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Impact of school closures and subsequent support strategies on attainment and socio-emotional wellbeing in Key Stage 1: Interim Paper 2

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- encouraging schools, government, charities, and others to apply evidence and adopt innovations found to be effective.

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Summary

On 20 March 2020, as a result of the Covid-19 pandemic, schools in England closed to all pupils apart from vulnerable pupils and the children of keyworkers. Early studies predicted a 'learning loss' and widening of the disadvantage gap in attainment. After fully reopening in the autumn term of 2020, schools faced further closures in January 2021.

This study estimates the impact on attainment of pupils in Key Stage 1 in England following this disruption to schooling during the spring and summer terms of 2020 and again during the second set of school closures in the spring term of 2021. It also aims to determine the parts of the curriculum with which children are struggling. In addition, another strand of the work looks at the development of pupils' social skills.

The first set of findings¹, based on assessments taken by Year 2 pupils in autumn 2020, was published in January 2021. This is the second interim paper of the study and provides further insight into two of the study's research questions:

RQ1 – To what extent has pupils' attainment in reading and mathematics been impacted by school closures in 2020 and 2021? This is referred to as the 'Covid-19 gap'.

RQ3 – Were children eligible for free school meals (FSM) disproportionately affected? This is referred to as the 'disadvantage gap' in attainment between pupils who are eligible and not eligible for free school meals.

These results focus on assessments taken by Year 1 pupils (aged 5-6) and Year 2 pupils (aged 6-7 and in their final year of Key Stage 1) in the spring term of 2021. The assessments were taken by over 5000 pupils in each year group in 156 schools. There will be a further data sweep in the summer term.

It is important to note that this paper is based on interim findings only and focuses on assessments undertaken in the spring term of 2021. This paper, and the autumn 2020 paper, present test score distributions and averages for relevant papers in the relevant school terms. More detailed, further analysis will be carried out prior to the publication of the final report later in the year. Changes over time, including at a pupil level, will be investigated once all test data has been collected and will be carried out as part of the final analysis.

¹ https://educationendowmentfoundation.org.uk/public/files/Publications/Covid-19_Resources/Impact_of_school_closures_KS1_interim_findings_paper_-_Jan_2021.pdf

Further work looking at the performance of pupils, and different subgroups of pupils including disadvantaged and non-disadvantaged pupils, is planned for the final analysis where we will analyse outcome scores over time at a pupil level², to determine if the gaps in performance are narrowing, remaining stable or increasing. Currently the gap between the 2019 standardised sample and the current cohort of pupils in spring 2021 and the gap between disadvantaged and non-disadvantaged pupils is based on the observed difference for the cohort average converted into age in months. The confidence intervals around these point estimates represent uncertainty in our estimate of the population mean at a single point in time. They do not concern comparisons over time, which require the repeated measures models of the main final analysis. For this reason, comparisons between the autumn 2020 results and the spring 2021 results should not be made at this stage.

The autumn assessment was standardised in 2017 and the spring assessment was standardised in 2019. We do not anticipate any issues with a different year of standardisation. We have no evidence available to us to suggest that the 2017 standardisation is not still valid and is within a window where re-standardisation is not considered necessary. A reason for re-standardisation would be due to changes in the curriculum and this is not relevant here.

Key findings for Year 1 pupils: spring term 2021

- Year 1 pupils' attainment in reading was significantly³ lower in spring 2021 compared to a standardised sample from spring 2019; representing a Covid-19 gap of around three months' progress.
- Year 1 pupils' attainment in mathematics was significantly lower in spring 2021 compared to a standardised sample from spring 2019; representing a Covid-19 gap of around three months' progress.
- The disadvantage gap in reading in Year 1 is around seven months' progress⁴.
- The disadvantage gap in mathematics in Year 1 is around seven months' progress.

Key findings for Year 2 pupils

- Year 2 pupils' attainment in reading was significantly⁵ lower in spring 2021 compared to a standardised sample from spring 2019; representing a Covid-19 gap of around three months' progress.
- Year 2 pupils' attainment in mathematics was significantly lower in spring 2021 compared to a standardised sample from spring 2019; representing a Covid-19 gap of around two months' progress.
- The disadvantage gap in reading in Year 2 is around seven months' progress, which represents a widening as compared to Key Stage 1 in 2019.

² There will be two time points for Year 1 pupils and three time points for Year 2 pupils.

³ Where we use the word 'significantly' to refer to the Covid-19 gap, we mean that the confidence interval does not overlap 100 i.e. the difference can be regarded as statistically significant.

⁴ We do not have data for Year 1 relating to the disadvantage gap prior to school closures so no comparison can be made.

⁵ Where we use the word 'significantly' to refer to the Covid-19 gap, we mean that the confidence interval does not overlap 100 i.e. the difference can be regarded as statistically significant.

- The disadvantage gap in mathematics in Year 2 is around eight months' progress, which represents a widening as compared to Key Stage 1 in 2019.

This study confirms that Year 1 children have fallen behind and there is a large disadvantage gap. It also confirms that Year 2 children have fallen behind and that disadvantage gaps have widened since 2019⁶.

The 2019 Key Stage 1 disadvantage gap for reading and mathematics, was measured by test-guided teacher assessments regarding children working at the expected standard. By assuming a normal distribution of test scores, and calculating an effect size using the performance of disadvantaged/non-disadvantaged pupils, the gap in 2019 was estimated to be six months' progress.

This study quantifies the scale of the impact of school closures on pupils' learning and it reinforces the importance of a long term, sustained, focus on recovery activities to enable children to recover the learning they have lost.

⁶ Phonics_screening_check_and_key_stage_1_assessments_in_England_2019.pdf
(publishing.service.gov.uk)

Limitations

The Covid-19 gap estimates are liable to biased sampling. We have attempted to correct for this in the 2021 sample using school-level weighting by attainment and we checked the 2019 standardisation sample itself for representativeness at the time. The disadvantage gap estimates are relative measures within the spring 2021 sample so are less vulnerable to bias. For both gaps, conversion of mean standardised score differences into months progress is limited by the degree of reliability of the conversion table itself, and the inherent uncertainty in reading/mathematics ages.

Method

To establish the Covid-19 gap we needed a counterfactual: what would children have learned had they not been subject to school closures? Although impossible to measure for real, for a standardised test this can be estimated from the standardisation sample, which in this case was obtained in 2019. As the standardisation was done on a nationally representative sample of schools and assuming limited change over time in terms of the ability of different cohorts, we can compare the mean standardised score in our sample to the standardisation mean (in this case 100). Furthermore, we can construct confidence intervals to represent the uncertainty around the mean score and, should we wish to explore whether any difference is genuine, we can see whether it overlaps 100.

There are limitations in comparing the current sample to a different sample of pupils and schools. We address this limitation through weighting. There are also likely to be limits in the extent to which the standardisation sample is completely representative of all children and there could be non-pandemic related changes in academic performance over time. Furthermore, standardised scores typically generate an artificial floor and/or ceiling effect as a minimum score is assigned. A more rigorous method of comparing the two samples would be to match them both to the National Pupil Database and construct a multi-level regression of raw score on time controlling for appropriate school and pupil-level factors. However, GDPR and time limitations dictate the simpler approach presented here.

Context

Schools closed to the majority of pupils on 20 March 2020, opening only for vulnerable pupils and the children of keyworkers. Remote learning was introduced and projects such as the Oak National Academy were launched to aid pupils in learning from home. The partial reopening of schools took place from 1 June 2020 to pupils in Years 1 and 6, and GCSE and A Level students. However, most pupils remained at home until schools fully reopened in September 2020. A further set of school closures occurred from 4 January 2021 until 8 March 2021.

Despite the introduction of remote learning to the majority of pupils, early estimates by teachers of the Covid-19 gap was an average of three months for all pupils and four months for pupils in the most disadvantaged schools⁷, whilst the disadvantage gap was projected to

⁷https://www.nfer.ac.uk/media/4119/schools_responses_to_covid_19_the_challenges_facing_schools_and_pupils_in_september_2020.pdf

widen by 36% during the first lockdown by EEF⁸. Concerns were widely shared and debated with regards to a 'digital divide' caused by the lack of devices and access to broadband for some pupils, and the differing levels of engagement in remote learning. The government-funded but sector-led National Tutoring Programme was introduced in the 2020/21 school year to provide additional support to help pupils who had missed out the most as a result of school closures.

All schools in England who are current customers of the NFER's primary suite of assessments were invited to take part in the study. Schools that agreed to participate administered Year 2 assessments in November 2020 and Year 1 and Year 2 assessments in March 2021. A target of 158 schools was set for the study. A self-selecting sample of 168 schools took part in the autumn 2020 assessment and, of these, 12 schools decided to withdraw from the study following the second set of school closures. 156 took part in the spring 2021 assessment, however, of these, a small number did not take the assessments either with one of their year groups or in one subject due to either the pupils not being sufficiently settled after returning to school or as a result of the collapse of a class bubble.

