacher survey collected information about the situation in schools following the disruption caused by the Covid-19 pandemic, the challenges faced in the current school year, and how well they were able to support children's learning.

Disruption to learning in the 2021/2022 academic year

As shown in Figure 23, all but one headteacher reported that the learning of Year 2 and Year 3 pupils was disrupted during 2021/2022. Over half (55%) said it was somewhat disrupted and 15% very disrupted. Common reasons given were the Covid-19-related absences of pupils (26%) and of staff (24%). The need to cover material that would normally be taught in earlier years was reported as a disruption by 19% of headteachers. Challenges with pupil behaviour or wellbeing was also a factor for 13% of respondents. Figure 24 presents the other reasons for disruption selected by headteachers.

Figure 23: How would you rate the level of disruption to learning this academic year to date?

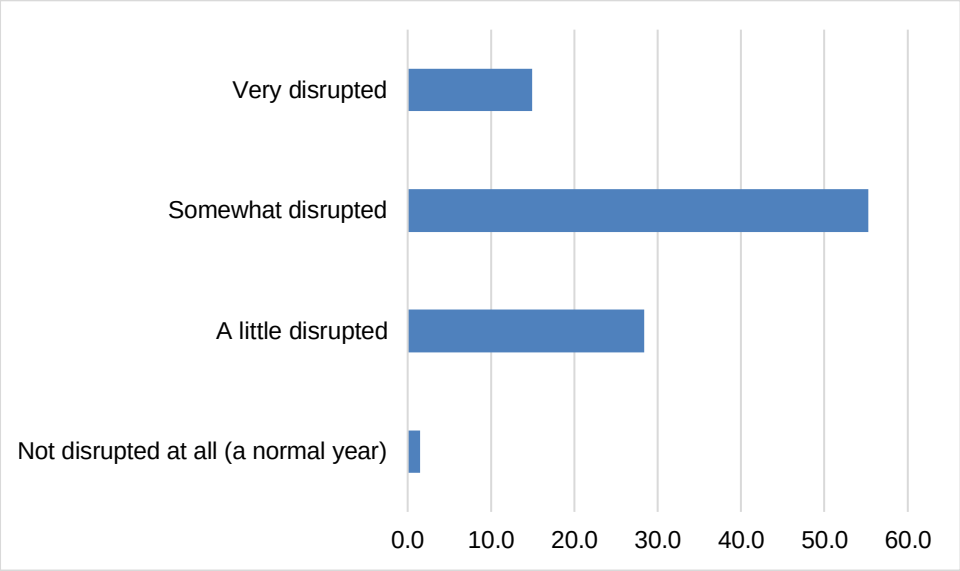
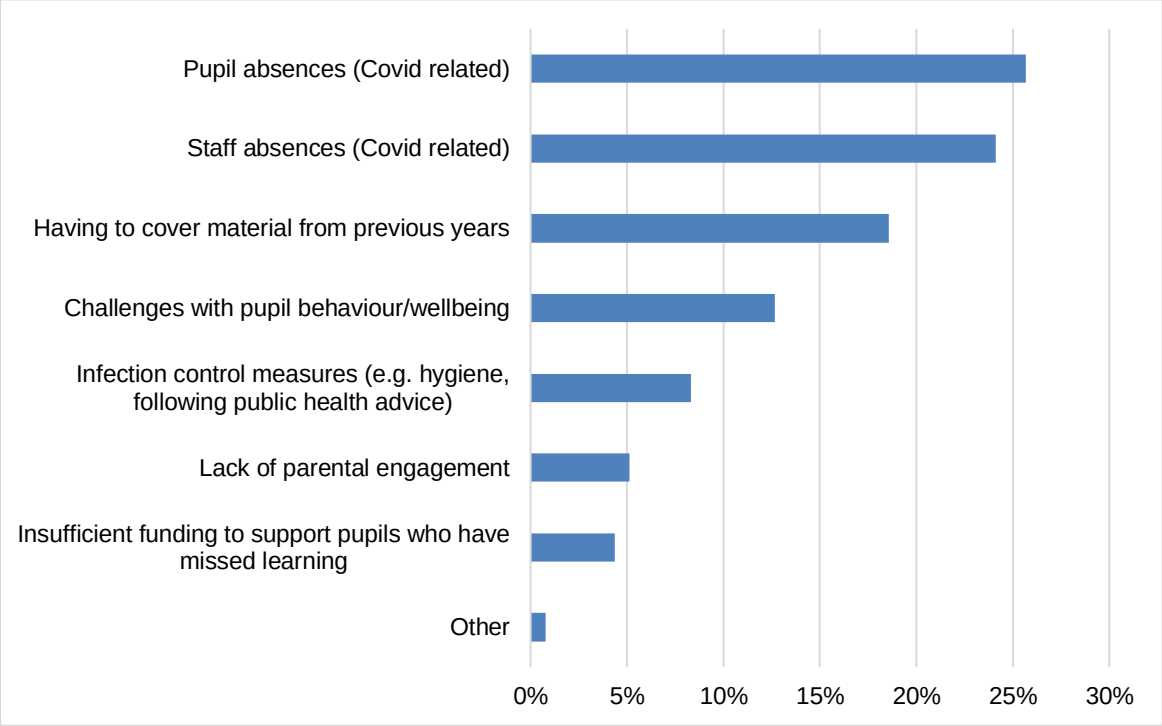


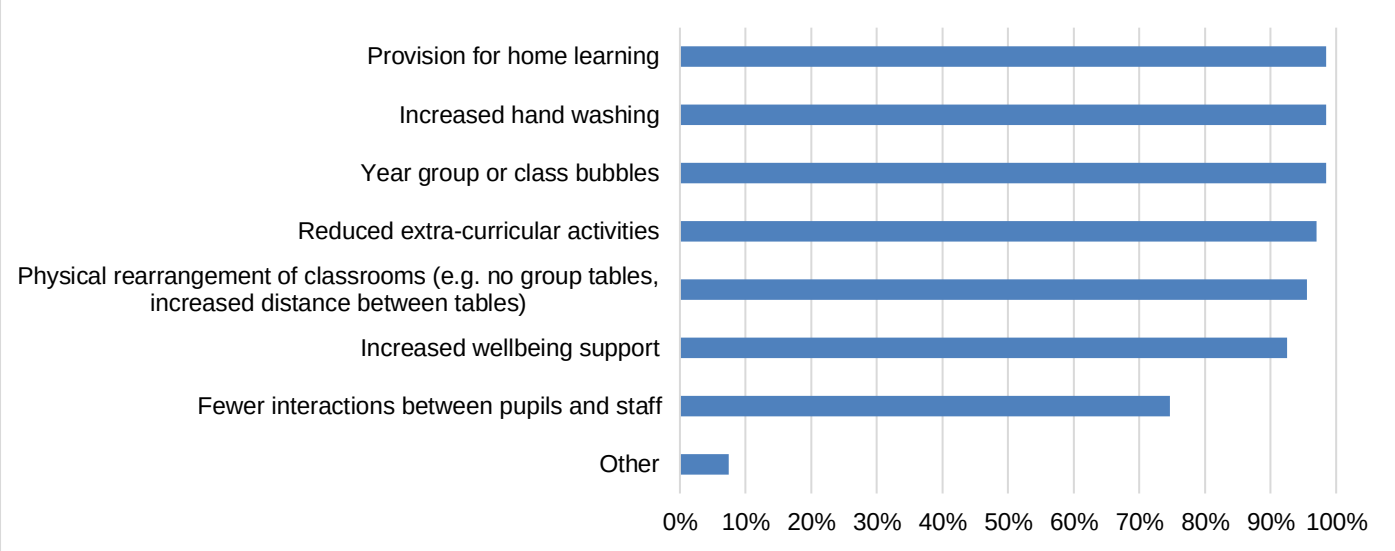
Figure 24: What are the main reasons for this disruption?



Practices retained after the end of Covid-19-related school closures

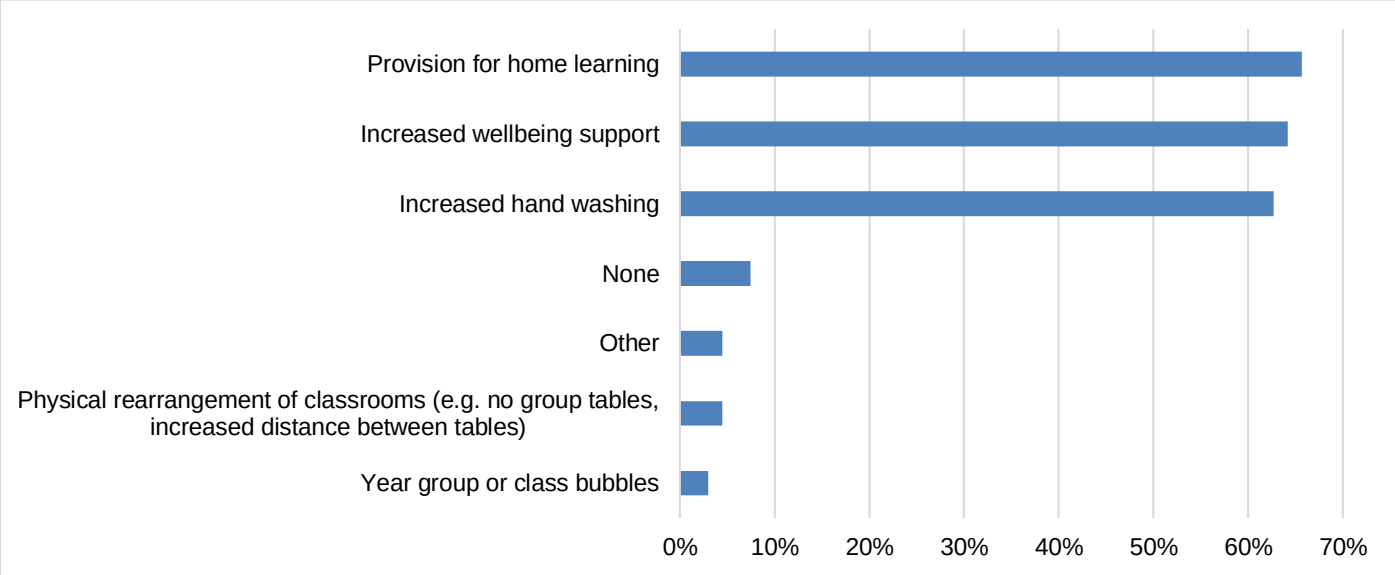
During the academic years 2019 to 2021, the vast majority of headteachers introduced practices to their schools as a result of Covid-19, as shown in Figure 25. Over 90% of schools had introduced year group or class bubbles, increased handwashing, provision for home learning, reduced extracurricular activities, rearranged classrooms, and increased wellbeing support. Three-quarters had reduced the number of interactions between pupils and staff.

Figure 25: What practices did your school introduce during the 2019/2020 and 2020/2021 academic years as a result of Covid-19?



Home learning provision, increased wellbeing support, and increased hand washing were retained by the majority of schools because they had been found to be an improvement to pre-pandemic practices. The level of retention of Covid-19-related measures are shown in Figure 26.

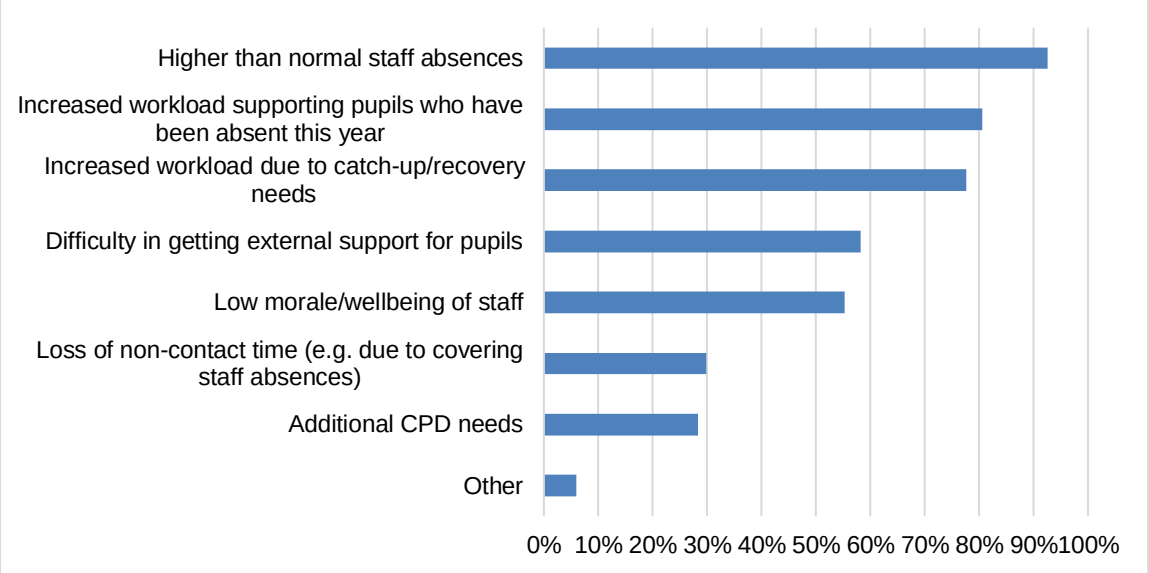
Figure 26: Are there any practices that your school has found to be an improvement to pre-pandemic practices and, therefore, chosen to retain for the future?



Challenges for school staff in 2021/2022

The combination of high staff absence and increased workload supporting pupils either absent in the 2021/2022 academic year or to catch up on missed learning has been a challenge faced by the vast majority of schools. Given these challenges, it is perhaps unsurprising that headteachers had concerns for the low morale and wellbeing of staff. Figure 27 presents this information.

Figure 27: Have any of the following challenges been faced by Year 2 and Year 3 school staff this academic year?



Provision of remote learning for Year 2 and Year 3 pupils

Nearly a third of headteachers (31%) said that they felt 'very well' able to support home learning for pupils absent from school (for example, those isolating at home because of infection). A further 52% reported they felt 'quite well' able to support home learning, as shown in Figure 28. When asked how well prepared they felt their school was to deliver effective home learning for all pupils in the event of further school closures, two-fifths (43%) said they were 'very well' prepared with only 5% saying they were 'somewhat' prepared, as shown in Figure 29.

Figure 28: How well do you feel you are currently able to support home learning for pupils who are absent from in-school learning (for example, when isolating)?

