

SEN language needs during the pandemic: methodology

This document describes the analysis process for identifying changes in language support needs in schools for pupils entering during the pandemic — including checking alternative hypotheses.

Data sources

Data on SEN was downloaded from:

<https://explore-education-statistics.service.gov.uk/find-statistics/special-educational-needs-in-england> - click 'Download all data', then unzip, the specific file we used is called `sen_ncyear.csv` - it has a column for each year group (Q is `nc_year_1`) and a column (M) for 'primary_need' - so you can filter that down to 'Speech, Language and Communications needs'

Data on pupil numbers is at

<https://explore-education-statistics.service.gov.uk/find-statistics/school-pupils-and-their-characteristics>. The raw data can be downloaded, queries can be made, or particular queries re-loaded. One query of interest is 'Pupil characteristics - Ethnicity and Language' for 'Known or believed to be English, Known or believed to be other than English, Language unclassified, Non-maintained special school, Pupil referral unit and 4 other filters in England between 2020/21 and 2021/22' at <https://explore-education-statistics.service.gov.uk/data-tables/fast-track/09a7ce09-543a-47f4-bf13-36a85aa20858>

That table provides national figures, but 'Step 3' above the table can be edited to change it to all local authorities.

Likewise, the time period can be edited to the previous five years.

A version edited for those changes can be accessed at

<https://explore-education-statistics.service.gov.uk/data-tables/permalink/715a3b55-7f69-4526-b553-cc1b3d120f83> (a URL generated by using the 'generate link' option)

This allows us not only to put SEN figures into the context of pupil numbers (alternative hypothesis: any rise in SEN numbers is simply due to a rise in pupil numbers) but also to put them into the context of pupils for whom English is a second language (alternative hypothesis: any rise in language support is simply due to a rise in ESL pupils)

Analysis 1: Calculating change in SEN language needs

The `sen_nyear.csv` file can be pivoted and filtered to identify the change in each local authority.

See the notebook [sen_covid_R1_ChangeByLA.ipynb](#) for R script that fetches the data, pivots it and performs the year on year calculations.

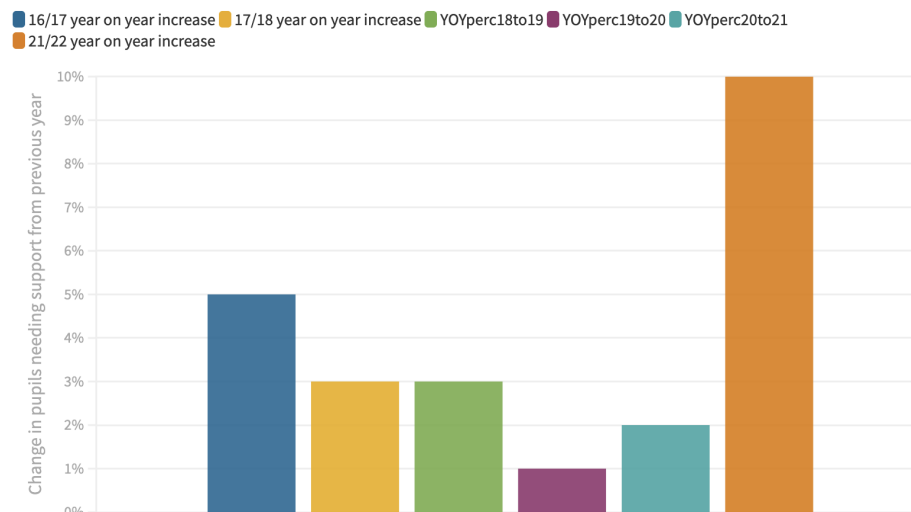
It can also be done in Excel with a pivot table designed like so, but requires some manual calculation columns to the right:

[illegible]

The figures show a big increase.

The number of children in year 1 needing language support has shot up

Every year the proportion of pupils in Year 1 needing support for "Speech, language and communication needs" increases - but the last year has seen the biggest increase of all, up 10%.