The test window for schools for the spring assessments was open between 8 and 31 March 2021. Schools were asked to administer the tests to all Year 1 and Year 2 pupils. Schools were provided with spring Year 1 and spring Year 2 test papers from the NFER Key Stage 1 suite of assessments. All tests were marked by NFER. Coded marking, which identifies the type of response rather than simply whether it was correct, was used in order to be able to provide diagnostic information to schools.

In both Year 1 and Year 2, mathematics assessments consisted of two papers, one in arithmetic and the other in reasoning. Both papers are suitable for all pupils and should be taken by all. Pupils needed to sit both papers in order to be included within the study. The total number of Year 1 pupils included in the mathematics analysis was 5101 from 148 schools. The total number of Year 2 pupils included in the mathematics analysis was 5349 from 152 schools.

In both Year 1 and Year 2, reading assessments also consisted of two papers. Following the model of Key Stage 1 national assessment, both papers are intended for all pupils. However, as it is slightly higher in difficulty, it is expected that paper 2 may be unsuitable for some pupils and the NFER teacher guide advises that it is not suitable to administer this paper in such cases. The majority of pupils sat both papers, however, a small number of pupils who sat only paper 1 were also included in the study. Two schools did not administer paper 2 to any of their Year 1 pupils for logistical, rather than accessibility, reasons and these were not included in the results. The total number of Year 1 pupils included in the reading analysis was 5303 from 150 schools. The total number of Year 2 pupils included in the reading analysis was 5408 from 155 schools.

⁸https://educationendowmentfoundation.org.uk/public/files/REA_-_Impact_of_school_closures_on_the_attainment_gap_summary.pdf

NFER Standardised Tests

NFER spring assessments for both Year 1 and Year 2 in reading and mathematics were standardised in spring 2019 with a sample of schools from across England. The standardisation sample was representative of all schools in England in terms of attainment (Key Stage 2), school type, governance and region.

At standardisation, schools were randomly selected from the population of schools but not all agreed to take part. To check the schools included in the achieved standardisation sample were representative of all schools, the above school-level characteristics were compared with the national population and all yielded non-significant chi-squared tests. The achieved samples were therefore judged representative of the national population in all four of the above stratification characteristics at the school level.

The average standardised score is set at 100 with a standard deviation of 15 based on the nationally representative sample. Based on a normal distribution, this would mean that approximately two-thirds of pupils will have a standardised score between 85 and 115.

It is expected that under the normal distribution almost all pupils would fall within the range of two standard deviations above and below the mean, i.e. 70 to 140. Scores falling outside of this range would be considered exceptional and cannot be scored with the necessary reliability. Where an exact score is needed for these pupils, for example in order to calculate a mean, a value of 69 or 141 is used.

Analysis of assessment data from spring 2021

Pupils' raw scores from the spring 2021 assessments were converted into standardised scores using the NFER conversion table⁹, which was created during the 2019 standardisation. This enables their performance to be compared to the standardised sample.

The data from pupils taking assessments in spring 2021, as part of this study, was weighted using KS2 attainment quintiles. This was done to ensure the sample in spring 2021 was representative of the population quintiles at school level. This was the best attainment variable we could use to weight the data but it was limited by being for a different year group and by not being at pupil level.

⁹ This table is provided to schools using NFER assessments.

Year 1

Table 1 Summary of results for Year 1 in spring 2021

Measure	Reading		Mathematics	
	Standardisation sample 2019	Spring term 2021	Standardisation sample 2019	Spring term 2021
Mean	99.79	96.36	99.53	96.68
95% Confidence Interval	99.28-100.30	95.93-96.78	98.95-100.11	96.28-97.08
Standard deviation	14.60	15.80	14.61	14.53
N pupils	3126	5303	2445	5101

Year 1 Attainment in reading and mathematics – Covid-19 gap

Reading

The overall performance of Year 1 pupils in reading in spring 2021 was significantly lower than the standardised sample. The mean standardised score across the spring 2021 sample was 96.36 and this equates to an effect size of -0.24^{10} or around -3 months' progress using EEF's conversion table¹¹.

The standard deviation of the study sample is slightly larger at 15.80 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.

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://educationendowmentfoundation.org.uk/evidence-summaries/about-the-toolkits/attainment/>

Figure 1: Distributions of reading standardised scores for standardisation sample and spring 2021 sample of Year 1 pupils

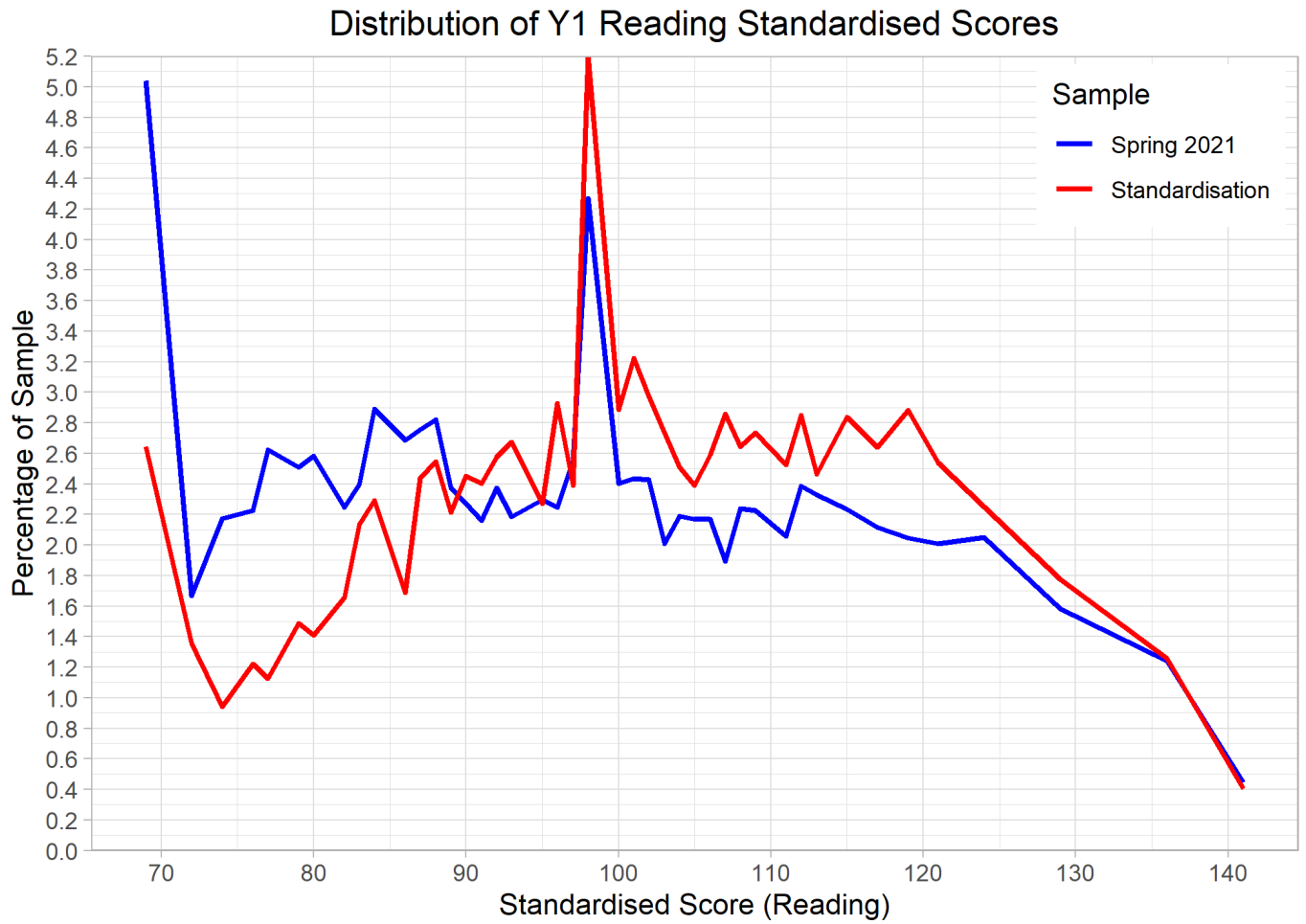


Figure 2: Distribution of cumulative reading standardised scores for standardisation sample and spring 2021 sample of Year 1 pupils