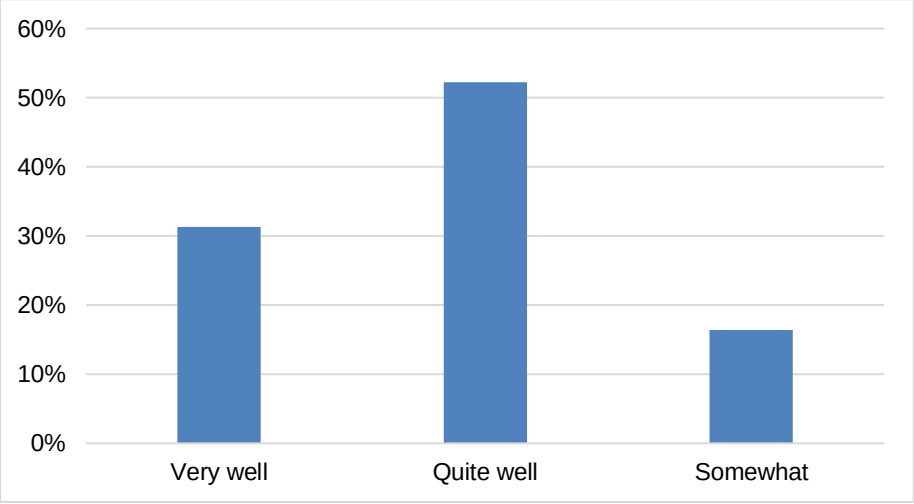
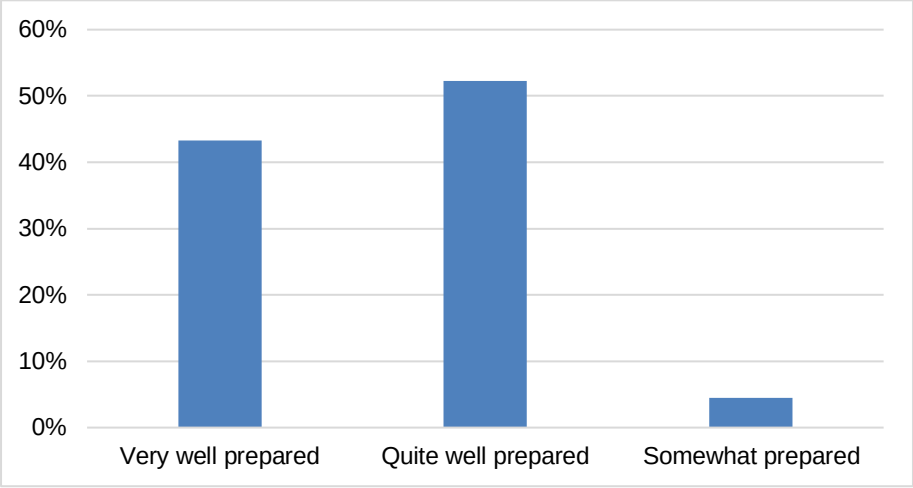
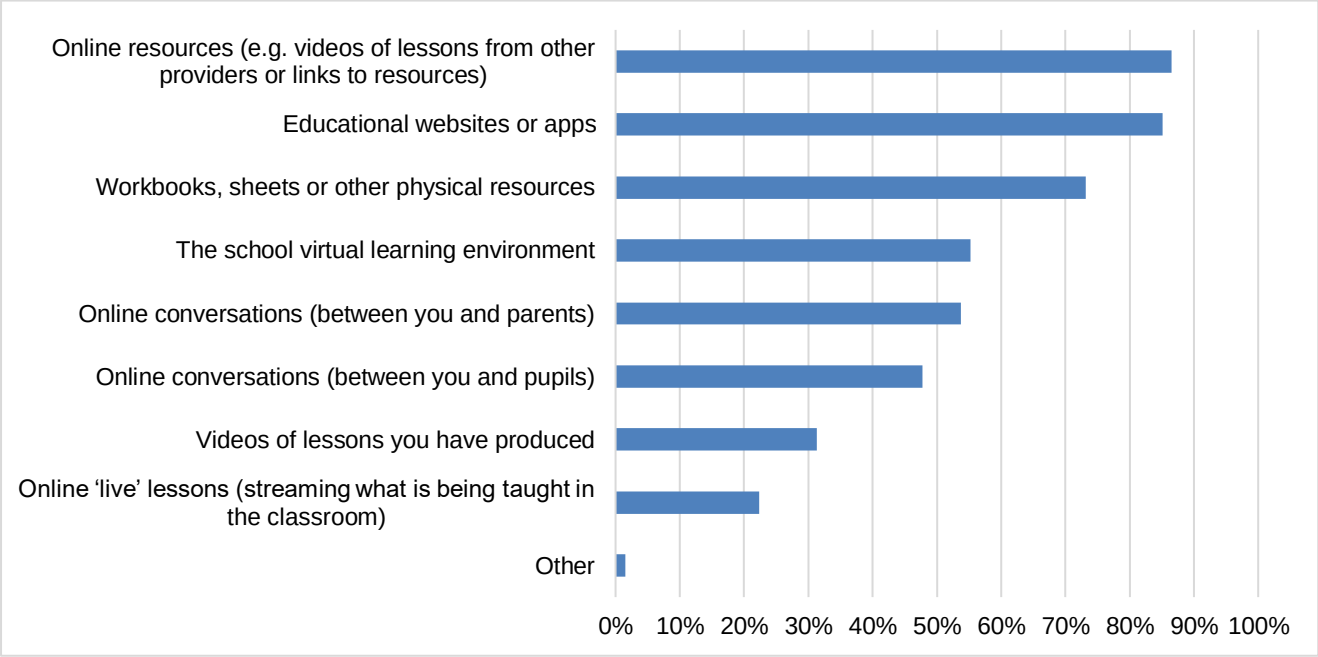


Figure 29: In the event of further school closures, how well prepared to do you feel your school is to deliver effective home learning for all pupils?



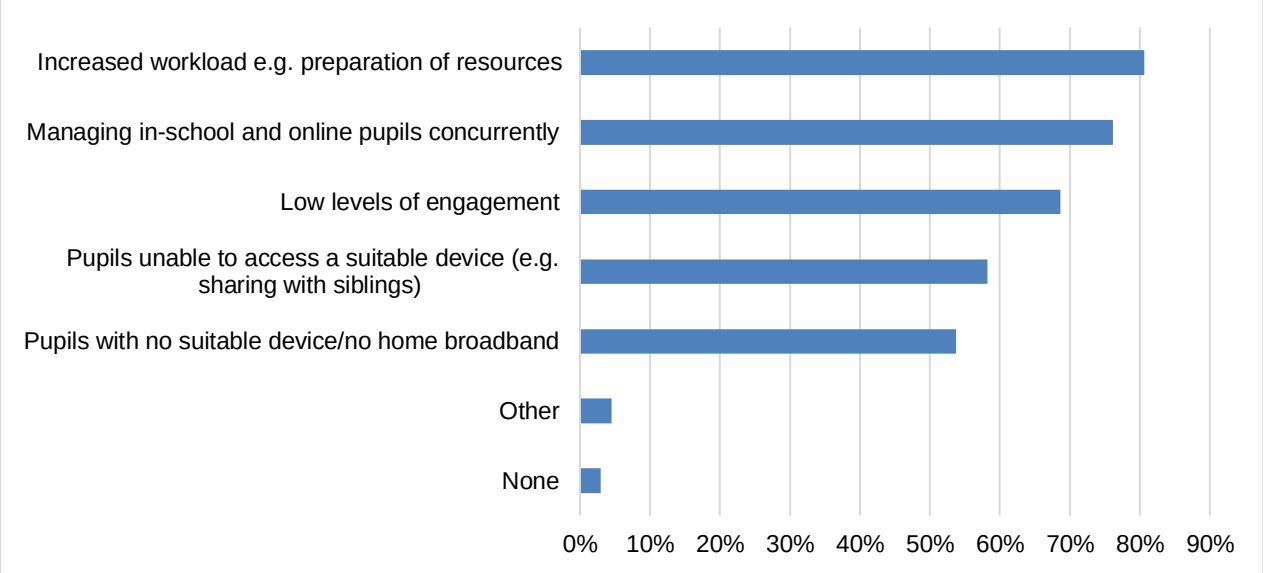
The most common methods for supporting home learning were internet-based: online resources (87%), educational websites or apps (85%), and the school's virtual learning environment (55%). Workbooks, sheets, or other physical resources were also common, reported by 73% of headteachers. Around half reported using online conversations, either with parents (54%) or pupils (48%). Less common were videos of lessons produced by the school (31%) and online 'live' lessons—streaming the classroom (22%). Figure 30 presents this information.

Figure 30: How does your school support home learning for pupils who are absent from in-school learning (for example, when isolating)?



As shown in Figure 31, increased workload was the most commonly reported challenge encountered with online learning in the academic year, reported by 81% of headteachers. A similar proportion reported the difficultly of managing in-school and online pupils concurrently (76%). Just over two-thirds of headteachers (69%) reported that there were low levels of engagement with online learning and over half reported that access to suitable devices was a problem for over half of pupils (for example, due to sharing, 58%, or because there was unsuitable technology at home, 54%).

Figure 31: What challenges have you encountered with online learning this year?



Catch-up strategies in 2021/2022 for Year 2 and Year 3

The strategies implemented in schools to aid pupils' learning recovery were similar for both maths and reading, as shown in Figures 32 and 33. The most common strategy was small-group work (maths 90%, reading 91%). Staff redeployment was more common for reading (78%) than maths (69%), while revisions to the curriculum were more common for maths (66%) than reading (58%). Engaging parents to support learning was more common for reading (46%) than maths (37%), whereas catch-up programmes were more common for maths (31%) than reading (25%).

Tutoring was reported by similar proportions of headteachers for maths (43%) and reading (42%), as was tutoring through the National Tutoring Programme (maths 39%, reading 36%). Of the headteachers reporting that tutoring was used in their schools, 82% said they were using the funding for school tutors (School-Led Tutoring grant), 28% were using Tuition Partners tutors, and 22% were using external tutors or another approach.

Figure 32: Maths: what strategies has your school implemented this academic year to aid Years 2 and Year 3 learning recovery?

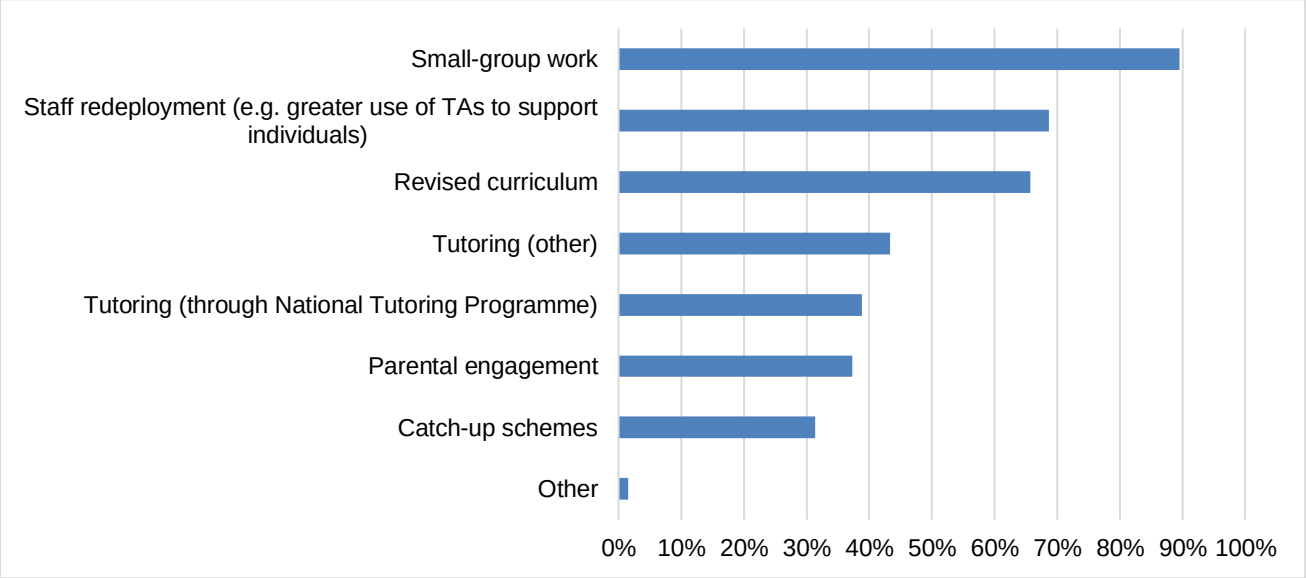
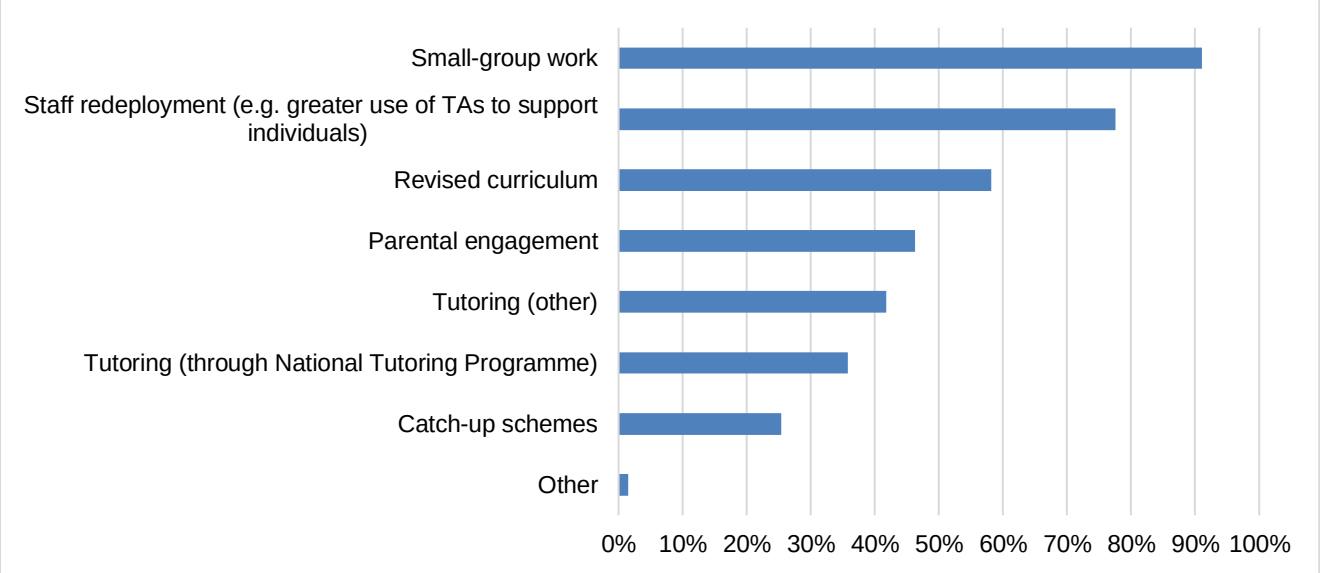


Figure 33: Reading: what strategies has your school implemented this academic year to aid Years 2 and Year 3 learning recovery?