Analysis 2: Factoring in changes in pupil numbers

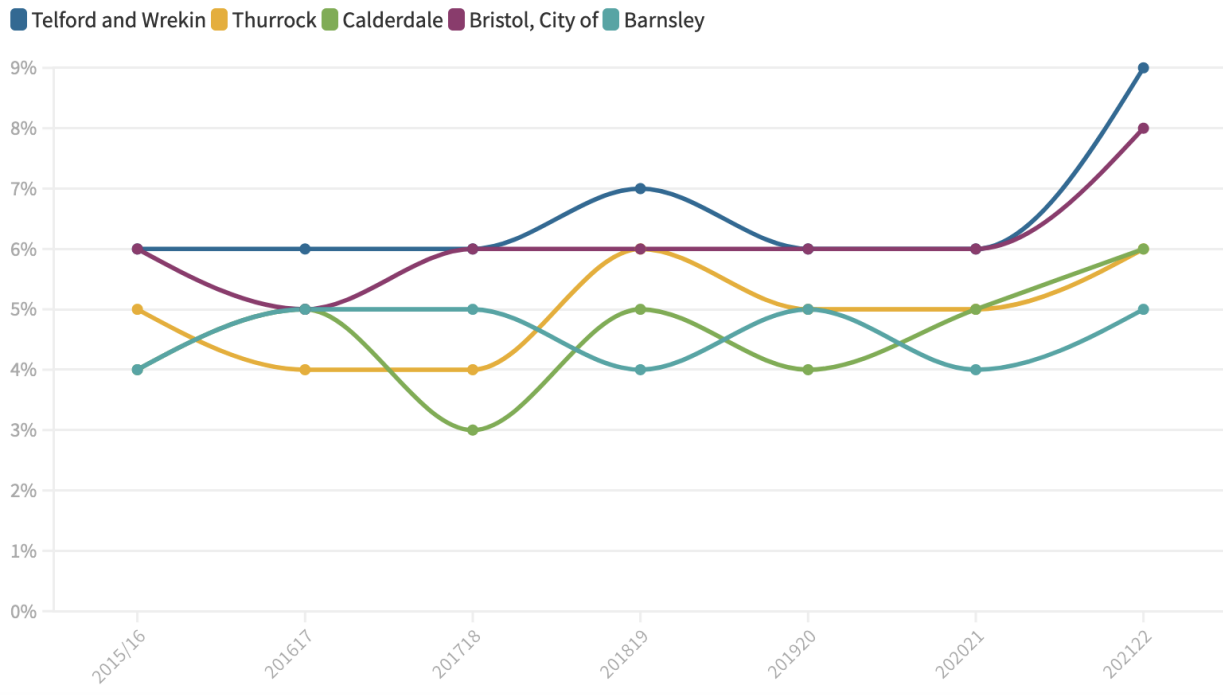
This can be found in the notebook [sen_covid_R2_pupilNumbers.ipynb](#). In that notebook we:

- Import data on pupil numbers for Year 1
- Combine that with the data on SEN numbers for Year 1
- Divide SEN numbers by pupil numbers to calculate what proportion of pupils in each LA needed speech and language support - this has risen from 5% five years ago to 7% now, a proportional increase of around 40%

Pupil numbers over the period for year 1 actually dropped a couple thousand, so we can definitively say that this is not the cause - and if anything makes the change bigger. Below we [focus on change in the 5 authorities with the biggest change](#).

The 5 authorities with the biggest change in speech and language needs in the last year

These authorities have seen a 40% rise in the proportion of pupils needing support with speech, language and communication - after years of relative stability



Analysis 3: Factoring in changes in ESL pupils

This analysis is in the notebook [sen_covid_R3_eslNumbers.ipynb](#). This:

- Imports data on pupils with English as a second language - this is only given at LA level and not at year level, but a change in Year 1 should be reflected by a year on year change overall
- Calculate year on year changes

- Calculates a correlation coefficient to check if there's any relationship

There's no similar rise in ESL and a [Google Sheet performing correlation coefficient calculations show no relationship](#).