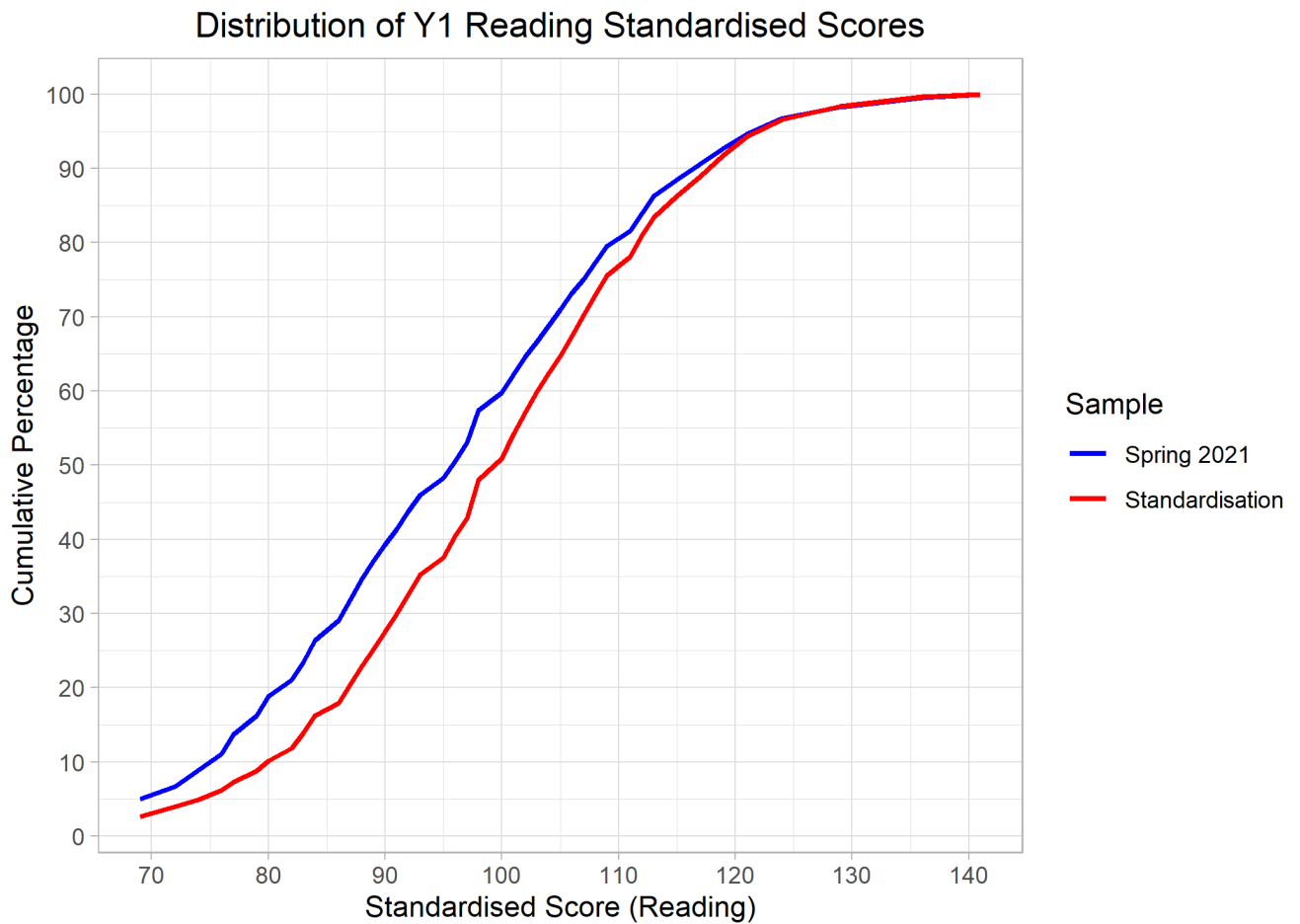


Figure 1 shows a smaller proportion of pupils scoring above 115 and a larger proportion scoring below 85.

As explained earlier, scores falling outside of the expected range of standardised scores (70 to 140) are considered exceptional. In the reading test, pupils who gained less than 5 marks were awarded a score of 69 and pupils who scored more than 47 marks out of 48 were awarded a score of 141.

It is noteworthy that a higher than expected proportion of pupils (267 or 5.0%) scored fewer than five marks on the reading test resulting in a standardised score of 69. This indicated that a large number of pupils were unable to engage effectively with the tests. In the standardised sample, the percentage of pupils being awarded this score was 2.6%.

Figure 3: Distribution of reading standardised scores for the spring 2021 sample of Year 1 pupils



In Figure 3 the blue line represents the expected mean if the sample performed exactly as the standardisation sample, and the red dotted line represents the observed mean for the sample in spring 2021. The distribution shows a positive skew, i.e. more lower scores and fewer higher scores than expected, compared to the 2019 standardisation sample.

Mathematics

The overall performance of pupils in mathematics in spring 2021 was also significantly lower than the standardisation sample. The mean standardised score across the spring 2021 sample was 96.68 and this equates to an effect size of -0.19 or around -3 months' progress.

The standard deviation of the study sample is smaller at 14.53 than that of the standardisation sample indicating a narrower spread of scores.

Figure 4: Distributions of mathematics standardised scores for standardisation sample and spring 2021 sample of Year 1 pupils

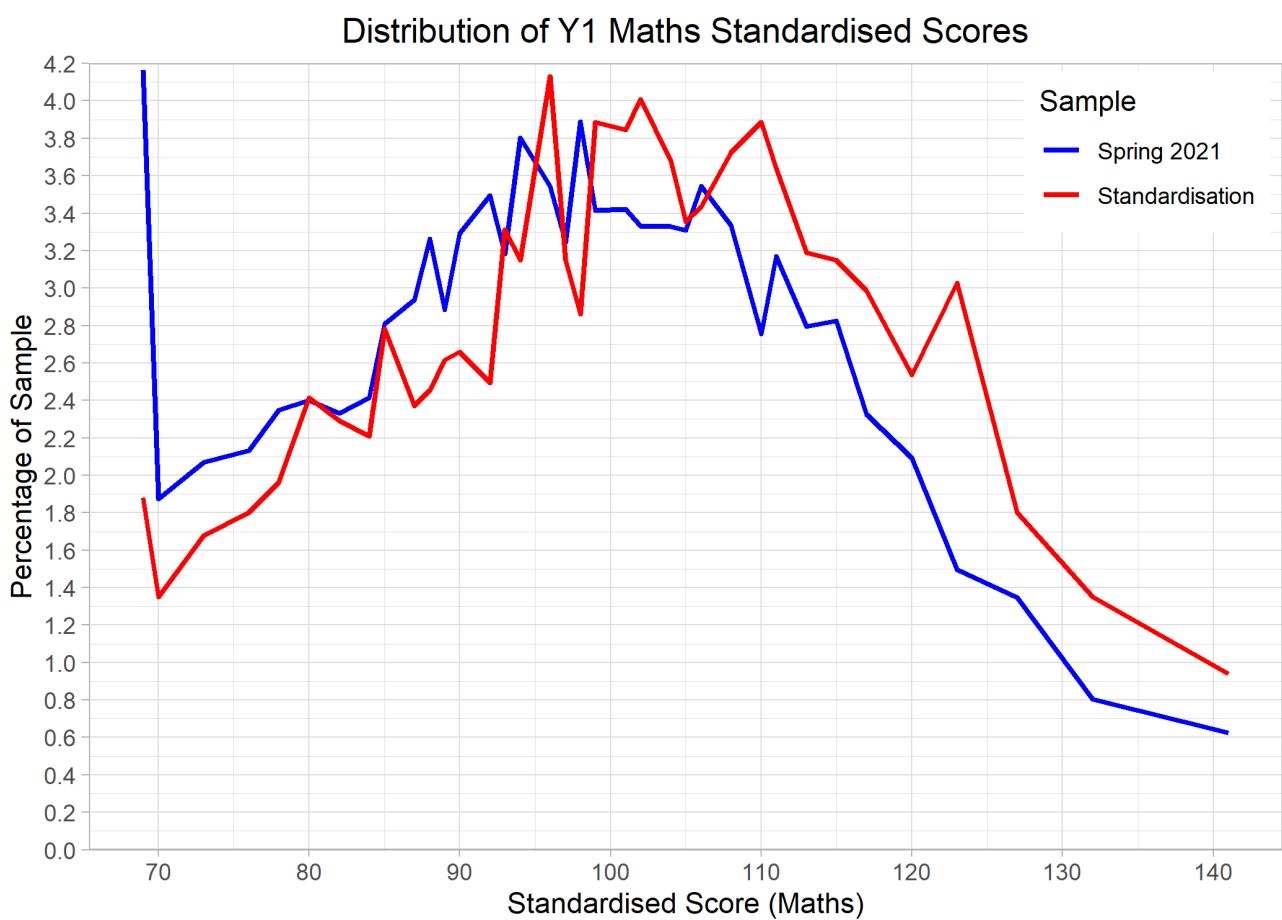


Figure 5: Distribution of cumulative mathematics standardised scores for standardisation sample and spring 2021 sample of Year 1 pupils