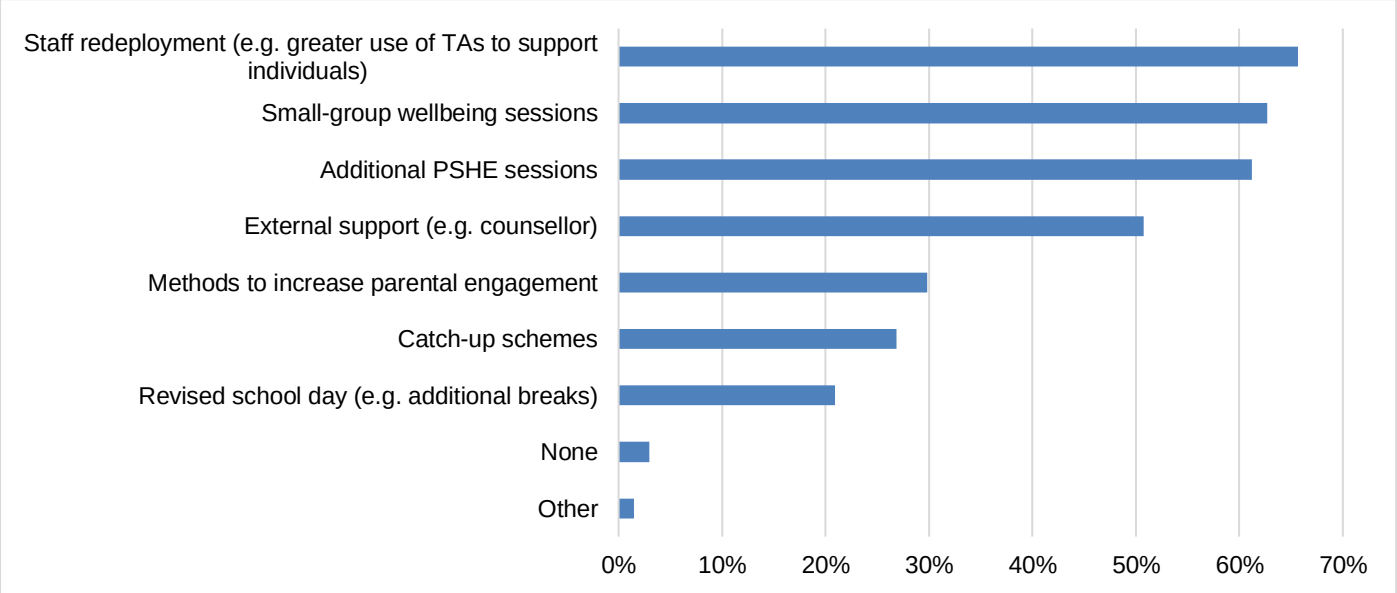


Support for social skills and wellbeing for Year 2 and Year 3

The headteacher responses highlight areas for concern for pupils' wellbeing. As reported in this section, 13% of schools reported disruption in the 2021/2022 academic year due to challenges with pupil behaviour and wellbeing, and 58% of schools were struggling to get the external support they needed for pupils.

The most common strategy for providing social skills or wellbeing support for pupils was staff redeployment, reported by two-thirds of headteachers (66%). Small-group wellbeing sessions and additional PSHE sessions were similarly popular (63% and 61% respectively). Half of headteachers (51%) reported that external support for pupils was available, which could be seen to contradict the 58% of schools struggling to get the external support they needed for pupils. However, headteachers responded that they were struggling to get external support to a broader question about the biggest challenges they were facing. Many schools (30%) had introduced methods to increase parental engagement at school. Just over a quarter of headteachers (27%) said that their schools had implemented catch-up schemes and just over a fifth (21%) had revised the school day (for example, having additional breaks). This information is shown in Figure 34.

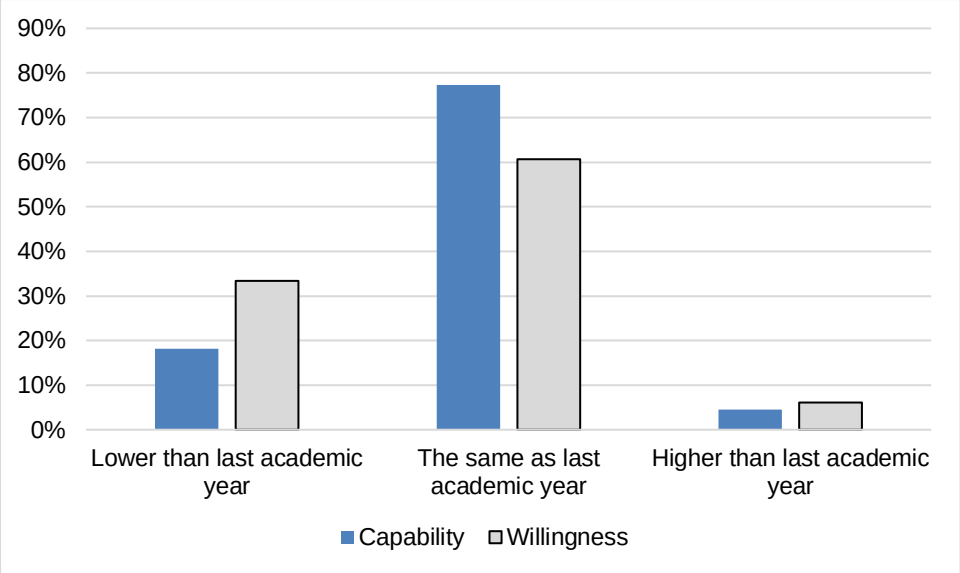
Figure 34: What strategies has your school implemented this academic year to provide social skills/wellbeing support for Year 2 and Year 3?



Three in ten headteachers (30%) reported that the level of support most parents were providing to their children in terms of their learning was high, while two in ten (21%) said it was low. The remaining half (49%) said it was neither high nor low.

As shown in Figure 35, three-quarters of headteachers rated the capability of parents to support their children's learning (for example, having the time or resources to support) as the same as that in the previous academic year. Nearly one-fifth (18%) reported that it was lower than the previous year. However, when asked about parents' willingness to support their children's learning, a third of headteachers (33%) said that it was lower than the previous academic year.

Figure 35: How would you rate the level of parental support, in terms of capability (for example, time, resources to support), and willingness, compared to last academic year?



Research question 5: Are social skills at or behind expectations?

Summary

- The Peer Social Maturity Scale (PSMAT) was found to be a reliable measure, as were the bespoke supplementary items written to investigate a broader range of social skills.
- The school survey highlighted headteachers' concerns about Year 2 and Year 3 pupils' wellbeing; 63% of schools had implemented small-group wellbeing sessions and 61% additional PSHE sessions. As for many similar measures, the PSMAT validation study was small-scale and sampling appears non-random. We, therefore, cannot be reassured that the validation means are generalisable to pupils in our sample but, if we compare teachers' assessments of Year 2 and Year 3 social skills in our study with the means from the validation study, pupils in Year 2 and Year 3 were rated as less socially mature.
- FSM pupils and boys were assessed as having significantly lower social skills than non-FSM pupils and girls, respectively.

The social skills of pupils in Year 2 and Year 3 in 2021/2022 were measured using Peterson et al.'s (2007) Peer Social Maturity Scale (PSMAT) and bespoke items written for this study. Year 2 and Year 3 teachers were asked to rate 12 randomly selected pupils on the seven PSMAT items and seven bespoke items using a seven-point scale. The centre of the scale (4) represents a rating of 'about average for children this age'. Responses 1 to 3 represent 'less mature than the average child of this age' (from 'very much less', 1, to 'a little less', 3). Reponses 5 to 7 represent 'more mature than the average child of this age' (from 'a little more', 5, to 'very much more', 7). As discussed in the methods section, the Child Self-Regulation and Behaviour Questionnaire (CSBQ) was used to measure the social skills of pupils in the 2020/2021 baseline study (Rose et al., 2021). As this was a different measure, we are, therefore, unable to make direct comparisons between the social skills of pupils in spring 2022 and spring 2021. In this chapter, we present data on the performance of the PSMAT and bespoke items as a measure of social skills, compare social skills of pupils in this study with the validation of the PSMAT (with caveats), and analyse differences in social skills of pupils by gender and free school meals eligibility.

Performance of the PSMAT and bespoke items

The PSMAT showed excellent internal consistency for our sample: a Cronbach's alpha of 0.97. The supplementary items performed similarly with a Cronbach's alpha of 0.96. The sets of items were highly correlated (0.9) and, together, the 14-item scale had a Cronbach's alpha of 0.98. The range of scores for each of the items indicated that teachers were discriminating between children in their responses to the items. An exploratory factor analysis indicated that the 14 items measured one factor, which accounted for 80% of the variance.

The value in the measure of social skills will be to compare pupils in 2022/2023 with pupils in the previous academic year. However, below we make comparisons with the validation of the measure in order to check how pupils in England were scored compared with those in the Australian studies. The validation study of the PSMAT was reported by Fink et al. (2013). It established the convergent validity of the PSMAT with a norm-referenced scale, the Social Skills Rating System (Gresham and Elliott, 1990). The first part of the validation study (Study 1) assessed a sample of 145 pupils in Sydney, Australia, with a mean age of 6 years 6 months. The second part of the validation study (Study 2) assessed a separate sample of children on the PSMAT and SSRS longitudinally in kindergarten, Grade 1 and Grade 2. From an original sample of 114 children in kindergarten, 96 remained in the Grade 2 group. However, due to the poor documentation of the sampling approach of the validation study, the results presented below should be taken with caution.

The mean scores and standard deviations for Study 1 and 2 are reported in Table 45 alongside the total mean scores for pupils assessed in spring 2022 in this study for the PSMAT and supplementary items, including scores broken down by Year 2 and Year 3 pupils. The mean score for pupils assessed in spring 2022 and Fink et al.'s Study 1 mean score are very similar. Fink et al.'s score of 27.26 is within the confidence interval around the mean for the sample in this study but the average age in the validation study was lower than ours. Average age was more comparable

between Grade 1 (in Study 2) and our Year 2 and between Grade 2 and our Year 3. If we calculate confidence intervals for these validation study samples, we can see that our means are significantly lower in both year groups. As noted above, there is insufficient evidence on the quality of the sampling for the validation study. However, if these were reasonable estimates of the pre-pandemic population of Australian children at this age, this comparison does suggest that English children post-pandemic are less mature socially. To note, it is not appropriate to make any comparisons with these validation studies and the supplementary items.

Table 45: Total mean scores for the PSMAT scale from the validation study and this study, plus supplementary items, by year group

		Fink et al. (2013)					This study			
			PSMAT				PSMAT		Supplementary items	
		Mean age (years: months)	Mean	SD		Age range (years)	Mean (95% CI)	SD	Mean (95% CI)	SD
Study 1		6:6	27.26	7.36	All pupils	6–8	27.01 (26.60–27.42)	8.22	27.47 (27.06–27.89)	8.35
Study 2	Kinder-garten	5:7	29.32	9.01	-	-	-	-	-	-
	Grade 1	6:8	29.25	8.08	Year 2	6–7	27.07 (26.47–27.68)	8.53	27.49 (26.89–28.10)	8.55
	Grade 2	7:8	30.91	9.37	Year 3	7–8	26.95 (26.39–27.51)	7.90	27.45 (26.87–28.03)	8.14

Social skills of pupils measured by the PSMAT and bespoke items

As discussed in the previous section, the mean scores for pupils in this study are lower than similarly aged pupils in the validation study.

There are seven items in the PSMAT scale and seven supplementary items. For each item, a rating of three or below indicates the child is less socially mature than children of that age and a rating of five or above indicates the child is more socially mature. A score of 28 (7×4) is representative of a child who, on average, had the expected level of maturity for children of the same age. Using this approach, a score of 21 (7×3) can be taken as a cut-off point, and children scoring 21 or below can be considered to be, on average, not yet at the expected level of social maturity for children of the same age. Similarly, a score of 35 (7×5) and over would indicate that a child was more mature than a child of the same age. We can, therefore, use these cut-off points to look in more detail at the social skills of pupils.

Table 46: Percentages of children rated as less, more, or about average in terms of their social maturity, as measured by the PSMAT

			Less mature than average child	About average	More mature than average
Fink et al. (2013)	PSMAT Study 1		23%	-	-
	PSMAT Study 2	Kindergarten	17%	-	-
		Grade 1	23%	-	-
		Grade 2	10%	-	-
This study	PSMAT		22%	60%	18%
	Supplementary items		21%	59%	20%

The majority of pupils were rated as having the same level of social maturity as average children of the same age, with the proportions being less mature or more mature being similar to each other. Teachers indicated that 60% of pupils had an average level of social maturity for children of the same age on the PSMAT, and pupils were rated very similarly on the supplementary items. In the validation of the PSMAT scale, Fink, et al. do not report the percentage of children either 'about average' or 'more mature than average'. However, in Study 1 they found that 23% of children were rated as less mature than the average child of the same age. In this study, a similar percentage was found: 22%. For the supplementary items, the percentage was 21%, as shown in Table 46.

Figures 36 and 37 present the proportions of rating of pupils below, at, and above average levels of maturity on the PSMAT and supplementary items, respectively. The PSMAT item for which the greatest proportion of pupils were rated as being 'less mature than the average child of this age' was 'the child's leadership skills with peers' (40% of pupils). The item for which pupils were rated most mature was 'the child's ability to understand the needs of peers who differ from the norm' (27% of pupils were rated as 'more mature than the average child this age').

Of the supplementary items, an item intended to measure emotional regulation, 'the child's ability to deal with minor conflict and disappointment', was the item for which the greatest proportion of pupils were rated as less mature than an average child (37% of pupils; and only 21% were rated as more mature than average). The item, 'the child's ability to make choices for themselves', had the lowest proportion of pupils rated as less mature (26%).