Analysis 4: Comparing language support against other needs

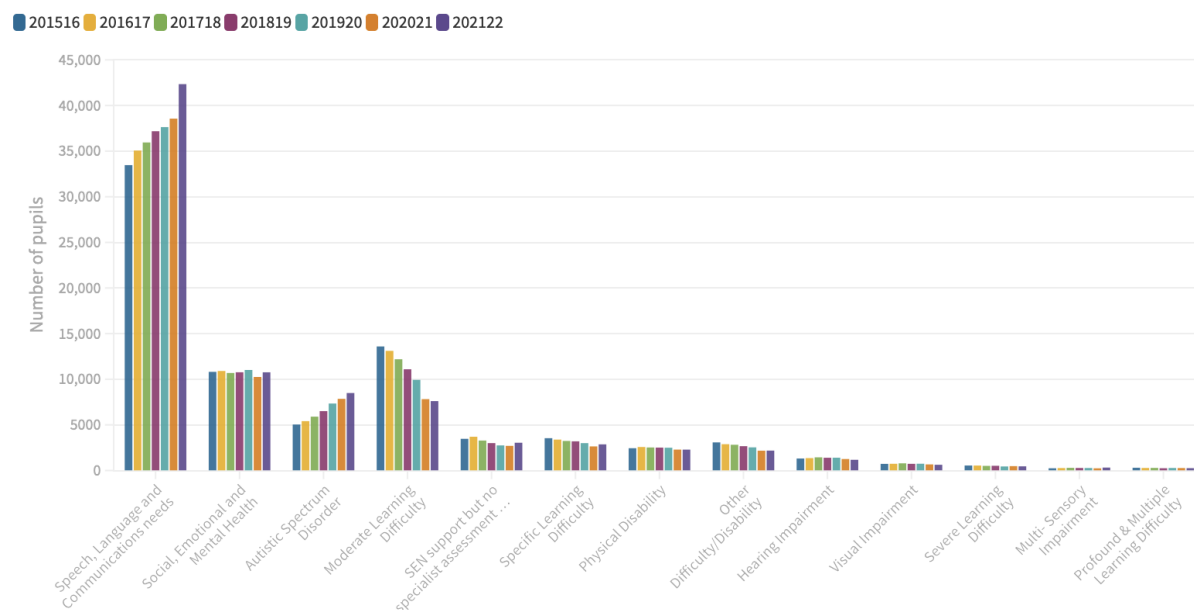
This can be done with a pivot table in Excel ([analysis here](#)), adding year on year change calculations to the right like so:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1	la_name	(blank)	-Y													
2	region_name	(blank)	-Y													
3	geographic_level	National	-Y													
4	pupil_sen_status	Total	-Y													
5	phase_type_grouping	State-funded primary	-Y													
6																
7	Sum of nc_year_1	Column Labels														
8	Row Labels		201516	201617	201718	201819	201920	202021	202122	Grand Total	YOY 19-20		YOY 20-21		5 year change	
9	Speech, Language and Communications needs		33464	35061	35949	37178	37632	38560	42341	260185	928	2%	3781	10%	7280	21%
10	Social, Emotional and Mental Health		10809	10902	10685	10764	11017	10252	10760	75189	-765	-7%	508	5%	-142	-1%
11	Autistic Spectrum Disorder		5039	5408	5900	6506	7338	7852	8490	46533	514	7%	638	8%	3082	57%
12	Moderate Learning Difficulty		13593	13108	12191	11094	9930	7819	7603	75338	-2111	-21%	-216	-3%	-5505	-42%
13	SEN support but no specialist assessment of type of need		3471	3700	3282	3001	2749	2698	3044	21945	-51	-2%	346	13%	-656	-18%
14	Specific Learning Difficulty		3540	3385	3238	3195	2999	2637	2864	21858	-362	-12%	227	9%	-521	-15%
15	Physical Disability		2441	2572	2524	2511	2496	2291	2289	17124	-205	-8%	-2	0%	-283	-11%
16	Other Difficulty/Disability		3080	2880	2820	2664	2536	2172	2181	18333	-364	-14%	9	0%	-699	-24%
17	Hearing Impairment		1313	1355	1442	1398	1403	1256	1174	9341	-147	-10%	-82	-7%	-181	-13%
18	Visual Impairment		728	737	786	732	742	667	628	5020	-75	-10%	-39	-6%	-109	-15%
19	Severe Learning Difficulty		545	539	506	515	444	477	457	3483	33	7%	-20	-4%	-82	-15%
20	Multi- Sensory Impairment		244	265	291	278	273	239	319	1909	-34	-12%	80	33%	54	20%
21	Profound & Multiple Learning Difficulty		302	274	284	249	276	267	257	1909	-9	-3%	-10	-4%	-17	-6%
22	Grand Total		78569	80186	79898	80085	79835	77187	82407	558167	-2648	-3%	5220	7%	2221	3%