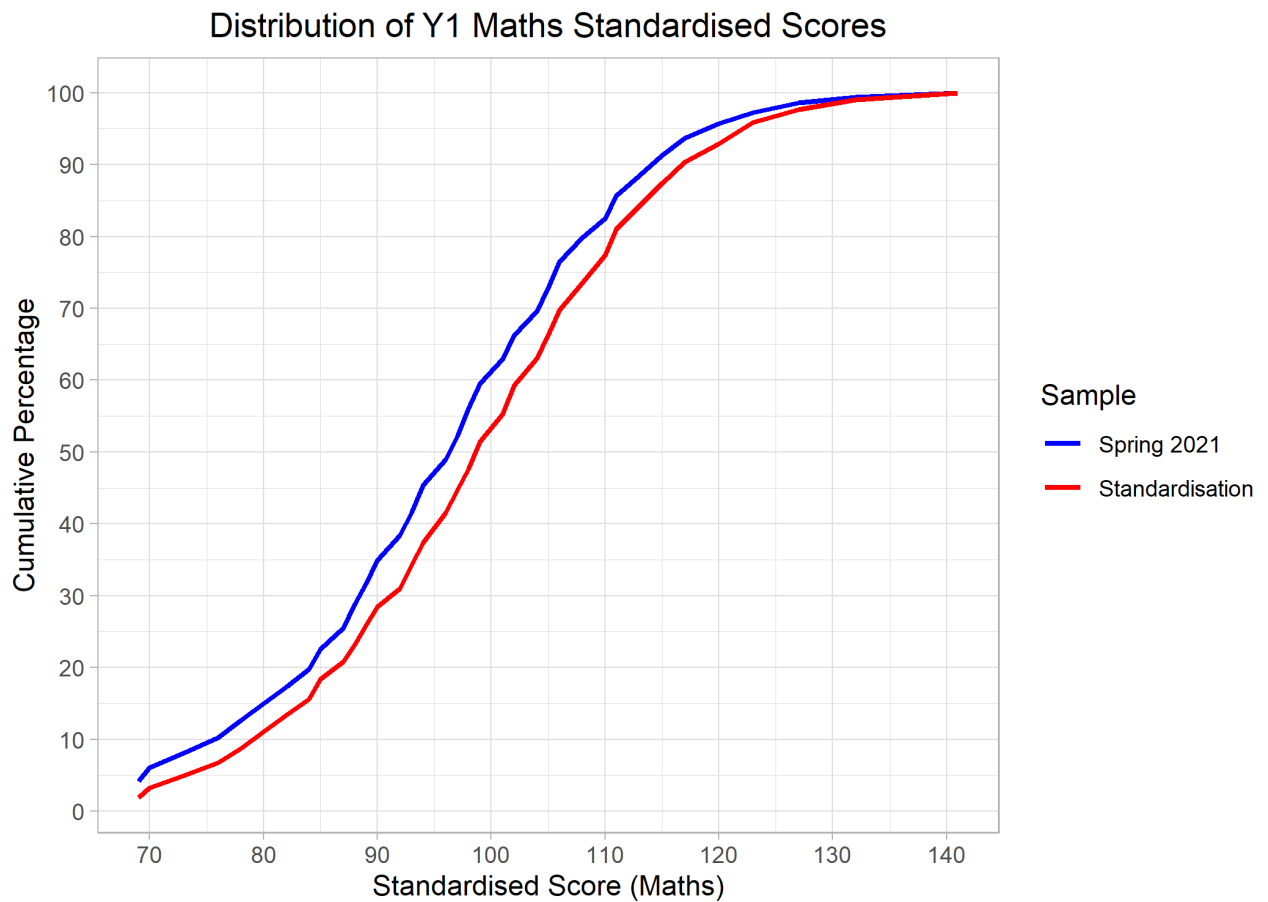
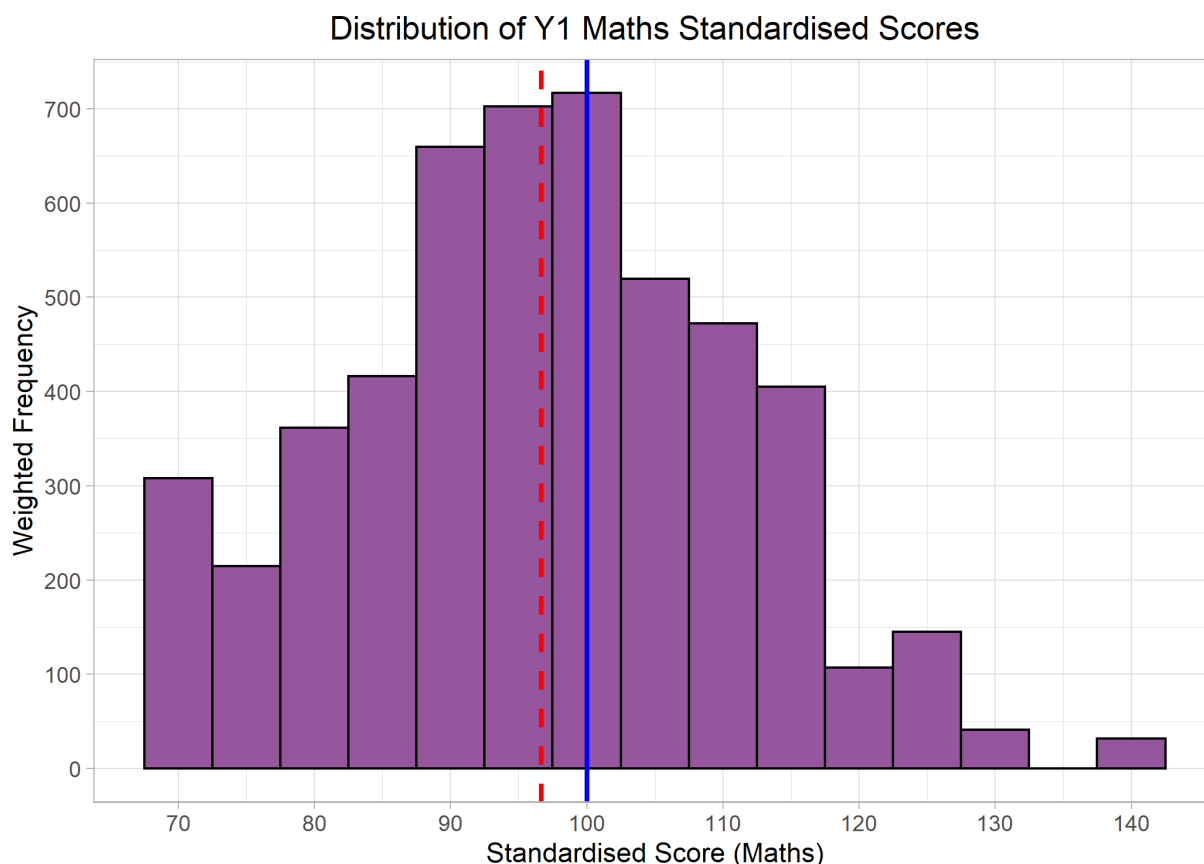


Figure 4 shows a smaller proportion of pupils scoring above 115 and a higher proportion scoring below 85.

All pupils included in the study had shown evidence of having engaged with both mathematics papers since those pupils who sat only one paper have been excluded. As explained earlier, scores falling outside of the expected range of standardised scores (70 to 140) are considered exceptional. In the mathematics test, pupils who gained fewer than 5 marks were awarded a score of 69 and pupils who scored more than 38 marks out of 40 were awarded a score of 141.

As in the reading test, a higher than expected proportion of pupils (212 or 4.2%), scored fewer than five marks on the mathematics test resulting in a standardised score of 69. A large number of pupils were therefore unable to engage effectively with the content of the tests. In the standardisation sample, the percentage of pupils being awarded this score was lower at 1.9%.

Figure 6: Distribution of mathematics standardised scores for the spring 2021 sample of Year 1 pupils



In Figure 6 the blue line represents the expected mean if the sample performed exactly as the standardisation sample and the red dotted line represents the observed mean for the sample in spring 2021. The distribution shows a positive skew, i.e. more lower scores and fewer higher scores than expected, compared to the 2019 standardised sample.

Attainment in reading and mathematics – Disadvantage gap

Within the spring 2021 sample, approximately 18% of the pupils in Year 1 were classed as disadvantaged in spring 2021 (i.e. eligible for FSM as reported by schools). For a small number of pupils (60 pupils in reading and 15 pupils in mathematics), no FSM data was provided and these pupils have been excluded from the following calculations until further data can be obtained. The standardisation sample does not provide data on the performance of disadvantaged and non-disadvantaged pupils. Further analysis on this area will be carried out following the assessment point in June 2021 to examine whether the gap narrows, widens or remains stable.

Reading

The following table shows a summary of the performance of disadvantaged pupils compared to those pupils who are not disadvantaged.

Table 2 Performance of Year 1 disadvantaged pupils in reading for spring 2021

Measure	Standardisation sample 2019	Spring 2021 all pupils	Spring 2021 FSM	Spring 2021 Non- FSM
Mean	99.79	96.36	89.02	97.99
95% Confidence Interval	99.28-100.30	95.93-96.78	88.13-89.90	97.52-98.46
Standard deviation	14.60	15.80	13.82	15.74
N pupils	3126	5303	934	4309

The difference between the mean standardised scores of disadvantaged pupils and non-disadvantaged pupils is large at 8.97 standardised score points. The effect size for this data is 0.57¹² which, using EEF's table¹³, equates to seven months of learning. This calculation indicates a large gap but the results, expressed in terms of months of learning, should be interpreted with caution due to the unreliability of the conversion table itself, or the inherent uncertainty in reading/mathematics ages.