Figure 36: Maturity ratings of pupils on the PSMAT scale

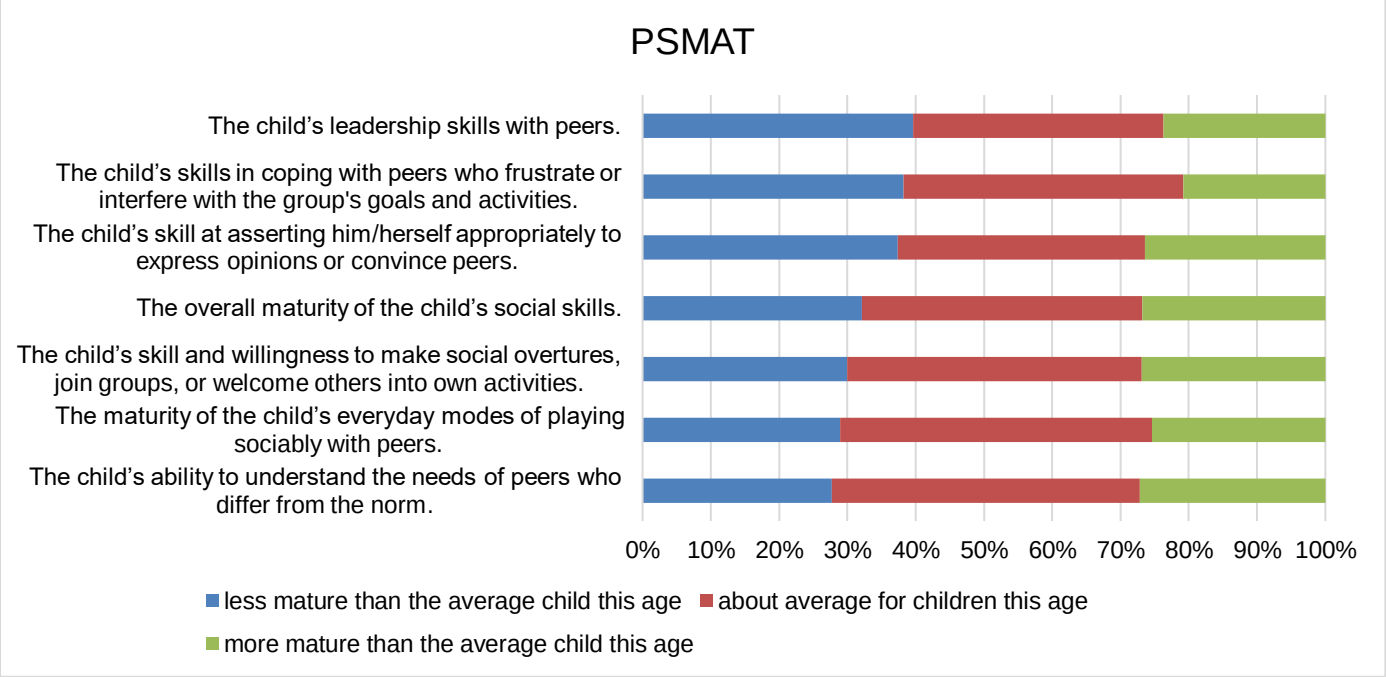
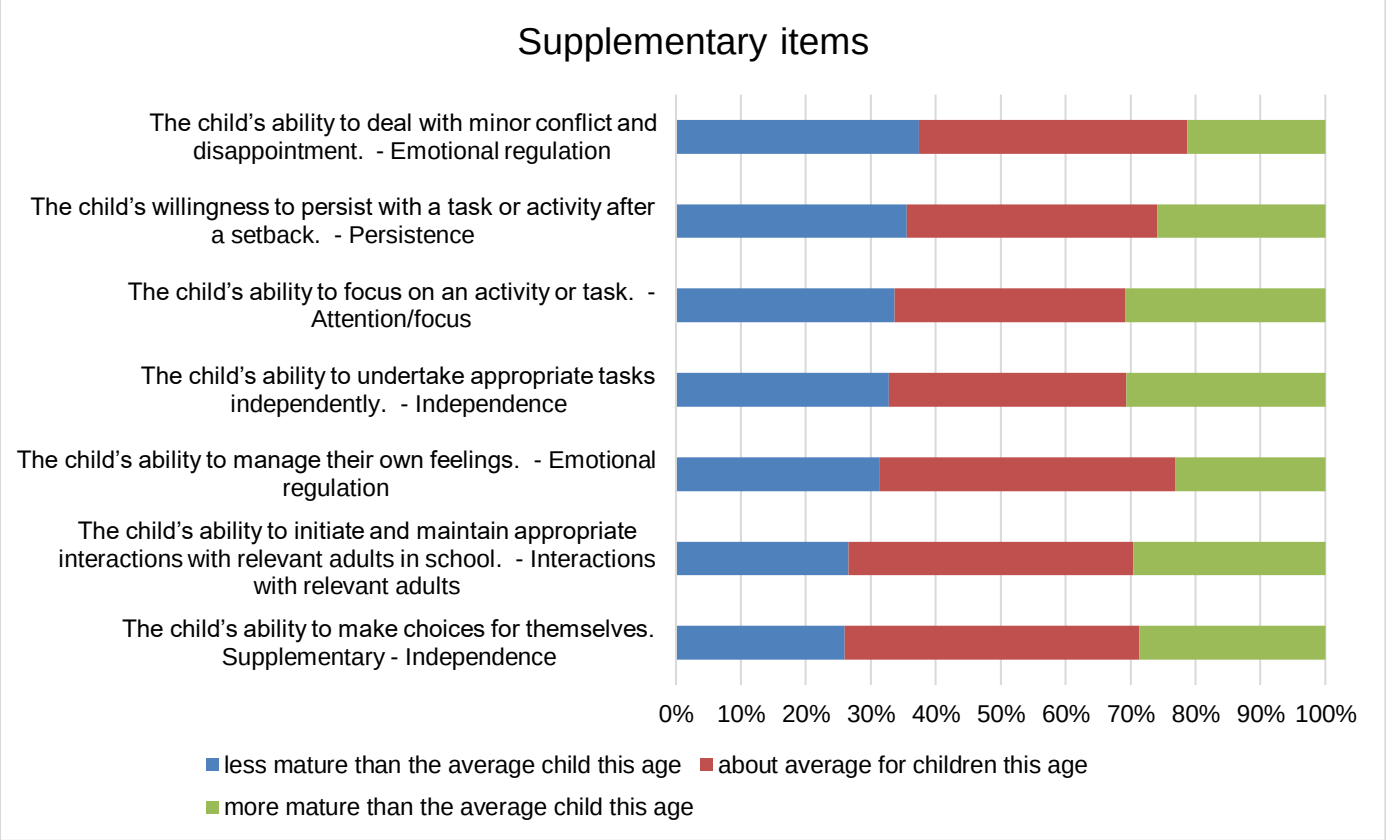


Figure 37: Social skills ratings of pupils on the Supplementary items



Teachers' assessments of their pupils did not indicate areas for concern in the social skills of pupils in Year 2 and Year 3. In the previous chapter on the results of research question 4 (figure 25), we reported on the support provided by schools for pupils' social skills and wellbeing. Over 90% of headteachers reported that increased wellbeing support was introduced in their schools as a result of Covid-19 and 64% said that it had remained in place in the 2021/2022 academic year. This indicates that many schools are attributing some of the greater challenges they are facing to changes in pupils' wellbeing and this is, therefore, a priority area for schools. It should be noted that we do not have a baseline for English pupils established before the Covid-19 pandemic with which to compare these findings with the PSMAT. The repetition of the measure in 2022/2023, when pupils are in Year 3 and Year 4, will enable us to understand how the social skills of pupils are changing in our sample.

Differences in social skills by eligibility for free school meals

Pupils eligible for free school meals were rated as having lower social skills than those ineligible in both the PSMAT and the bespoke supplementary items. These differences were significant. This finding was also found in the baseline study using a different measure (the CSBQ) when pupils were in Year 1 and Year 2 in 2020/2021.

Table 47: Total mean scores for the PSMAT scale and supplementary items, by eligibility for free school meals

Measure		Mean (95% CI)	SD
PSMAT	Eligible for free school meals	24.69** (23.52–25.86)	8.90
	Ineligible for free school meals	27.80 (27.34–28.26)	7.85
Supplementary items	Eligible for free school meals	24.82** (23.68–25.96)	8.67
	Inligible for free school meals	28.36 (27.89–28.83)	8.02

** Significantly different at 1% level.

Differences in social skills by gender

Boys were rated as having lower social skills than girls in the PSMAT and the supplementary items, and these differences were significant.

Table 48: Total mean scores for the PSMAT scale and supplementary items, by gender

Measure		Mean (95% CI)	SD
PSMAT	Female	28.73** (28.13–29.33)	8.04
	Male	25.67 (25.08–26.26)	8.06
Supplementary items	Female	29.29** (28.69–29.89)	8.10
	Male	26.08 (25.28–26.68)	8.20

** Significantly different at 1% level.

Limitations

The results of this study should be interpreted with some important limitations in mind.

For the cross-sectional analyses, any sample representation checks and weighting that resulted were based on school-level data weighted to pupil numbers. This is not as good as true pupil-level representativeness comparisons. The spring 2021 and spring 2022 schools were not sampled in such a way as to be representative. Weighting on school-level Key Stage 2 attainment outcomes addresses differences between the standardisation sample and our samples in spring 2021 and 2022, making them more representative. We also checked comparability of other characteristics which are likely to have an impact on attainment outcomes, for instance the percentage of FSM pupils. Nevertheless, there may have been underlying reasons for schools to decide not to take part in spring 2021 and 2022 that are not fully accounted for by the weighting. The high attrition between spring 2021 and spring 2022 also brings similar risks that underlying factors are not fully accounted for. Notwithstanding the limitations in regard to representativeness and thus generalisability to the general population—by only comparing the same schools in spring 2021 and 2022—the repeated measures analysis has internal validity; that is, comparisons in performance are made within similar samples and thus not affected by attrition.

The loss of participating schools between 2021 and 2022 made the detection of statistically significant differences less likely. Simulations carried out showed that moderate to large size effects would still be detectable, particularly for the Covid-19 gap. Change in the disadvantage gap posed greater challenges for detecting change due to the imbalance between the proportion of FSM and non-FSM pupils, and this would have been the case if the full spring 2021 sample had been maintained.

Additionally, when checking the assumptions for running our linear mixed-effects multilevel models, we observed instances of violation of the normality of residuals assumption. However, given our large sample size, such a violation is not a cause of concern. In fact, studies have shown robustness of linear mixed-effects models to violations of distributional assumptions. Estimates from such models are at worst imprecise in their confidence intervals, but not biased (see, for example, Schielzeth et al., 2020).

Clearly there are several different reasons why the sample mean or distribution shape for different assessments in our study are different from previous standardisation samples, aside from school closures. For example, the samples for our comparison came from two different years (2019 for Year 2 and 2017 for Year 3) and additionally each assessment in the NFER assessment suite is standardised as a standalone assessment. For Year 3 in particular, as the standardisation sample was standardised relatively soon after a new curriculum was introduced, some of the changes observed may, in part, be attributed to the sawtooth effect (the decrease in performance when a new curriculum is introduced and then improvements in subsequent years). This means that we may be underestimating the Covid-19 gap. We also acknowledge the limitation that this is not conceptually a pure indication of the Covid-19 gap as schools have implemented a range of additional support strategies and activities prior to the pupils sitting these assessments. The school-level survey was used, as appropriate, to help us interpret the results.

The PSMAT has limitations as a measure of social skills and wellbeing. It was validated before the Covid-19 pandemic for a small sample of Australian children and does not have norms. It was validated longitudinally, but again with a small potentially unrepresentative sample of pupils and, therefore, there is a limit to the conclusions that can be drawn on whether pupils were at ‘expected’ standards. However, the PSMAT and bespoke supplementary items performed well as a scale. It also identified differences in the social skills of pupils eligible and those ineligible for free school meals, and differences between girls and boys. The change in measure from the CSBQ in the baseline study to the PSMAT with additional bespoke items means that comparisons cannot be made to the baseline. Comparisons will be possible between pupils in 2021/2022 and 2022/2023.

Discussion and implications

The disruption faced by schools between spring 2020 and summer 2021 was unprecedented, with partial school closures and a move to online learning. Our study found that in the 2021/2022 academic year, the vast majority of schools felt equipped to delivery online and home learning but they continued to deal with huge challenges as they faced high staff absences and increased workload to put in place additional measures to support pupils (Morton, 2022). In addition, pupils have continued to miss more school during 2021/2022—and learning—than would have been expected before the pandemic.

Existing evidence on recovery in 2020/2021 has highlighted the different challenges faced by pupils at different stages of education (such as reviewed by Twist et al., 2022 and the EEF, 2022). All age groups had lower attainment, but within primary school, for Key Stage 1 pupils, reading was the subject most affected. For Key Stage 2 pupils, maths attainment and writing were most affected; this persisted into the 2021/2022 academic year as demonstrated by the 2022 Key Stage 2 data (DfE, 2022). Our study shows positive results in 2021/2022 for maths and Year 3 pupils indicating that the support strategies which schools have put in place have been effective at reducing the impact of the disruption to learning of pupils in our study. There was no significant difference in the maths performance of Year 2 pupils compared with before the pandemic, and there was no significant difference in the performance of Year 3 pupils in reading and maths compared with before the pandemic. For reading, Year 2 pupils were three months behind where they would be expected to be, but the Covid-19 gap had reduced since they were in Year 1. As discussed in the limitations, the generalisability of the findings relies on our sample being representative. Efforts to correct for a lack of representativeness with regard to achievement were taken by weighting our samples to Key Stage 2 attainment. However, there may be underlying reasons for schools that decided not to participate in the original 2021 sample and again for schools' decisions not to take part in 2022, which may be related to attainment outcomes not fully captured by our study.

The results of the study indicate that the negative impact of school closures on Year 2 pupils' learning is still evident in reading. However, the findings for Year 2 maths and Year 3 are positive. In Year 2 maths, the evidence seen in Rose et al. (2021) of a beginning in recovery is supported by our findings. The Year 2 maths and Year 3 results suggest that the strategies implemented by teaching staff to support pupils in a very challenging year have been well targeted.

However, our study does raise areas of concern in addition to the Year 2 reading result. Behind the average attainment data are two worrying findings. These are the increase in numbers of the lowest performing pupils and the wide disadvantage gap.

There was a greater proportion of Year 2 and Year 3 pupils in both reading and maths who were unable to engage with the assessments compared with before the pandemic. This was also a finding in the baseline study during 2020/2021 (Rose et al., 2021). For instance, in Year 2 reading this is the difference between one pupil in a class of 30 lacking the skills to access the assessment, on average, before the Covid-19 pandemic and three children in a class since Covid-19 indicating a substantial challenge for teachers and support staff in each class and across the country, particularly those in schools in disadvantaged areas with higher proportions of lower performing pupils.

Research into the impact of the pandemic on attainment has consistently found that the disadvantage gap widened further (Rose et al., 2021; Blainey and Hannay, 2021). Our study provides no evidence for the disadvantage gap decreasing or increasing since spring 2021. Although the cohort of disadvantaged pupils in spring 2022 scored significantly higher than the cohort in spring 2021, the change in scores was at the same rate as for non-FSM pupils.

The impact of the wide disadvantage gap and the increase in the number of very low attaining pupils will continue to be demanding of teacher and support staff time. This study highlights the importance of policymakers ensuring that schools have the appropriate resources to identify these pupils early and provide targeted support as they progress through primary school to enable them to reach their potential. This is particularly important as primary schools make tough decisions about areas of funding as budgets are squeezed. Our findings about the impact of school-level FSM on attainment reinforce the magnitude of the challenge faced by schools in deprived areas.

Our study found that the wellbeing of pupils was an area of increased focus for schools during 2021/2022. Teachers' assessments of the social skills of their pupils is suggestive that this could be an area for concern. The school survey indicated that headteachers continued to be concerned about Year 2 and Year 3 pupils' wellbeing; interventions were

focused on improving the wellbeing of pupils and reducing the challenges faced by classroom staff as a result of problems identified by schools in this area.

This longitudinal study is unique in following the youngest school-aged pupils during the Covid-19 partial school closures. Overall, it shows that the Covid-19-related disruption to pupils' learning continues to have an impact on their attainment. It raises particular concerns about the longer-term impact of the pandemic on disadvantaged pupils and the greater proportion of pupils on the lowest end of attainment spectrum not able to access key resources and assessments. The findings have important implications for policy and highlight the particular importance for schools to ensure that appropriate resources are allocated and targeted to address the challenges disadvantaged and very low attaining pupils are facing. The focus on wellbeing in schools indicates that this is a key area to consider when the performance of pupils is assessed in spring 2023.

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Appendix A: Ethics, data protection and team

Ethics

Ethical approval

This research project received ethical approval through NFER's standard project start-up procedures and Code of Practice group.