The results are [visualised here](#). Speech and language is the biggest category of need, accounting for more than half of year 1 children needing SEN support, and has experienced one of the biggest increases. The chart [showing numbers each year can be found here](#).

The number of children needing support has gone up during the pandemic - in some areas more than others

The number of pupils in Year 1 needing SEN support for speech, language and communication needs has increased 10% year on year to an all-time high — those needing support for multi-sensory impairment is up 33%



Only two categories experienced bigger rises:

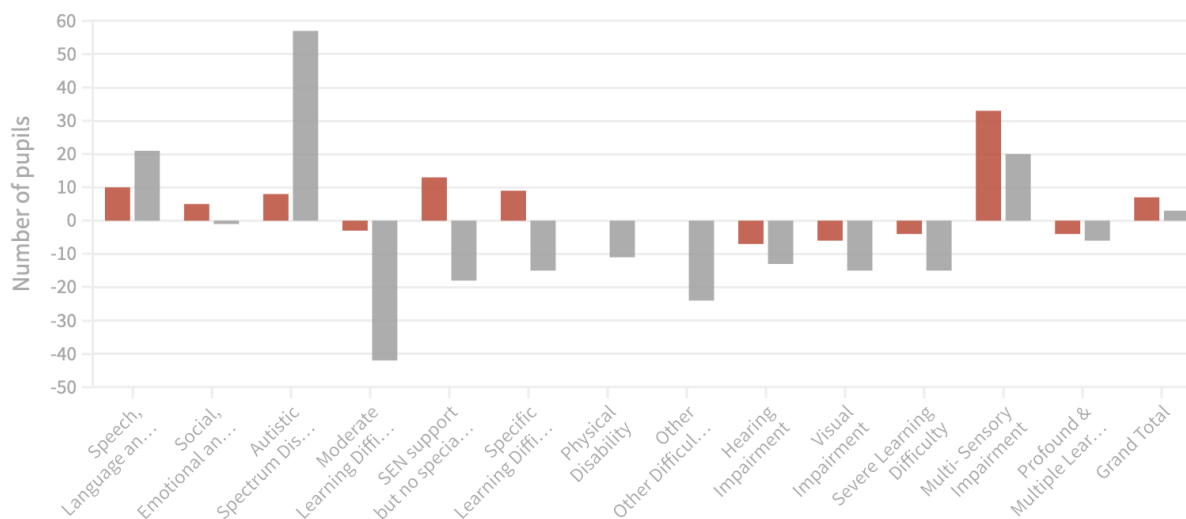
- Multi-sensory impairment increased by 33% but this is from a low base (from 239 to 319 children nationally in year 1)
- “SEN support but no specialist assessment of type of need” has increased by 13%, from 2698 to 3044 children. This is an interesting category, however, as this has dropped every year, from a high of 3,700 in 2016/17, suggesting that an increase in children not being assessed took place in 20/21. Given that speech and language needs account for around half of all children classified under SEN, it's likely that this is part of that increase too.

The number of children needing support has gone up during the pandemic - in some areas more than others

The number of pupils in Year 1 needing SEN support for speech, language and communication needs has increased 10% year on year to an all-time high.