Mathematics

The following table shows a summary of the performance of disadvantaged pupils compared to those pupils who are not disadvantaged.

Table 3 Performance of Year 1 disadvantaged pupils in mathematics for spring 2021

Measure	Standardisation sample 2019	Spring 2021 all pupils	Spring 2021 FSM	Spring 2021 Non- FSM
Mean	99.53	96.68	90.17	98.07
95% Confidence Interval	98.95-100.11	96.28-97.08	89.28-91.06	97.64-98.51
Standard deviation	14.61	14.53	13.61	14.36
N pupils	2445	5101	897	4189

¹² Disadvantage gap effect sizes were calculated by dividing the standardised score point difference between FSM and non-FSM by the overall spring 2021 standard deviation.

¹³ <https://educationendowmentfoundation.org.uk/evidence-summaries/about-the-toolkits/attainment/>

The difference between the mean standardised scores of disadvantaged pupils and non-disadvantaged pupils is large at 7.90 standardised score points. The effect size for this data is 0.54 which, using EEF’s table, equates to seven months of learning. This calculation indicates a large gap but the results, expressed in terms of months of learning, should be interpreted with caution due to the unreliability of the conversion table itself, or the inherent uncertainty in reading/mathematics ages.

Year 2

Table 4 Summary of results for Year 2 in spring 2021

Measure	Reading		Mathematics	
	Standardisation sample 2019	Spring term 2021	Standardisation sample 2019	Spring term 2021
Mean	100.02	96.78	99.48	97.59
95% Confidence Interval	99.38-100.66	96.35-97.20	98.84-100.13	97.18-98.00
Standard deviation	14.69	15.81	14.48	15.22
N pupils	2019	5408	1911	5349

Reading

The overall performance of Year 2 pupils in reading in spring 2021 was significantly lower than the standardised sample. The mean standardised score across the spring 2021 sample was 96.78 and this equates to an effect size of -0.22^{14} or around -3 months’ progress using EEF’s conversion table¹⁵. In autumn 2020¹⁶, for this cohort of pupils, the effect size was -0.17 or around -2 months’ progress. Although, there is some evidence to suggest that the gap may be widening, it is important to recognise that these estimates are based on a range of effect sizes and it will be necessary to test the significance between these two points before any firm conclusions can be drawn. Changes over time will be investigated once all test data has been collected and will be carried out as part of the final analysis.

The standard deviation of the study sample is slightly larger at 15.81 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.

¹⁴ 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.

¹⁵ <https://educationendowmentfoundation.org.uk/evidence-summaries/about-the-toolkits/attainment/>

¹⁶ The autumn 2020 has been reworked using a method to improve comparison by removing independent schools from the standardised sample. The estimate of the gap in terms of months has not been affected.

Figure 7: Distributions of reading standardised scores for standardisation sample and spring 2021 sample of Year 2 pupils

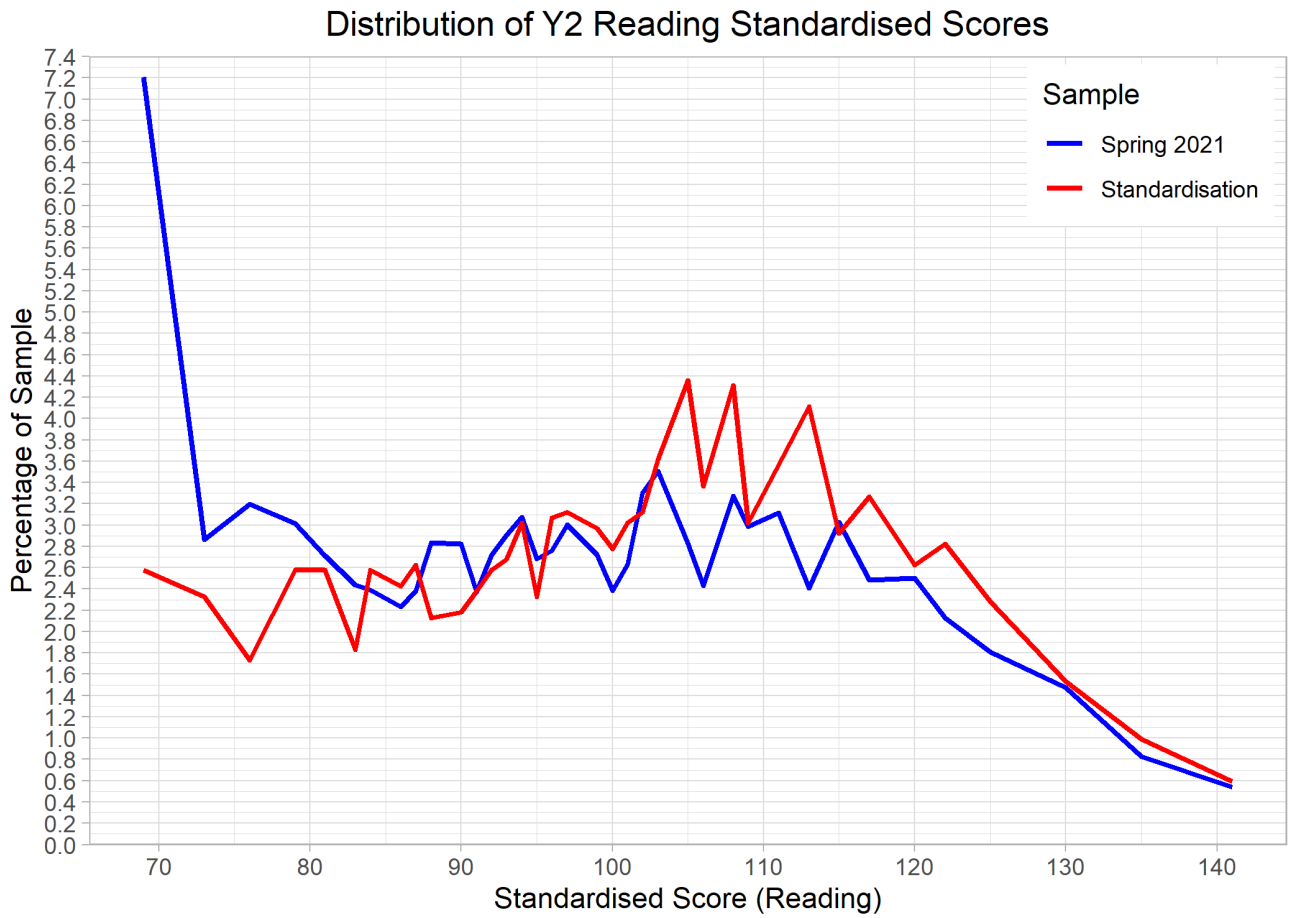


Figure 8: Distribution of cumulative reading standardised scores for standardisation sample and spring 2021 sample of Year 2 pupils