Ethical agreement from schools to take part

NFER was responsible for recruiting schools for this research. A letter for headteachers was emailed in October 2021 to all schools that had taken part in the baseline study during the 2020/21 academic year, and also to four linked junior schools of infant schools that were involved in the study. The letter gave information on the aims of the research, what the school would be required to do before and after completing assessments and surveys, and the benefits of the research. The letter also provided instructions on how to use the secure school portal to access an online reply form. Also included were the Memorandum of Understanding (MOU) setting out expectations for both NFER and the school, and the School and Parent Privacy Notices. Headteachers were asked to complete the online reply form, which incorporated their acceptance of the terms of the MOU.

Once schools had completed the online reply form confirming their interest, they provided details of Year 2 and Year 3 pupils (name, date of birth, unique pupil number (UPN), gender, Free School Meal (FSM) status and year group). A parent information sheet and withdrawal letter were uploaded to the school portal for schools to share with their Year 2 and Year 3 parents. This gave parents the option to prevent their child's data from being shared, stored or used in this research. No parents made such a request.

Copies of these documents are included in Appendix B.

Data protection

Data protection statement

All data gathered during the research was and will be held in accordance with the data protection framework created by the Data Protection Act 2018 and the General Data Protection Regulation (GDPR) 2016/679, and was and will be treated in the strictest confidence by the NFER. No individual or school will be identified in any report.

Legal basis for processing personal data

NFER was the data controller during this research. Our legal basis for processing teachers' and pupils' personal data is covered by GDPR Article 6 (1) (f) which states that 'processing is necessary for the purposes of legitimate interests unless there is a good reason to protect the individual's personal data which overrides those legitimate interests'.

We carried out a legitimate interest assessment, which demonstrated that the research fulfilled one of NFER's core business purposes (undertaking research, evaluation and information activities). The research project has broader societal benefits and contributes to improving the lives of learners by identifying whether any pupil-level factors are associated with the degree of impact of the Covid-19 school closures on pupils' attainment and their recovery over the 2021/22 academic year. We considered and balanced any potential impact on the data subjects' rights and found that our activities will not do the data subject any unwarranted harm. Therefore, it was in our legitimate interest to process and analyse the personal data described below in order to administer the research.

Personal data processed

The personal data processed for this research was:

- Name, job title and contact details for a nominated named teacher within a participating school to liaise with about this research.

- Pupil name, date of birth, gender, UPN, year group, school name and FSM status. This data was required for survey weblinks, analysis and to match their personal data to background data from the National Pupil Database (NPD) for archiving.

- Teachers provided information about a sample of pupils' social skills to explore what impact the school closures may have had on the social skills development.

No special category data was processed in this research.

Data security/transfer

All personal data provided electronically was done using the NFER's secure school portal. All researchers involved directly with pupils and their data had up-to-date DBS checks. NFER survey administrations obtained personal data in accordance with the GDPR and other applicable legislation.

Data sharing

For the purposes of research archiving, school-level data and pupils' test data and survey responses will be linked with information from the NPD and shared with the Department for Education (DfE), the EEF's archive manager and in an anonymised form, with the Office for National Statistics (ONS) and potentially other research teams. Further matching to NPD and other administrative data may take place during subsequent research. No individual or school will be named by NFER in any report for this research and individual views from teacher interview data will not be shared.

Data retention and deletion

Data collected for this research will be stored securely in NFER systems until the final report in this research project is published. This is currently expected to be September 2023. NFER will securely delete all personal data from its systems within one year of publication of this final report. After three months from the completion of the research, all of the de-identified matched pupil data will be added to the EEF archive. At this point, EEF becomes fully responsible for the data (sole data controller) and NFER is no longer the data controller. Other research teams may use the de-identified data as part of subsequent research through the ONS Approved Researcher Scheme[19].

Right to withdraw

Schools and parents were provided with privacy notices explaining how their data will be collected, used and how they can withdraw from the research project at any time. Schools were asked to make the Parent Privacy Notice and Parent Opt-out/Withdrawal form available to parents using their usual channels. Both Privacy Notices (see Appendix B) were available via links on the project pages of the NFER website and also uploaded to the school portal.

Project team

Susan Rose	Project leader
Rebecca Wheater	Project director
Ben Styles	Project consultant
Liz Twist	Project consultant
Rob Ager	Researcher
Lydia Fletcher	Researcher
Jose Liht	Statistician
Simon Rutt	Statistician

[19] https://www.ons.gov.uk/aboutus/whatwedo/statistics/requestingstatistics/approvedresearcherscheme

Alison Hale	Test and school administration lead
Rob Green	Data manager

Appendix B: Recruitment documents

School invitation letter

RPO/LLON/41707/8/2

School Name
NFER No:

15 October 2021

Dear School Contact,

Impact of KS1 School Closures on Later Attainment and Social Skills Study

Last academic year your school kindly participated in our project on the impact of school closures on Key Stage 1 pupils. This project has continued to provide valuable evidence to policymakers highlighting the importance that sufficient funding is prioritised to support attainment and social skills for this cohort.

Due to the importance of this research the Education Endowment Foundation (EEF) have commissioned the National Foundation for Educational Research (NFER) to continue this project for a further two academic years.

We would like to invite your school to continue to be part of this study, which will track the pupils who were in KS1 during the academic year 2020/21. By following the same pupils as they move through the school system, this study will continue to explore the impact of the Covid-19 related school closures have had on these pupils. This study will also explore how quickly children reach where they might be expected to be had the pandemic not happened.

What will participating in the study involve

We are mindful of the continued pressures and challenges schools face this year as a result of the Covid-19 pandemic, therefore the requirements for this study over the next two years has been reduced. There will be one set of data collection activities each year, during the spring term, where we will ask schools to administer and mark their pupil assessments, complete a school-level questionnaire and a social skills survey about a sample of their pupils.

What will be the benefit to participating schools?

In return for your school's ongoing participation in this research project NFER will provide the following:

- Free mathematics and reading assessments for your Year 2 and Year 3 pupils in spring 2022
- Free mathematics and reading assessments for your Year 3 and Year 4 pupils in spring 2023
- A discount of 20% on any two year groups worth of assessments, purchased between April and September in each year of the study
- Exclusive access to a school webinar during the spring term of both years

The Information sheet and Privacy notices provide further details about what being involved means and how you and your school will benefit.

Confidential

Next Steps

Each school's headteacher will be asked to sign an online Memorandum of Understanding (MoU) which you can access here

We very much hope that you would like to continue with this important piece of research. In order to do so, please can you complete this online form and sign up to the project by 12 November.

If you have any queries please contact my colleague Alison Hale via email at KS1AttainmentResearch@nfer.ac.uk.

Yours sincerely,

Kathryn Hurd
Head of Survey Operations, Research and Product Operations
National Foundation for Educational Research

Memorandum of understanding

INTRODUCTION – Show to all	

Key Stage 1 Longitudinal Recovery Study - Memorandum of Understanding

This form sets out the responsibilities of The National Foundation for Educational Research (NFER) and schools that participate in this research. Please read the school information sheet and Privacy Notices provided by NFER before signing this Memorandum of Understanding (MoU) which can be found here

If you have any questions please contact us at KS1AttainmentResearch@nfer.ac.uk.

This two year, longitudinal study is following the youngest school-age children affected by the school closures brought into place due to the pandemic.

By extending this project and following these pupils as they move through the school system, this project continues to explore the impact of the Covid-19 related school closures on the attainment gap of those pupils who were in Key Stage 1 (KS1) during the 2020/2021 academic year and the impact of school closures on their ongoing socio-emotional development.

All schools will receive complementary NFER assessments for all their Years 2 and 3 pupils in 2022/23 and all Year 3 and 4 pupils in 2022/23. This also includes any new pupils who have joined the school as they can also become part of this study.

We ask that you complete these assessments as follows:

- Y2 and Y3 spring tests: March/early April 2022*
- Y3 and Y4 spring tests: March/early April 2023

**In the case of Junior Schools, you will only be asked to complete Year 3 and above assessments*

Schools will then be asked to upload their pupils' assessment results onto the NFER Hub/Test Analysis Tool before the Easter break

As this form asks for agreement on behalf of your school to share data, we request that the headteacher completes this form.

I'd like to sign my school up. What do I do now?

Please click 'next' to start filling in the form. It will take around 10 minutes to complete.

Kind regards

NFER Key Stage 1 Longitudinal Recovery Study Team

Please use the buttons at the bottom of the page to move through the form, please do not use your browser's forward and back buttons.

Please note that if the form is left inactive for over 20 minutes you will be timed out. Please use your personalised link in your email to resume completion.

QX – SR, Ask all, Mandatory				
QX	**Could you confirm you are completing this form for <<School Name>>?**	(please select one only)	1	**Yes**
			2	**No**

QA – MR, Ask all, Mandatory				
QA	**Please confirm your name, role and email address** **All correspondence for this project will be sent to you via your email address**	Please write in your name and role	Name	
			Role	
			Email Address	
			Please confirm Email Address	

Q1– MR, Ask all, Mandatory				
Q1	**How many pupils do you currently have on roll in Year 2?**			
			None – we are a Junior school	

Q2– MR, Ask all, Mandatory				
Q2	**How many pupils do you currently have on roll in Year 3?**			

Q3 – SR, Ask all, Mandatory – must tick all options to confirm

Memorandum of Understanding: Responsibilities

The NFER will:

- Provide a key project contact who will be available to support schools with the project
- Provide a Parent withdrawal letter and Parent information sheet (to be sent to schools upon receipt of this MoU)
- Provide a secure means and templates for schools to provide all requested data including teacher data and updated/new pupil data
- Analyse all data from the project using secure systems
- Provide schools with the use of the NFER Hub/Test Analysis Tool
- Provide schools with complementary spring NFER assessments in mathematics and reading for those pupils in Y2 and Y3 in spring 2022 and Y3 and Y4 in spring 2023.
  (*In the case of Junior schools, you will only be asked to complete Year 3 and above assessments)*
- Provide schools with research findings

Our overall expectations of your school:

The following outlines our expectations from schools and teachers taking part in the project. Please read the following statements and confirm below that you agree to them by ticking the corresponding boxes. Please also print and keep a copy of this form for your own reference.

For your school to be eligible to participate, you must agree to the following for the next two academic years (2021/2022 and 2022/23):

	Confirmation		1	We are able to allocate one of the participating teachers as the contact for the project to liaise with the NFER team. They should have sufficient capacity to be able to respond promptly to requests and facilitate requirements, as appropriate. If they leave the school or are no longer able to meet the requirements for the role, NFER must be informed of this with details of a replacement contact.
			2	We will be a point of contact for parents/carers, including providing them with full information about the project and inform NFER about any pupil withdrawal requests from parents
			3	We will provide the following information for all participating pupils, when not known by NFER: • pupil name • date of birth • unique pupil number (UPN) • gender • English as an Additional Language information (EAL) • Free School Meals status (FSM) • class • year group
			4	We will administer NFER mathematics and reading assessments and upload all assessment data onto the NFER Hub/Test Analysis Tool by the end of the spring term for the following year groups: • Y2 and Y3 spring 2022* • Y3 and Y4 spring 2023 * *In the case of Junior schools, you will only be asked to complete Y3 and above assessments*
			5	We will provide research data by way of surveys and interviews as requested.
			6	I confirm that I have read and understood the information provided about the study and I have passed a copy of the School information sheet to

				my designated named contact. I have had the opportunity to ask questions, and have had these answered satisfactorily.
			7	I understand that my school's participation is voluntary and that I am free to withdraw my school at any time. I will let NFER know if I choose to withdraw from the research
			8	I know who I can contact if I have any concerns or complaints about the project.

SUBMIT PAGE
You have reached the end of your online Memorandum of Understanding (MoU). Thank you for sharing your school details. Please click 'Next' to send your response. Once submitted, you will not be able to go back and change any of your answers. We look forward to working with your school. Thank you **NFER Key Stage 1 Longitudinal Recovery Study Team**

School information sheet

Impact of KS1 School Closures on Later Attainment and Social Skills Study
School Information sheet

What is the research project?

This research project is the continuation of an NFER project, 'Research on the impact of Covid-19 school closures and support strategies on pupils' learning and social wellbeing in Key Stage 1', which ran in the 2020/2021 academic year. By extending this project and following the same pupils as they move through the school system, this two year, longitudinal study will continue to explore the impact of the Covid-19 related school closures on the attainment gap of those pupils who were in Key Stage 1 (KS1) during the 2020/2021 academic year and the impact of school closures on their ongoing socio-emotional development. This study will also explore how quickly children reach where they might be expected to be had the pandemic not happened.

Who is conducting the study?

The National Foundation for Educational Research (NFER) has been commissioned to carry out this research by the Education Endowment Foundation (EEF).

Which schools can take part?

All schools who took part in the project during the 2020/2021 academic year will be asked if they would like to continue their participation for another two academic years. There were four Infant schools in the sample for year one; each of these four schools feed directly into one Junior school.These four Junior schools will be asked to participate in the next two years of the study inviting the whole of their Year 3 pupils (and Year 3 and 4 pupils in 2022/2023) to take part.

What will the evaluation involve for teachers and schools?

We will ask schools who sign up to this project to test pupils annually, using NFER assessments in mathematics and reading and then mark and upload their pupils' assessment results onto NFER's Hub/Test Analysis Tool. We will provide schools with NFER assessments for their Year 2 and Year 3 pupils in 2021/2022 and for the same pupils again in Year 3 and Year 4 in 2022/2023. Schools will need to mark their pupils' assessments and then upload their assessment marks onto the NFER's Hub/Test Analysis Tool. NFER's project team will then access the assessment data directly from the NFER Hub. For those pupils who have moved on from their Infant school, we will also be contacting the main linked Junior school, to ask them to join this project, so we can continue to include the same pupils in the study.

In addition, in the spring term of each year the headteacher or KS1 lead will be required to complete a school-level survey on how they approach on-going support and their planned recovery activities such as small-group work, tutoring and parental engagement. Teachers will also need to complete one survey in the spring term, on the socio-emotional development for a subsample of their pupils.

When will the assessments take place?

Schools who take part in this project will be asked to test their pupils within the following testing windows during the spring term:

- Y2 and Y3 spring assessments: March/early April 2022
- Y3 and Y4 spring assessments: March/early April 2023

Schools will then be asked to upload their pupils' assessment results before the Easter break.

Data

NFER will share the data collected during the 2020/21 project with schools via the secure school portal. Schools will be asked to check and confirm this data, along with confirming if any of the original pupils have left the school and also adding data for any pupils new to the school. This would include names of pupils and UPN.

When working with the Junior schools new to the study, the NFER will provide a template on the secure school portal for teachers to provide the data required for the research project. This will include contact information as well as some information on the pupils, for example names and UPN.

When will my school need to get involved and what is required?