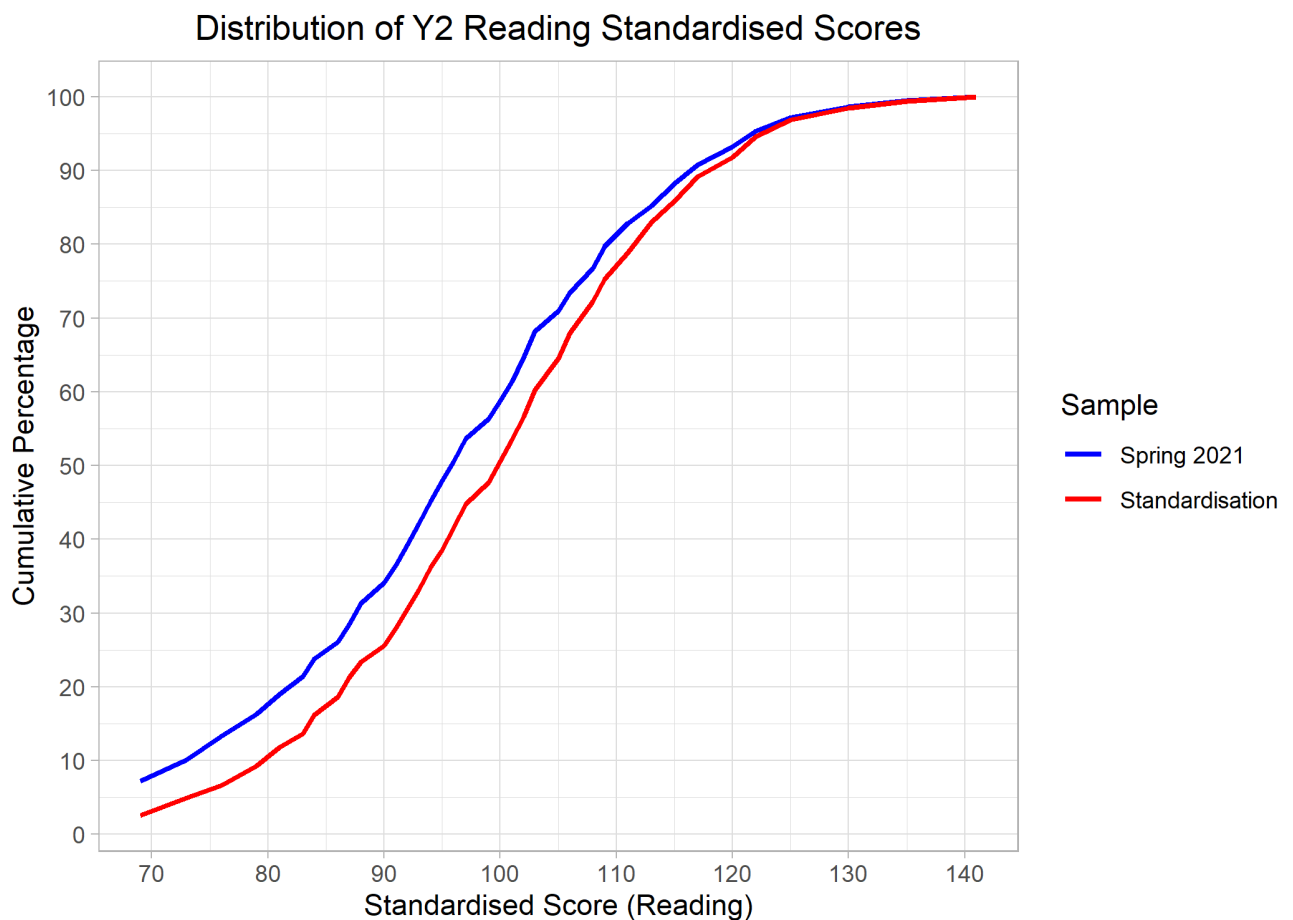
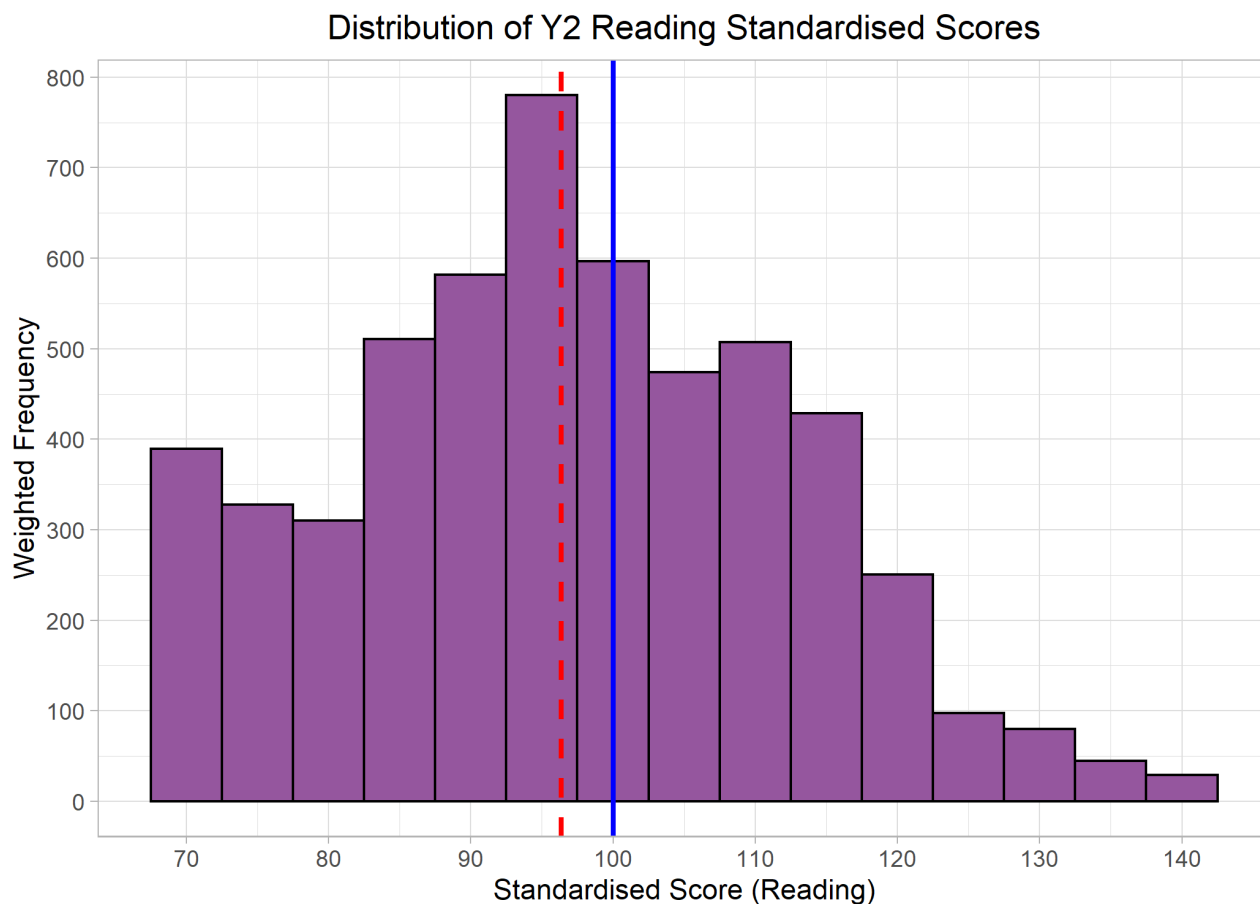


Figure 7 shows that although a smaller proportion of pupils scored above 115, a much larger proportion of pupils scored below 85.

As explained earlier, scores falling outside of the expected range of standardised scores (70 to 140) are considered exceptional. In the reading test, pupils who gained less than four marks were awarded a score of 69 and pupils who scored more than 38 marks out of 40 were awarded a score of 141.

It is noteworthy that a higher than expected proportion of pupils (390 or 7.2%) scored fewer than four marks on the reading test resulting in a standardised score of 69. This indicated that a large number of pupils were unable to engage effectively with the tests. In the standardised sample, the percentage of pupils being awarded this score was 2.6%.

Figure 9: Distribution of reading standardised scores for the spring 2021 sample of Year 2 pupils



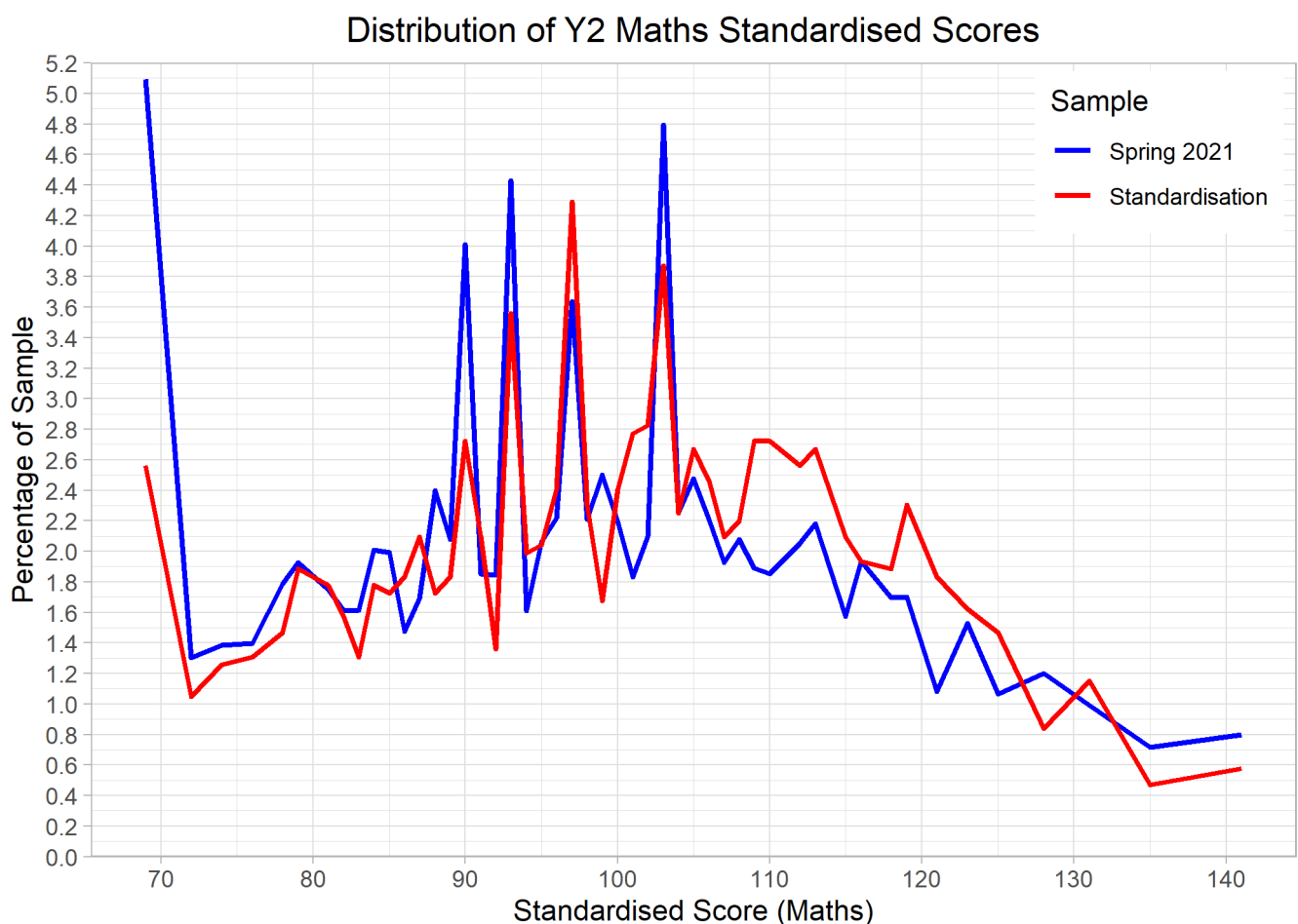
In Figure 9 the blue line represents the expected mean if the sample performed exactly as the standardisation sample, and the red dotted line represents the observed mean for the sample in spring 2021. The distribution shows a positive skew, i.e. more lower scores and fewer higher scores than expected, compared to the 2019 standardisation sample.