Date	Activity
October 2021	Schools confirm that they are happy to continue to be part of the project by signing an online Memorandum of Understanding (MOU).
March 2022	NFER sends Year 2 and Year 3 assessments to schools. School questionnaire and social skills survey links shared with schools
March/early April 2022	Schools sit Year 2 and Year 3 spring assessments Assessments are marked in-school and teachers upload data to the NFER analysis tool Schools continue to complete questionnaire and social skills survey
June 2022	Feedback to schools from the spring term assessments. This would include a comparison of the performance of pupils in 2022 in standardised reading and mathematics assessments with a standardisation sample from 2017. These results can be used to inform your understanding of where pupils may need support and their strengths and weaknesses across different areas of the curriculum.

Dates for the 2022/2023 academic year would be the same and a copy of the final evaluation report will be sent to schools on publication.

How will my school benefit from taking part?

All schools will receive complimentary assessments for the year groups required for the project. In addition, schools will also receive a 20 per cent discount off the purchase of NFER assessments on any two year groups worth of assessments. These can be purchased between April and September in each year of the study, once schools have uploaded their pupil assessment results onto the NFER hub.

Schools will also receive a short piece of feedback in June around the assessments completed each year.

How will the findings be used?

The findings from the original study are being used to provide a report to the EEF on the impact of the school closures on the attainment gap on the youngest school age children affected by the pandemic and the socio-emotional development of these pupils. This report will also include how Covid-19 related school closures and recovery has affected and supported disadvantaged children. The findings from this study will be used to report, each year, on how quickly these children recover their learning and are able to reach where they might be expected to be had the pandemic not happened. This series of reports will be available to primary schools to assist and develop their support of their pupils, particularly those from disadvantaged backgrounds.

Who needs to give agreement for participation in the research project?

Each school's headteacher will be asked to sign an online Memorandum of Understanding (MoU) and nominate their school's point of contact to be part of the continued research project.

What happens if a school, teacher or pupils want to withdraw from the research project?

A school, teacher or pupil can withdraw from the research project and/or from their data being used in the research project at any time. Schools must notify NFER of any pupils or teachers who wish to withdraw from the project.

Parents can choose to withdraw their child from the data collection of the research project at any time. They can do this by returning the form on the bottom of the parent letter to their school. Schools must not provide data about children whose parents withdraw them from the data collection. If the withdrawal takes place after the study commences, schools must notify NFER of such pupils, and these pupils will be removed from the project's datasets and subsequent analysis immediately.

How will NFER use and protect the data collected?

All data gathered during the research project will be held in accordance with the Data Protection Act 2018 and GDPR and will be treated in the strictest confidence by NFER. No pupil-level data will be shared with the EEF.

All teacher and pupil-level data shared by schools with NFER will be done so via a secure school portal. For the purposes of the research project, all pupils will have an ID number. **No school, teacher or pupil will be named in any report arising from this work.**
Parent and School Privacy Notices for the research project is available here:
Impact of KS1 School Closures on Later Attainment and Social Skills Study - NFER

Who can I contact for more information?

For further information, please contact Alison Hale via email at KS1AttainmentResearch@nfer.ac.uk.

Privacy notice for schools and teachers

Impact of KS1 School Closures on Later Attainment and Social Skills Study

Privacy Notice for Schools and Teachers

1 Why are we collecting this data?

The Education Endowment Foundation (EEF) has commissioned the National Foundation for Educational Research (NFER) to continue its research into the impact of Covid-19 related school closures on attainment in primary schools. The research looks at how quickly the youngest pupils affected by partial school closures recover from the learning they have missed. This two year, longitudinal study will follow pupils who were in Key Stage 1 in 2020/2021 and investigate the impact of school closures, looking at pupil attainment, school practices and teachers' perspectives.

This document outlines how school staff's personal data will be collected and processed as part of the project. The research also collects and analyses pupil data – for information about how it is processed please see the privacy notice covering pupil data here.

NFER is the data controller for the project.

2 What is the legal basis for processing activities?

The legal basis for processing personal data is covered by GDPR Article 6 (1) (f):

Legitimate interests: the processing is necessary for your (or a third party's) legitimate interests unless there is a good reason to protect the individual's personal data which overrides those legitimate interests.

We have carried out a legitimate interest assessment, which demonstrates that the research fulfils one of our core business purposes (undertaking research, evaluation and information activities). The research project has broader societal benefits and will contribute to improving the lives of learners by identifying if any pupil level factors are associated with the degree of impact of the Covid-19 school closures on pupils' attainment and their recovery over the academic year.

The research cannot be done without processing personal data but processing does not override the data subject's interests. To mitigate the risks to the rights and freedoms of the individual data subjects, as far as possible, NFER has put in place the technical and organisational measures set out in this privacy notice.

3 How will personal data be obtained?

Personal data about school staff will be collected directly from participating schools.

NFER
National Foundation for Educational Research

4 What personal data is being collected by this project?

The NFER will collect data (name, job title and contact details) about a nominated named teacher within a participating school so that we can liaise with them about this research.

The NFER will ask teachers to complete online surveys on school practices and teachers' perspectives including information on support strategies such as groupwork, tutoring and parental engagement by class, year group and at a school level.

5 Who will personal data be shared with?

No individual will be named in any report for this project.

More information can be found at: https://educationendowmentfoundation.org.uk/projects-and-evaluation/evaluation/evaluation-guidance-and-resources/archiving-evaluation-data

The survey will be managed and run using Questback software. Their privacy policy can be found here: https://www.questback.com/data-privacy/privacy-policy/

6 Is personal data being transferred outside of the European Economic Areas (EEA)?

No personal data is stored or transferred outside of the EEA.

7 How long will personal data be retained?

Data collected for the project, will be stored securely in the NFER systems until the final report in this research project is published. This is currently expected to be September 2023. NFER will delete all personal data from its systems within one year of publication of this final report.

After three months from the completion of the study, all of the de-identified matched pupil data will be added to the EEF archive. The EEF archive is hosted by the Office for National Statistics (ONS) and managed by the EEF archive manager. This data is archived to allow for further research. At this point, EEF becomes fully responsible for the data (sole data controller) and the NFER are no longer the data controllers. Other research teams may use the de-identified data as part of subsequent research through the ONS Approved Researcher Scheme[1]. The Approved Researcher Scheme is used by the ONS to grant secure access to data that cannot be published openly, for statistical research purposes, as permitted by the Statistics and Registration Service Act 2007 (SRSA).

8 How is the security of my data maintained?

The NFER have put in place appropriate measures to prevent your personal information from being accidentally lost, used or accessed in an unauthorised way, altered or disclosed. NFER has been certified to ISO27001 (GB17/872763) the internal standard for information security and holds Cyber Essentials Plus (IASME-CEP-004922). NFER operates Microsoft Windows Operating Systems and industry standard enterprise software such as databases and email, all managed to recognised

industry standards with a full patching regime. All NFER laptops and mobile storage devices are encrypted and accessed with PIN-codes and strong passwords. Annual penetration tests are carried out by a CHECK-accredited supplier and remediation undertaken. We use uses a replicated disaster recovery service (RDRS) which allows the business to continue to operate in the event of failure. Any personal data which is shared with us is transferred using our secure portal and is encrypted in transit (HTTPS and TLS 1.2).

9 Can I stop my personal data being used?

School staff can withdraw from the project and/or from their data being used in the project at any time. Parents will be provided with a parent letter about the project and explaining how their child's data will be collected, used and how they can withdraw from data sharing.

However, the NFER appreciates schools' and participants' support in collecting the data since it is very important for the validity of the results. If your school/you withdraw from the research, unless otherwise instructed, we will use any data we have collected in our analysis.

Under certain circumstances, you have the right:

- to request access to information that we hold about you (subject access request)
- to have your personal data rectified, if it is inaccurate or incomplete
- to request the deletion or removal of personal data where there is no compelling reason for its continued processing
- to restrict our processing of your personal data (for example, permitting its storage but no further processing)
- to object to our processing
- not to be subject to decisions based purely on automated processing where it produces a legal or similarly significant effect on you

To exercise these rights, please contact our Compliance Officer, compliance@nfer.ac.uk

10 Who can I contact about this project?

To talk to someone about the day to day management of this research or question about it, please contact Alison Hale via the following email address: KS1AttainmentResearch@nfer.ac.uk.

If you have a concern about the way this project processes personal data, we request that you raise your concern with us in the first instance (see the details above). If you remain disatisifed, you can contact the Information Commissioner's Office, the body responsible for enforcing data protection legislation in the UK, at https://ico.org.uk/concerns/.

11 Updates

We may need to update this privacy notice periodically so we recommend that you revisit this information from time to time. The date when this privacy notice was last updated is shown in the footer at the bottom of this document.

Privacy notice for parents

Impact of KS1 School Closures on Later Attainment and Social Skills Study

Privacy Notice for Parents

1 Why are we collecting this data?

The Education Endowment Foundation (EEF) has commissioned the National Foundation for Educational Research (NFER) to continue its research into the impact of Covid-19 related school closures on attainment in primary schools. The research looks at how quickly the youngest pupils affected by partial school closures recover from the learning they have missed. This two year, longitudinal study will follow pupils who were in Key Stage 1 in 2020/2021 and investigate the impact of school closures, looking at pupil attainment, school practices and teachers' perspectives, and is a continuation of a one year project which ran in 2020/21

This document outlines how your child's personal data will be collected and processed as part of the project.

NFER is the data controller for the project.

2 What is the legal basis for processing activities?

The legal basis for processing personal data is covered by GDPR Article 6 (1) (f):

Legitimate interests: the processing is necessary for your (or a third party's) legitimate interests unless there is a good reason to protect the individual's personal data which overrides those legitimate interests.

We have carried out a legitimate interest assessment, which demonstrates that the research fulfils one of our core business purposes (undertaking research, evaluation and information activities). The research project has broader societal benefits and will contribute to improving the lives of learners by identifying if any pupil level factors are associated with the degree of impact of the Covid-19 school closures on pupils' attainment and their recovery over the academic year. The research cannot be done without processing personal data but processing does not override the data subject's interests. To mitigate the risks to the rights and freedoms of the individual data subjects, as far as possible, NFER has put in place the technical and organisational measures set out in this privacy notice.

3 How will personal data be obtained?

If your school participated in the first year of our study, we will use data collected as part of that project and add to it pupil assessment data and findings from a social skills survey for a sample of pupils for both the 2021/22 and 2022/23 academic years. We will only collect data for pupils who were in Key Stage 1 during the 2020/2021 academic year. For any pupil or school who did not participate in the first year of this study, personal data detailed in section 4 below will be collected from their school.

NFER
National Foundation for Educational Research

4 What personal data is being collected by this project?

The NFER will collect personal data about pupils from participating schools. This includes

- pupil name,
- date of birth,
- gender
- unique pupil number (UPN)
- class name
- school name
- English as an Additional Language information (EAL)
- Free School Meals status (FSM)
- attainment information for all pupils who were in KS1 during the 2020/21 academic year,
- information on support activities that pupils' have taken part in (such as 1:1 or small group support)

Teachers will provide information about a sample of pupils' socio-emotional development and social skills. The Child self-regulation and behaviour questionnaire will be used with a sample of 12 pupils from each year group in the school to assess levels of self-regulation and social development (including sociability, pro-social behaviour, externalising and internalising problems).

5 Who will personal data be shared with?

No pupil or teacher will be named in any report for this project.

For the purpose of research archiving, the responses will be linked with information about the pupils from the National Pupil Database (NPD) and shared with the Department for Education, the EEF's archive manager and in an anonymised form, with the Office for National Statistics and potentially other research teams. Further matching to NPD and other administrative data may take place during subsequent research. More information can be found at : https://educationendowmentfoundation.org.uk/projects-and-evaluation/evaluation/evaluation-guidance-and-resources/archiving-evaluation-data

The survey will be managed and run using Questback software. Their privacy policy can be found here: https://www.questback.com/assets/uploads/Survey_Privacy_Policy.pdf

6 Is personal data being transferred outside of the European Economic Areas (EEA)?

No personal data is stored or transferred outside of the EEA.

7 How long will personal data be retained?

Data collected for the project will be stored securely in the NFER systems until the final report in this research project is published. This is currently expected to be September 2023. NFER will then delete all pupil personal data within one year of publication of this final report.

After three months from the completion of the study, all of the de-identified matched pupil data will be added to the EEF archive. The EEF archive is hosted by the Office for National Statistics (ONS) and managed by the EEF archive manager. This data is archived to allow for further research. At this point, EEF becomes fully responsible for the data (sole data controller) and the NFER are no longer the data controllers. Other research teams may use the de-identified data as part of subsequent research through the ONS Approved Researcher Scheme[1]. The Approved Researcher Scheme is used by the ONS to grant secure access to data that cannot be published openly, for statistical research purposes, as permitted by the Statistics and Registration Service Act 2007 (SRSA).

8 How is the security of my child/children's data maintained?

The NFER have put in place appropriate technical and organisational measures to prevent your child's personal information from being accidentally lost, used or accessed in an unauthorised way, altered or disclosed. NFER has been certified to ISO27001 (GB17/872763) the internal standard for information security and holds Cyber Essentials Plus (IASME-CEP-004922). NFER operates Microsoft Windows Operating Systems and industry standard enterprise software such as databases and email, all managed to recognised industry standards with a full patching regime. All NFER laptops and mobile storage devices are encrypted and accessed with PIN-codes and strong passwords. Annual penetration tests are carried out by a CHECK-accredited supplier and remediation undertaken. We use uses a replicated disaster recovery service (RDRS) which allows the business to continue to operate in the event of failure. Any personal data which is shared with us is transferred using our secure portal and is encrypted in transit (HTTPS and TLS 1.2).

9 Can I stop my child/children's data being used?

Your child can be withdrawn from the project and/or from their data being used in the project at any time. You will be provided with a parent letter about the project and explaining how your child's data will be collected, used and how they can be withdrawn from data processing. However, the NFER appreciates schools' and participants' support in collecting the data since it is very important for the validity of the results. If you withdraw your child from the project, unless otherwise instructed, we will use any data we have collected in our analysis.

The NFER will handle your child/children's personal data in accordance with the rights given to individuals under data protection legislation. If at any time, you wish to withdraw your child/children's data from this research project or correct errors in it, please contact NFER at KS1AttainmentResearch@nfer.ac.uk.

Under certain circumstances, you have the right:

[1] https://www.ons.gov.uk/aboutus/whatwedo/statistics/requestingstatistics/approvedresearcherscheme

- to request access to information that we hold about you (subject access request)
- to have your personal data rectified, if it is inaccurate or incomplete
- to request the deletion or removal of personal data where there is no compelling reason for its continued processing
- to restrict our processing of your personal data (for example, permitting its storage but no further processing)
- to object to our processing
- not to be subject to decisions based purely on automated processing where it produces a legal or similarly significant effect on you

'o exercise these rights, please contact our Compliance Officer, compliance@nfer.ac.uk

10 Who can I contact about this project?

To talk to someone about the day to day management of this research or ask a question about it, please contact Alison Hale via the following email address: KS1AttainmentResearch@nfer.ac.uk.

If you have a concern about the way this project processes personal data, we request that you raise your concern with us in the first instance (see the details above). If you remain dissatisfied, you can contact the Information Commissioner's Office, the body responsible for enforcing data protection legislation in the UK, at https://ico.org.uk/concerns/.