Mathematics

The overall performance of pupils in mathematics in spring 2021 was also significantly lower than the standardisation sample. The mean standardised score across the spring 2021 sample was 97.59 and this equates to an effect size of -0.13 or around -2 months' progress. In autumn 2020¹⁷, for this cohort of pupils, the effect size was -0.14 or around -2 months' progress. Although, there is some evidence to suggest that the gap has not closed since the autumn, it is important to recognise that these estimates are based on a range of effect sizes and it will be necessary to test the significance between these two points before any firm conclusions can be drawn. Changes over time will be investigated once all test data has been collected and will be carried out as part of the final analysis.

The standard deviation of the study sample is larger at 15.22 than that of the standardisation sample indicating a broader range of scores.

Figure 10: Distributions of mathematics standardised scores for standardisation sample and spring 2021 sample of Year 2 pupils



¹⁷ The autumn 2020 has been reworked using a method to improve comparison by removing independent schools from the standardised sample. The estimate of the gap in terms of months has not been affected.

Figure 11: Distribution of cumulative mathematics standardised scores for standardisation sample and spring 2021 sample of Year 2 pupils

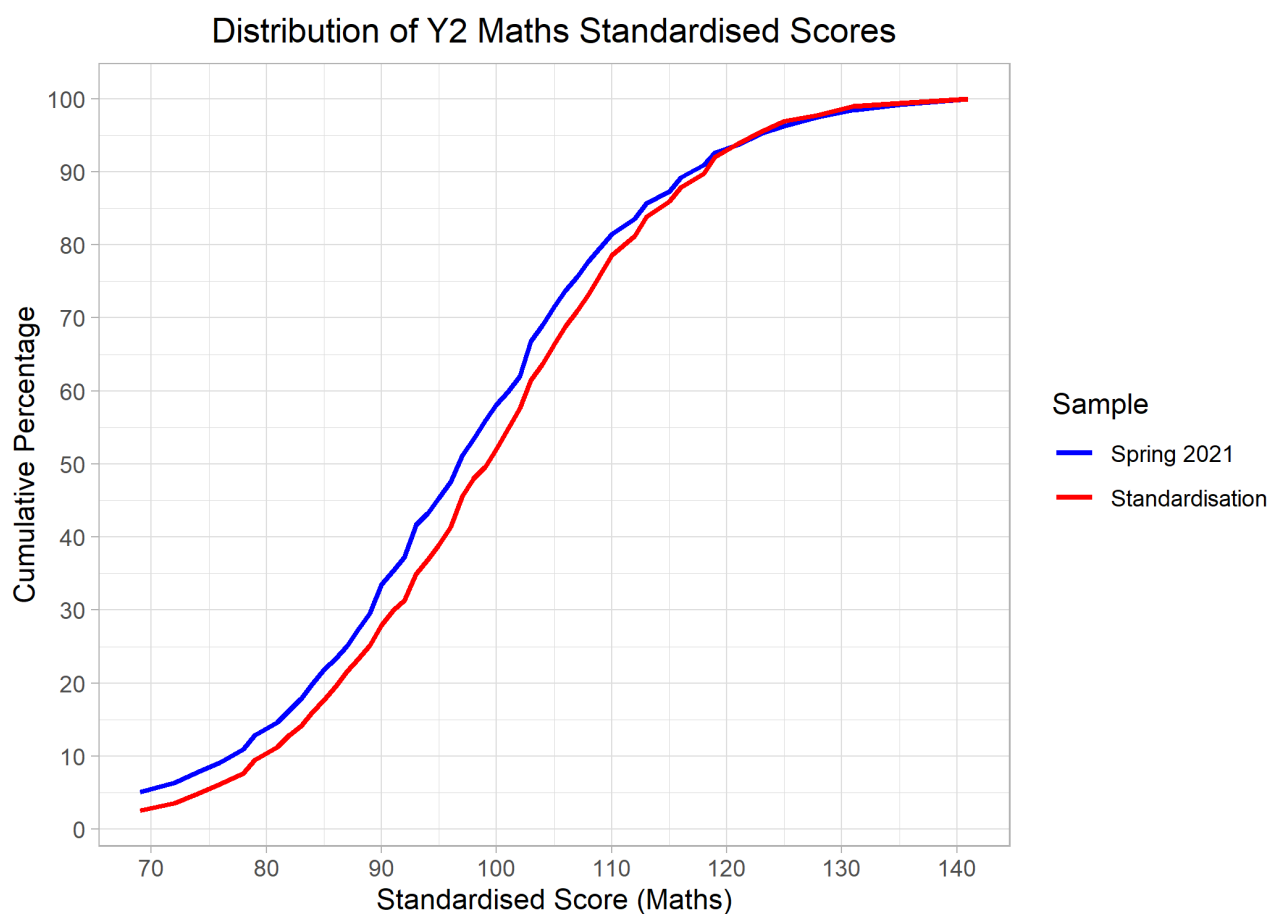
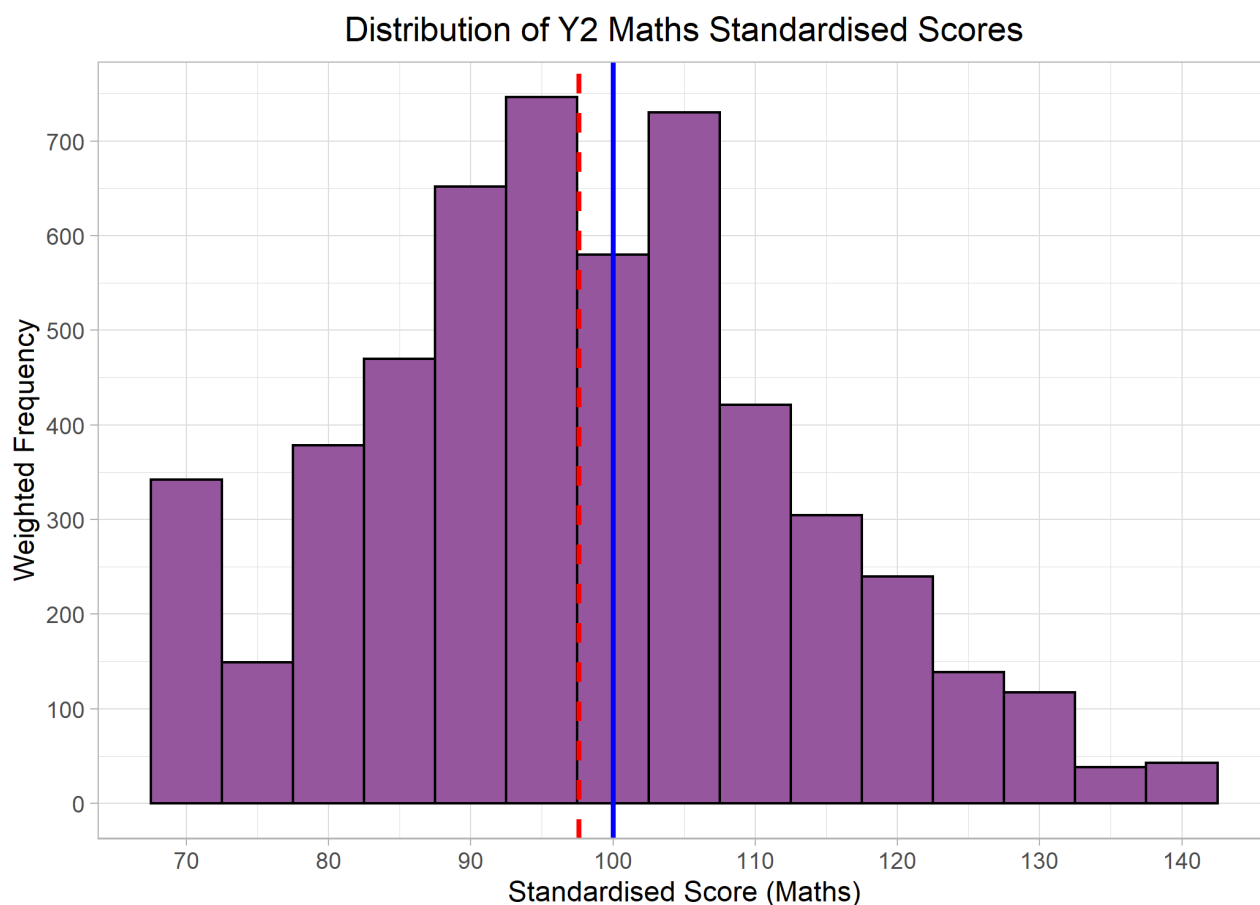


Figure 10 shows a smaller proportion of pupils scoring above 115, however, the proportion of the spring 2021 sample scoring 130 or above is slightly higher. A higher proportion of pupils scored below 85.