11 Updates

We keep this privacy notice under review to make sure it is up to date and accurate. Any changes will be noted. The date when this privacy notice was last updated is shown in the footer at the bottom of this document.

Parent opt-out letter

RPO/LLON/41707-9/PWJ

January 2022

Dear Parent/Guardian,

Impact of KS1 School Closures on Later Attainment and Social Skills Study

We are writing to you to let you know that your child's school has been selected to continue participating in an ongoing research project to determine the impact of the school closures during the 2020/2021 Covid-19 lockdown period. All pupils in your child's year group will be taking part in this project which is an extension of a project commissioned during the 2020/2021 academic year.

We would like to thank you for agreeing for your child to participate in the first part of this study and would ask you to continue to support this valuable research.

The National Foundation for Educational Research (NFER) has been commissioned to carry out this research by the Education Endowment Foundation (EEF) to learn more about how quickly children reach where they might be expected to be had the pandemic not happened.

The research is due to take place annually, during the spring term of the 2021/2022 and 2022/2023 academic years. All children in your child's year group will complete a mathematics and a reading assessment already planned by their school; no additional unplanned assessments will be carried out. Their individual responses will be kept completely confidential and will not be shared with anyone outside of the NFER.

We very much appreciate your and your child's participation. Enclosed with this letter you will find a 'School Information Sheet' with more information about the research and our commitment to the General Data Protection Regulations (GDPR), including where you can access the privacy notice.

If you are happy for your child's data to be used for this project, **you do not need to return the enclosed reply slip**. However, please inform your child's teacher if you would like to withdraw your child's data from this project at any subsequent stage. If you would prefer your child's data not to be shared, stored and used for this project, please complete the enclosed form and return it to your child's school.

If you have any queries please contact my colleague Alison Hale via email at KS1AttainmentResearch@nfer.ac.uk.

Yours sincerely,

Kathryn Hurd
Head of Survey Operations, Research and Product Operations
National Foundation for Educational Research

KS1 Longitudinal Recovery Study : Withdrawal from data processing

You only need to complete this form if you DO NOT wish your child's data to be shared, stored and used for this research.

I **DO NOT** give permission for data about my child that is collected as part of the above research project to be shared, stored or used for research purposes.

Child's name……Child's class:……..

Name of school……...

Your full name……..

Your telephone number (optional)……

Your signature…… Date……

Appendix C: NFER test duration and scores

The Year 2 reading assessment, the Year 2 mathematic assessments and the Year 3 mathematics assessment each have two test papers. Individuals obtain a raw score on each of these papers based on the number of questions they answer correctly.

For the mathematics papers, test takers must sit both papers 1 and 2 to get a total raw score. For Year 2 reading, a total raw score is obtained if the individual has sat paper 1 or both papers 1 and 2. Should an individual sit paper 2 for reading without sitting paper 1, a total raw score is not calculated.

The table below identifies the time required to complete each assessment paper and the number of raw marks available on each paper.

Assessment		Paper 1	Paper 2	Paper 3
Mathematics Year 2 spring	Duration (mins)	20 (arithmetic)	35 (reasoning)	N/A
	Maximum score	25	35	N/A
Reading Year 2 spring	Duration (mins)	40	50	N/A
	Maximum score	20	20	N/A
Mathematics Year 3 spring	Duration (mins)	25 (arithmetic)	30 (Test 1)	30 (Test 2)
	Maximum score	30	25	25
Reading Year 3 spring	Duration (mins)	75	N/A	N/A
	Maximum score	35	N/A	N/A

Appendix D: PSMAT and supplementary items

Social Skills Questionnaire

Introduction

The Education Endowment Foundation (EEF) has commissioned NFER to track the progress of the pupils who were in Key Stage 1 during the Covid-19 school closures. We will track the attainment and socioemotional skills of these pupils as they move into Years 2 and 3, to determine any ongoing impact of the closures and provide information to support schools and pupils.

The purpose of this survey is to explore the socioemotional skills of pupils in this academic year. This data will be used alongside attainment data to provide a broad picture of Covid-19 recovery in Year 2 and Year 3 pupils.

Please complete the questionnaire in relation to each child as they are now, in the spring term. The rating is compared to an average child (**pre-pandemic**) of the same age.

If a child has left your class or the school, please answer the first two questions, after which the survey will close for this pupil. Please **do not** answer the questionnaire for any other child to replace them.

The privacy notices are available at https://www.nfer.ac.uk/for-schools/participate-in-research/impact-of-ks1-school-closures-on-later-attainment-and-social-skills-study/

If you have any queries about the completion of this questionnaire or would like further information about the evaluation, please do not hesitate to email KS1attainmentresearch@nfer.ac.uk.

The questionnaire will take about 5 minutes to complete per child.

Please use the buttons at the bottom of the page to move through the questionnaire, please do not use your browser's forward and back buttons.

Please note that if a questionnaire is left inactive for over 20 minutes you will be timed out. Please use the original link again to return to the questionnaire.

Thank you very much for your help with this questionnaire.

SHOW AT TOP OF SCREEN

Please rate the child as compared to an *average child (pre-pandemic)* of the same age. Provide a rating on the scale from 1 to 7.

PSMAT								
		Please select one choice in each row.						
		Very much less mature than the average child this age	Less mature than the average child this age	A little less mature than the average child this age	About average for children this age	A little more mature than the average child this age	More mature than the average child this age	Very much more mature than the average child this age
1	The child's skill and willingness to make social overtures, join groups, or welcome others into own activities.	1	2	3	4	5	6	7
2	The child's skill at asserting him/herself appropriately to express opinions or convince peers.	1	2	3	4	5	6	7
3	The child's leadership skills with peers.	1	2	3	4	5	6	7
4	The maturity of the child's everyday modes of playing sociably with peers.	1	2	3	4	5	6	7
5	The child's skills in coping with peers who frustrate or interfere with the group's goals and activities.	1	2	3	4	5	6	7
6	The child's ability to understand the needs of peers who differ from the norm.	1	2	3	4	5	6	7

7	The overall maturity of the child's social skills.	1	2	3	4	5	6	7
	Supplementary items							
8	The child's ability to focus on an activity or task.	1	2	3	4	5	6	7
9	The child's ability to deal with minor conflict and disappointment.	1	2	3	4	5	6	7
10	The child's ability to initiate and maintain appropriate interactions with relevant adults in school.	1	2	3	4	5	6	7
11	The child's ability to undertake appropriate tasks independently.	1	2	3	4	5	6	7
12	The child's willingness to persist with a task or activity after a setback.	1	2	3	4	5	6	7
13	The child's ability to make choices for themselves.	1	2	3	4	5	6	7
14	The child's ability to manage their own feelings.	1	2	3	4	5	6	7

Appendix E: School survey

Learning recovery – School Questionnaire

The Education Endowment Foundation (EEF) has commissioned NFER to track the progress of the pupils who were in Key Stage 1 during the Covid-19 school closures. We will track the attainment and social skills of these pupils as they move into Years 2 and 3, to determine any ongoing impact of the closures and provide information to support schools and pupils.

The purpose of this survey is to understand recovery approaches, challenges and specific support given to pupils, to inform the assessment results. This survey is to be completed by the head teacher or a senior leader.

Your views are invaluable to us so please take the time to complete this survey. All responses will be treated in confidence and reported only in aggregated or anonymised form. If you exit the survey before the end, your partial answers (i.e. any answers that you have given before exiting the survey) may still be analysed. The information collected will be used for research purposes only and will not be shared with EEF.

The privacy notice is available at https://www.nfer.ac.uk/for-schools/participate-in-research/impact-of-ks1-school-closures-on-later-attainment-and-social-skills-study/.

This survey will take up to 10 minutes to complete and only needs to be completed once by your school. Unless specified, questions in the survey are asking about the whole cohort of pupils in the year groups mentioned.

If you have any queries, please contact Alison Hale via email at KS1AttainmentResearch@nfer.ac.uk.
Thank you very much for your help with this survey.

About your experience of this academic year

All questions refer to pupils who are in Year 2 and Year 3 in this current academic year (i.e. 2021-2022).

1 How would you rate the level of disruption to learning in this academic year to date?

Not disrupted at all (a normal year)	☐	1
A little disrupted	☐	2
Somewhat disrupted	☐	3
Very disrupted	☐	4

2 ***[ASK IF Q1 = 2, 3 or 4]*** **What are the main reasons for this disruption?**
Please select all options that apply.

Pupil absences (Covid related)	☐	1
Staff absences (Covid related)	☐	2
Challenges with pupil behaviour/wellbeing	☐	3
Lack of parental engagement	☐	4
Having to cover material from previous years	☐	5
Insufficient funding to support pupils who have missed learning	☐	6
Infection control measures (e.g. hygiene, following public health advice)	☐	7
Other (please specify)	☐	8

[free text box for 'other' mandatory if 'Other' ticked] [100 characters]

About new school practices

3 **What practices did your school introduce during the 19/20 and 20/21 academic years as a result of Covid-19?** *Please select all options that apply.*

Year group or class bubbles	☐	1
Physical rearrangement of classrooms (e.g. no group tables, increased distance between tables)	☐	2
Increased hand washing	☐	3
Provision for home learning	☐	4
Fewer interactions between pupils and staff	☐	5
Increased wellbeing support	☐	6
Reduced extra-curricular activities	☐	7
None	☐	8
Other (please specify)	☐	9

[free text box for 'other' questions Mandatory if ticked 'Other'] [100 characters]

4 *[Only show options selected in Q3. Do NOT show options 5 and 7]* **Are there any practices that your school has found to be an improvement to pre-pandemic practices and therefore chosen to retain for the future?** *Please select all options that apply.*

Year group or class bubbles	☐	1
Physical rearrangement of classrooms (e.g. no group tables, increased distance between tables)	☐	2
Increased hand washing	☐	3
Provision for home learning	☐	4
Increased wellbeing support	☐	6
Other (*INSERT TEXT FROM Q3 other*)	☐	7
None	☐	8

About staff challenges

5 Have any of the following challenges been faced by Year 2 and 3 school staff this academic year? *Please select all options that apply.*

Higher than normal staff absences	☐	1
Increased workload supporting pupils who have been absent this year	☐	2
Increased workload due to catch-up/recovery needs	☐	3
Loss of non-contact time (e.g. due to covering staff absences)	☐	4
Low morale/wellbeing of staff	☐	5
Difficulty in getting external support for pupils	☐	6
Additional CPD needs	☐	7
Other (please specify)	☐	8

[free text box for 'other' Mandatory if ticked 'Other'] [100 characters]

About remote learning

6 How well do you feel you are currently able to support home learning for pupils who are absent from in-school learning (e.g. when isolating)?

Very well	☐ 1
Quite well	☐ 2
Somewhat	☐ 3
Not at all	☐ 4

7 How does your school support home learning for pupils who are absent from in-school learning (e.g. when isolating)? *Please select all options that apply.*

The school virtual learning environment	☐ 1
Educational websites or apps	☐ 2
Workbooks, sheets or other physical resources	☐ 3
Online resources (e.g. videos of lessons from other providers or links to resources)	☐ 4
Videos of lessons you have produced	☐ 5
Online 'live' lessons (streaming what is being taught in the classroom)	☐ 6
Online conversations (between you and pupils)	☐ 7
Online conversations (between you and parents)	☐ 8
Other (please specify)	☐ 9

[free text box for 'other' question. Mandatory if ticked 'Other'] [100 characters]

8 What challenges have you encountered with online learning this year? *Please select all options that apply.*

Managing in-school and online pupils concurrently	☐ 1
Pupils with no suitable device/no home broadband	☐ 2
Pupils unable to access a suitable device (e.g. sharing with siblings)	☐ 3
Increased workload e.g. preparation of resources	☐ 4

Low levels of engagement	☐ 5
None	☐ 6
Other (please specify)	☐ 7

[free text box for 'other'. Mandatory if 'Other' ticked] [100 characters]

9 In the event of further school closures, how well prepared do you feel your school is to deliver effective home learning for <u>all</u> pupils?

Very well prepared	☐ 1
Quite well prepared	☐ 2
Somewhat prepared	☐ 3
Not prepared	☐ 4

About catch-up strategies this academic year

10 What strategies has your school implemented this academic year to aid Y2/Y3 maths and reading learning recovery? *Please select all options that apply.*

	Maths	Reading
Small-group work	☐ 1	☐ 9
Tutoring (through National Tutoring Programme)	☐ 2	☐ 10
Tutoring (other)	☐ 3	☐ 11
Parental engagement	☐ 4	☐ 12
Revised curriculum	☐ 5	☐ 13
Staff redeployment (e.g. greater use of TAs to support individuals)	☐ 6	☐ 14
Catch-up schemes	☐ 7	☐ 15
Other (please specify)	☐ 8	☐ 16

[free text box for 'other' questions. Mandatory if ticked 'Other']

Maths	[100 characters]
Reading	[100 characters]

11 ***[ASK IF Q10 = 2, 3, 10 or 11]*** **How are you approaching the use of tutoring as a catch-up strategy?** *Please select all options that apply.*

Using Tuition Partners tutors	☐ 1
Using funding for school tutors (School-Led Tutoring grant)	☐ 2
Using external tutors (**not** via Tuition Partners or School-Led Tutoring)	☐ 3
Other approach (please specify)	☐ 4

[free text box for 'other'. Mandatory if ticked 'Other'] [100 characters]

12 **What strategies has your school implemented this academic year to provide social skills/wellbeing support for Y2/Y3?**
Please select all options that apply.