All pupils included in the study had shown evidence of having engaged with both mathematics papers since those pupils who sat only one paper have been excluded. As explained earlier, scores falling outside of the expected range of standardised scores (70 to 140) are considered exceptional. In the mathematics test, pupils who gained fewer than seven marks were awarded a score of 69 and pupils who scored more than 57 marks out of 60 were awarded a score of 141.

As in the reading test, a higher than expected proportion of pupils (272 or 5.1%), scored fewer than seven marks on the mathematics test resulting in a standardised score of 69. A large number of pupils were therefore unable to engage effectively with the content of the tests. In the standardisation sample, the percentage of pupils being awarded this score was lower at 2.6%.

Figure 12: Distribution of mathematics standardised scores for the spring 2021 sample of Year 2 pupils



In Figure 12 the blue line represents the expected mean if the sample performed exactly as the standardisation sample and the red dotted line represents the observed mean for the sample in spring 2021. The distribution shows a positive skew, i.e. more lower scores and fewer higher scores than expected, compared to the 2019 standardised sample.

Attainment in reading and mathematics – Disadvantage gap

Within the spring 2021 sample, approximately 18% of the pupils in Year 2 were classed as disadvantaged in spring 2021 (i.e. eligible for FSM as reported by schools). For a small number of pupils (35 pupils in reading and 6 pupils in mathematics), no FSM data was provided and these pupils have been excluded from the following calculations until further data can be obtained. The standardisation sample does not provide data on the performance of disadvantaged and non-disadvantaged pupils. Further analysis on this area will be carried out following the assessment point in June 2021 to examine whether the gap narrows, widens or remains stable.

Reading

The following table shows a summary of the performance of disadvantaged pupils compared to those pupils who are not disadvantaged.

Table 5 Performance of Year 2 disadvantaged pupils in reading for spring 2021

Measure	Standardisation sample 2019	Spring 2021 all pupils	Spring 2021 FSM	Spring 2021 Non- FSM
Mean	100.02	96.78	89.07	98.44
95% Confidence Interval	99.38-100.66	96.35-97.20	88.16-89.98	97.98-98.90
Standard deviation	14.69	15.81	14.51	15.54
N pupils	2019	5408	970	4403

The difference between the mean standardised scores of disadvantaged pupils and non-disadvantaged pupils is large at 9.37 standardised score points. The effect size for this data is 0.59¹⁸ which, using EEF's table¹⁹, equates to seven months of learning. This calculation indicates a large gap but the results, expressed in terms of months of learning, should be interpreted with caution due to the unreliability of the conversion table itself, or the inherent uncertainty in reading/mathematics ages. In autumn 2020²⁰, for this cohort of pupils, the effect size was 0.53 or around seven months of learning. Although, there is some evidence to suggest that the gap has remained broadly similar, it is important to recognise that these estimates are based on a range of effect sizes and it will be necessary to test the significance between these two points before any firm conclusions can be drawn. Changes over time will be investigated when all test data has been collected and this will be done as part of the final analysis.

To put this in context, the 2019 Key Stage 1 disadvantage gap for reading, as measured by test-guided teacher assessments regarding children working at the expected standard, was 17 percentage points²¹. By assuming a normal distribution of test scores, we can convert the percentages for disadvantaged/other pupils (62% and 78% respectively) into an effect size of 0.47. This converts to six months' progress using the EEF table so by this metric the disadvantage gap, now 0.59 or seven months, has widened from what might be predicted

¹⁸ Disadvantage gap effect sizes were calculated by dividing the standardised score point difference between FSM and non-FSM by the overall spring 2021 standard deviation.

¹⁹ <https://educationendowmentfoundation.org.uk/evidence-summaries/about-the-toolkits/attainment/>

²⁰ The autumn 2020 has been reworked using a method to improve comparison by removing independent schools from the standardised sample. The estimate of the gap in terms of months has not been affected.

²¹ Phonics_screening_check_and_key_stage_1_assessments_in_England_2019.pdf (publishing.service.gov.uk)

without school closures. Given the forecast²² that the disadvantage gap might increase by 0.022 standard deviations per month of closures, our findings on the disadvantage gap are not unexpected given the uncertainties in these measures.

Mathematics

The following table shows a summary of the performance of disadvantaged pupils compared to those pupils who are not disadvantaged.

Table 6 Performance of Year 2 disadvantaged pupils in mathematics for spring 2021

Measure	Standardisation sample 2019	Spring 2021 all pupils	Spring 2021 FSM	Spring 2021 Non- FSM
Mean	99.48	97.59	89.61	99.38
95% Confidence Interval	98.84-100.13	97.18-98.00	88.75-90.48	98.93-99.82
Standard deviation	14.48	15.22	13.84	14.93
N pupils	1911	5349	976	4367

The difference between the mean standardised scores of disadvantaged pupils and non-disadvantaged pupils is large at 9.77 standardised score points. The effect size for this data is 0.64 which, using EEF's table, equates to eight months of learning. Both of these calculations indicate a large gap but the results, expressed in terms of months of learning, should be interpreted with caution due to the unreliability of the conversion table itself, or the inherent uncertainty in reading/mathematics ages. In autumn 2020²³, for this cohort of pupils, the effect size was 0.58 or around seven months of learning. Although, there is some evidence to suggest that the gap may be widening, it is important to recognise that these estimates are based on a range of effect sizes and it will be necessary to test the significance between these two points before any firm conclusions can be drawn. Changes over time will be investigated once all test data has been collected and will be carried out as part of the final analysis.

To put this in context, the 2019 Key Stage 1 disadvantage gap for mathematics, as measured by test-guided teacher assessments regarding children working at the expected standard, was 17 percentage points²⁴. By assuming a normal distribution of test scores, we can convert the percentages for disadvantaged/other pupils (62% and 79% respectively) into

²² EEF_(2020)_-_Impact_of_School_Closures_on_the_Attainment_Gap.pdf
(educationendowmentfoundation.org.uk)

²³ The autumn 2020 has been reworked using a method to improve comparison by removing independent schools from the standardised sample. The estimate of the gap in terms of months has not been affected.

²⁴ Phonics_screening_check_and_key_stage_1_assessments_in_England_2019.pdf
(publishing.service.gov.uk)

an effect size of 0.50. This converts to six months' progress using the EEF table so by this metric the disadvantage gap, now 0.64 or eight months, has widened from what might be predicted without school closures. Given the forecast²⁵ that the disadvantage gap might increase by 0.022 standard deviations per month of closures, our findings on the disadvantage gap are not unexpected given the uncertainties in these measures.

Conclusion

This study confirms that, following the disruption to schooling in the 2020 spring and summer terms and spring 2021 term, both Year 1 and Year 2 pupils had significantly lower achievement in both reading and mathematics in spring 2021 when compared to performance seen in the spring term of 2019. In Year 1, this represents a Covid-19 gap of around three months' progress for both reading and mathematics. In Year 2, this represents a Covid-19 gap of around three months' progress for reading and around two months' progress for mathematics.

It also shows that there is a large and concerning attainment gap between disadvantaged and non-disadvantaged pupils. In Year 1, there is gap of around seven months for both reading and mathematics.

In Year 2, there is a gap of around seven months for reading and eight months for mathematics. The gap in 2019 was estimated to be six months' progress using the 2019 Key Stage 1 test-guided teacher assessments regarding children working at the expected standard²⁶. This was calculated by assuming a normal distribution of test scores, and calculating an effect size using the performance of disadvantaged/non-disadvantaged pupils. It seems that the disadvantage gap in spring 2021 for Year 2 is wider for both reading and mathematics than the six months that might have been predicted without school closures.

NFER is now conducting more granular analysis on performance on individual questions from the spring 2021 assessments to provide diagnostic information for teachers.

The next data collection is due in June 2021 which will involve Year 1 and Year 2 summer term assessments as well as further contextual information.

²⁵ EEF_(2020)_-_Impact_of_School_Closures_on_the_Attainment_Gap.pdf
(educationendowmentfoundation.org.uk)

²⁶ Impact of school closures and subsequent support strategies on attainment and socio-wellbeing in Key Stage 1: Interim Paper 1

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