Small-group wellbeing sessions	☐ 1
External support (e.g. counsellor)	☐ 2
Methods to increase parental engagement	☐ 3
Revised school day (e.g. additional breaks)	☐ 4
Staff redeployment (e.g. greater use of TAs to support individuals)	☐ 5
Catch-up schemes	☐ 5
Additional PSHE sessions	☐ 6
None	☐ 7
Other (please specify)	☐ 8

[free text box for 'other' Mandatory if ticked 'Other'] [100 characters]

About parental engagement

13 **How would you describe levels of Year 2/3 parental support in the current academic year (i.e 2021/2022)?** *Please select one option.*

	[1] Very high	[2] High	[3] Neither high nor low	[4] Low	[5] Very low
The level of support most parents are providing to their children in terms of their learning is…	☐	☐	☐	☐	☐

14 **How would you rate this level of parental support, in terms of *capability* (e.g time, resources to support) and *willingness* compared to last academic year (i.e 2020/2021)?** *Please select one option per row.*

	Lower than last academic year	The same as last academic year	Higher than last academic year
Capability	☐ 1	☐ 2	☐ 3
Willingness	☐ 4	☐ 5	☐ 6

15 **Is there anything further you would like to tell us about Year 2 / Year 3 learning and recovery in your school this academic year? We are particularly interested in wellbeing support, for example if there are any barriers you are facing in providing adequate support.**

_____

[300 characters]

Appendix F: Pupil and school characteristics

Year 2 Mathematics School Characteristics – Weighted by Pupil Numbers

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
FSM %	Lowest 20%	110417	17.1	622	21.2	22.5	4.1		5.4	
	2nd Lowest 20%	120742	18.7	379	12.9	14.4	5.8		4.3	
	Middle 20%	134148	20.7	832	28.4	25.9	7.7		5.2	
	2nd Highest 20%	140277	21.7	664	22.7	22.4	1.0		0.7	
	Highest 20%	130804	20.2	316	10.8	11.9	9.4		8.3	
	Missing	10726	1.7	118	4	3.0	2.3	5.1	1.3	4.2
Key Stage 2 2019 Attainment	Lowest 20%	102874	15.9	360	12.3	16.8	3.6		0.9	
	2nd Lowest 20%	104210	16.1	752	25.7	16.3	9.6		0.2	
	Middle 20%	122920	19	526	17.9	19.2	1.1		0.2	
	2nd Highest 20%	105233	16.3	689	23.5	16.2	7.2		0.1	
	Highest 20%	99127	15.3	296	10.1	14.2	5.2		1.1	
	Missing	112749	17.4	308	10.5	17.3	6.9	5.6	0.1	0.4
Academy Status	Academy	239832	37.1	878	30	27.8	7.1		9.3	
	Non-Academy	407282	62.9	2053	70	72.2	7.1	7.1	9.3	9.3
Rural Urban Classification	Urban	543849	84	671	77.1	78.2	6.9		5.8	
	Rural	103265	16	2260	22.9	21.8	6.9	6.9	5.8	5.8
SEN %	First Quartile	165377	25.6	1145	39.1	39.5	13.5		13.9	
	Second Quartile	168743	26.1	468	16	13.5	10.1		12.6	
	Third Quartile	158232	24.5	794	27.1	26.8	2.6		2.3	
	Fourth Quartile	141495	21.7	482	16.4	17.9	5.3		3.8	
	Missing	13267	2.1	42	1.4	2.4	0.7	3.0	0.3	2.0
EAL %	First Quartile	100996	15.6	403	13.7	12.0	1.9		3.6	
	Second Quartile	145646	22.5	927	31.6	32.4	9.1		9.9	
	Third Quartile	177341	27.4	855	29.2	32.0	1.8		4.6	

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
	Fourth Quartile	209864	32.4	704	24	21.2	8.4		11.2	
	Missing	13267	2.1	42	1.4	2.4	0.7	4.4	0.3	5.9
Region	East Midlands	55390	8.6	259	8.8	7.6	0.2		1.0	
	East of England	72789	11.2	279	9.5	6.6	1.7		4.6	
	London	100648	15.6	369	12.6	11.2	3.0		4.4	
	North East	29620	4.6	53	1.8	1.2	2.8		3.4	
	North West	87412	13.5	734	25	26.2	11.5		12.7	
	South East	103294	16	353	12	16.9	4.0		0.9	
	South West	60584	9.4	252	8.6	9.9	0.8		0.5	
	West Midlands	72300	11.2	376	12.8	11.1	1.6		0.1	
	Yorkshire and the Humber	65077	10	256	8.7	9.3	1.3	3.0	0.7	3.1

Year 2 Reading School Characteristics – Weighted by Pupil Numbers

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
FSM %	Lowest 20%	110417	17.1	625	21.3	22.6	4.2		5.5	
	2nd Lowest 20%	120742	18.7	380	12.9	14.3	5.8		4.4	
	Middle 20%	134148	20.7	830	28.2	25.7	7.5		5.0	
	2nd Highest 20%	140277	21.7	669	22.8	22.5	1.1		0.8	
	Highest 20%	130804	20.2	317	10.8	11.9	9.4		8.3	
	Missing	10726	1.7	118	4	3.0	2.3	5.1	1.3	4.2
Key Stage 2 2019 Attainment	Lowest 20%	102874	15.9	360	12.2	16.8	3.7		0.9	
	2nd Lowest 20%	104210	16.1	754	25.7	16.3	9.6		0.2	
	Middle 20%	122920	19	523	17.8	19.0	1.2		0.0	
	2nd Highest 20%	105233	16.3	694	23.6	16.2	7.3		0.1	
	Highest 20%	99127	15.3	297	10.1	14.3	5.2		1.0	
	Missing	112749	17.4	311	10.6	17.4	6.8	5.6	0.0	0.4
Academy Status	Academy	239832	37.1	881	30	27.9	7.1		9.2	
	Non-Academy	407282	62.9	2058	70	72.1	7.1	7.1	9.2	9.2
Rural Urban Classification	Urban	543849	84	2264	77	78.1	7.0		5.9	
	Rural	103265	16	675	23	21.9	7.0	7.0	5.9	5.9
SEN %	First Quartile	165377	25.6	1153	39.2	39.7	13.6		14.1	
	Second Quartile	168743	26.1	466	15.9	13.3	10.2		12.8	
	Third Quartile	158232	24.5	792	26.9	26.6	2.4		2.1	
	Fourth Quartile	141495	21.9	487	16.6	18.1	5.3		3.8	
	Missing	13267	2.1	41	1.4	2.3	0.7	3.0	0.2	2.0
EAL %	First Quartile	100996	15.6	405	13.8	12.1	1.8		3.5	
	Second Quartile	145646	22.5	931	31.7	32.4	9.2		9.9	
	Third Quartile	177341	27.4	859	29.2	32.1	1.8		4.7	
	Fourth Quartile	209864	32.4	703	23.9	21.1	8.5		11.3	
	Missing	13267	2.1	41	1.4	2.3	0.7	4.4	0.2	5.9

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
Region	East Midlands	55390	8.6	260	8.8	7.6	0.2		1.0	
	East of England	72789	11.2	279	9.5	6.5	1.7		4.7	
	London	100648	15.6	368	12.5	11.1	3.1		4.5	
	North East	29620	4.6	53	1.8	1.1	2.8		3.5	
	North West	87412	13.5	732	24.9	26.0	11.4		12.5	
	South East	103294	16	358	12.2	17.1	3.8		1.1	
	South West	60584	9.4	253	8.6	9.9	0.8		0.5	
	West Midlands	72300	11.2	376	12.8	11.1	1.6		0.1	
	Yorkshire and the Humber	65077	10.1	260	8.8	9.4	1.3	3.0	0.7	3.2

Year 3 Mathematics School Characteristics – Weighted by Pupil Numbers

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
FSM %	Lowest 20%	112692	17	607	20.3	21.1	3.3		4.1	
	2nd Lowest 20%	123518	18.6	571	19.1	19.7	0.5		1.1	
	Middle 20%	137066	20.7	687	23	23.2	2.3		2.5	
	2nd Highest 20%	143990	21.7	668	22.4	20.5	0.7		1.2	
	Highest 20%	135021	20.4	327	10.9	12.3	9.5		8.1	
	Missing	11053	1.7	127	4.3	3.1	2.6	3.2	1.4	3.1
Key Stage 2 2019 Attainment	Lowest 20%	106898	16.1	437	14.6	20.4	1.5		4.3	
	2nd Lowest 20%	107224	16.2	889	29.8	19.3	13.6		3.1	
	Middle 20%	126198	19	564	18.9	20.5	0.1		1.5	
	2nd Highest 20%	107568	16.2	587	19.7	13.7	3.5		2.5	
	Highest 20%	100641	15.8	300	10	14.4	5.8		1.4	
	Missing	114812	17.3	210	7	11.8	10.3	5.8	5.5	3.0
Academy Status	Academy	246451	37.2	827	27.7	27.1	9.5		10.1	
	Non-Academy	416891	62.8	2160	72.3	72.9	9.5	9.5	10.1	10.1
Rural Urban Classification	Urban	557106	84	2304	77.1	76.6	6.9		7.4	
	Rural	106236	16	683	22.9	23.4	6.9	6.9	7.4	7.4
SEN %	First Quartile	168930	25.5	1152	38.6	36.3	13.1		10.8	
	Second Quartile	172617	26	582	19.5	16.2	6.5		9.8	
	Third Quartile	162467	24.5	759	25.4	27.2	0.9		2.7	
	Fourth Quartile	146031	22	452	15.1	18.0	6.9		4.0	
	Missing	13297	2	42	1.4	2.4	0.6	3.8	0.4	2.2
EAL %	First Quartile	103985	15.7	357	12	11.5	3.7		4.2	
	Second Quartile	150025	22.6	1010	33.8	34.9	11.2		12.3	
	Third Quartile	181681	27.4	894	29.9	30.6	2.5		3.2	
	Fourth Quartile	214353	32.3	684	22.9	20.7	9.4		11.6	
	Missing	13297	2	42	1.4	2.4	0.6	5.5	0.4	6.3

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
Region	East Midlands	57176	8.6	323	10.8	9.8	2.2		1.2	
	East of England	74447	11.2	359	12	8.6	0.8		2.6	
	London	102580	15.5	283	9.5	9.2	6.0		6.3	
	North East	30492	4.6	58	1.9	1.3	2.7		3.3	
	North West	89327	13.5	764	25.6	27.3	12.1		13.8	
	South East	106494	16.1	304	10.2	13.1	5.9		3.0	
	South West	62082	9.4	257	8.6	10.1	0.8		0.7	
	West Midlands	73794	11.1	372	12.5	11.0	1.4		0.1	
	Yorkshire and the Humber	66950	10.1	267	8.9	9.7	1.2	3.7	0.4	3.5

Year 3 Reading School Characteristics – Weighted by Pupil Numbers

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
FSM %	Lowest 20%	112692	17	602	19.8	20.7	2.8		3.7	
	2nd Lowest 20%	123518	18.6	571	18.8	19.4	0.2		0.8	
	Middle 20%	137066	20.7	740	24.3	24.2	3.6		3.5	
	2nd Highest 20%	143990	21.7	672	22.1	20.4	0.4		1.3	
	Highest 20%	135021	20.4	329	10.8	12.3	9.6		8.1	
	Missing	11053	1.7	126	4.1	3.1	2.4	3.2	1.4	3.1
Key Stage 2 2019 Attainment	Lowest 20%	106898	16.1	437	14.4	20.1	1.7		4.0	
	2nd Lowest 20%	107224	16.1	890	29.3	19.1	13.2		3.0	
	Middle 20%	126198	19	563	18.5	20.2	0.5		1.2	
	2nd Highest 20%	107568	16.2	646	21.3	14.9	5.1		1.3	
	Highest 20%	100641	15.2	286	9.4	13.6	5.8		1.6	
	Missing	114812	17.3	218	7.2	12.1	10.1	6.1	5.2	2.7
Academy Status	Academy	246451	37.1	864	28.4	27.2	8.7		9.9	
	Non-Academy	416891	62.8	2176	71.6	72.8	8.8	8.8	10.0	10.0
Rural Urban Classification	Urban	557106	84	2373	78.1	77.6	5.9		6.4	
	Rural	106236	16	667	21.9	22.4	5.9	5.9	6.4	6.4
SEN %	First Quartile	168930	25.5	1158	38.1	36.3	12.6		10.8	
	Second Quartile	172617	26	626	20.6	16.7	5.4		9.3	
	Third Quartile	162467	24.5	761	25	26.9	0.5		2.4	
	Fourth Quartile	146031	22	453	14.9	17.8	7.1		4.2	
	Missing	13297	2	42	1.4	2.3	0.6	3.9	0.3	2.3
EAL %	First Quartile	103985	15.7	394	13	11.8	2.7		3.9	
	Second Quartile	150025	22.6	1017	33.5	34.9	10.9		12.3	
	Third Quartile	181681	27.4	893	29.4	30.2	2.0		2.8	
	Fourth Quartile	214353	32.3	694	22.8	20.8	9.5		11.5	
	Missing	13297	2	42	1.4	2.3	0.6	5.1	0.3	6.2

Variable	Level	Population		Sample		Weighted Sample	Differences (absolute)			
		N	%	n	%	%	Population - sample	Average	Population - weighted sample	Average
Region	East Midlands	57176	8.6	325	10.7	9.7	2.1		1.1	
	East of England	74447	11.2	366	12	8.6	0.8		2.6	
	London	102580	15.5	290	9.5	9.3	6.0		6.2	
	North East	30492	4.6	54	1.8	1.2	2.8		3.4	
	North West	89327	13.5	767	25.2	27.3	11.7		13.8	
	South East	106494	16.1	308	10.1	13.1	6.0		3.0	
	South West	62082	9.4	253	8.3	9.8	1.1		0.4	
	West Midlands	73794	11.1	426	14	12.1	2.9		1.0	
	Yorkshire and the Humber	66950	10.1	251	8.3	8.8	1.8	3.9	1.3	3.6

Appendix G: Attainment of girls and boys in reading and mathematics domains

Comparison between genders for the Year 2 spring 2022 cohort for reading

Mean total mark for domain				
Domain	Boys Spring 2022	Girls Spring 2022	Difference	Significance
Use knowledge of vocabulary to understand texts	2.14	2.41	+0.27	Girls significantly higher
Identify/explain key aspects of texts (retrieval)	10.30	11.19	+0.89	Girls significantly higher
Identify and explain the sequence of events in texts (retrieval)	0.27	0.31	+0.04	Girls significantly higher
Make inferences from the text	4.97	5.70	+0.73	Girls significantly higher
Predict what might happen from what has been read (inference)	0.46	0.55	+0.09	Girls significantly higher

Comparison between genders for the Year 2 spring 2022 cohort for mathematics

Mean total mark for domain				
Domain	Boys Spring 2022	Girls Spring 2022	Difference	Significance
Number and place value	7.71	7.12	-0.59	Girls significantly lower
Calculations	18.32	17.26	-1.06	Girls significantly lower
Fractions	2.14	2.00	-0.14	Girls significantly lower
Measurement	2.80	2.61	-0.19	Girls significantly lower
Geometry	1.35	1.44	+0.09	Girls significantly higher
Statistics	1.18	1.14	-0.04	Not significant

Comparison between genders for the Year 3 spring 2022 cohort for reading

Mean total mark for domain				
Domain	Boys Spring 2022	Girls Spring 2022	Difference	Significance
Give/explain the meaning of words in context (vocabulary)	6.38	7.10	+0.72	Girls significantly higher
Retrieve and record information / identify key details from texts (retrieval)	3.21	3.39	+0.18	Girls significantly higher
Summarise main ideas from more than one paragraph (retrieval)	7.42	8.01	+0.59	Girls significantly higher
Make inferences from the text / explain and justify inferences with evidence from the text	1.44	1.51	+0.07	Girls significantly higher
Identify/explain how content is related and contributes to meaning (inference)	1.06	1.19	+0.13	Girls significantly higher
Identify/explain how meaning is enhanced through choice of words and phrases (vocabulary)	1.19	1.31	+0.12	Girls significantly higher

Comparison between genders for the Year 3 spring 2022 cohort for mathematics

Mean total mark for domain				
Domain	Boys Spring 2022	Girls Spring 2022	Difference	Significance
Number and place value	11.53	10.09	-1.44	Girls significantly lower
Calculations	15.19	13.00	-2.19	Girls significantly lower
Fractions	4.87	3.87	-1.00	Girls significantly lower
Measurement	3.74	2.67	-1.07	Girls significantly lower
Geometry	1.54	1.51	-0.03	Not significant
Statistics	3.69	3.50	-0.19	Girls significantly lower

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