The only categories with a bigger increase are "SEN support but no specialist assessment of type of need" (up 13% to 3044 nationally) and those needing support for multi-sensory impairment - up 33%. However, this is one of the smallest categories (319 children nationally) whereas language needs represent the biggest (42,000).

■ 21-22 % ■ 5 year change %



Analysis 5: Comparing year 1 against other years

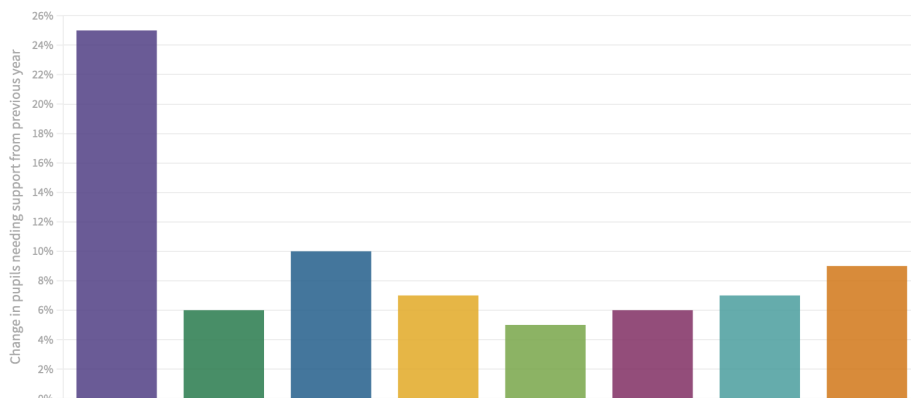
The Year 1 age group does see a larger increase in SEN language needs than any other year group, apart from Early Years.

The number of children in Year 1 and Early Years needing language support has increased more between 20/21 and 21/22 than other year groups

The proportion of children needing language and speech support in Early Years increased by 25%. In Year 1 it increased by 10%.

The Early Years figure may be misleading: the numbers in Early Years - which is not compulsory - needing language support dropped by 12% in 20/21 during the pandemic and this rise may simply reflect a return to more normal numbers.

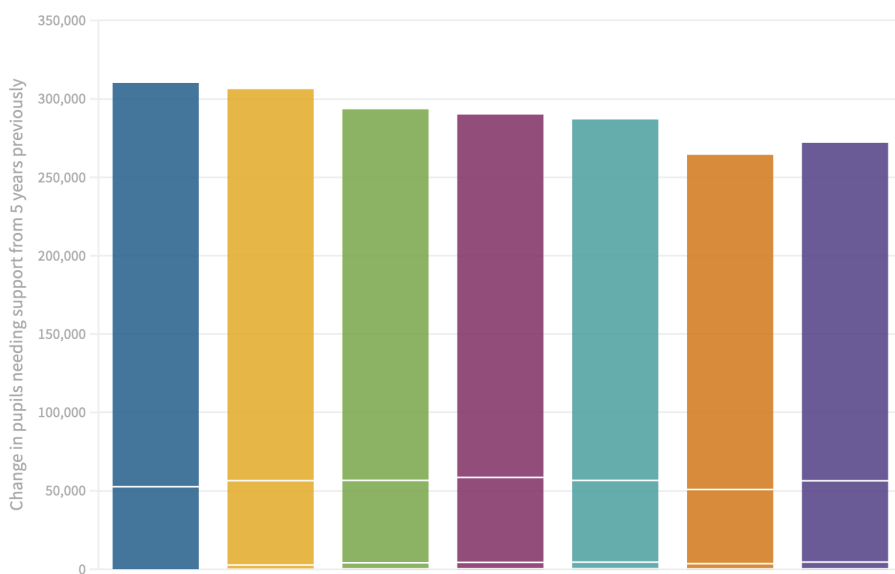
1 2 3 4 5 6 Early Years Reception



The Early Years figure may simply reflect a 'bounce back' after a drop in numbers during the pandemic ([chart shows pupil numbers for Early 1 and 2, Nursery 1 and 2](#)):

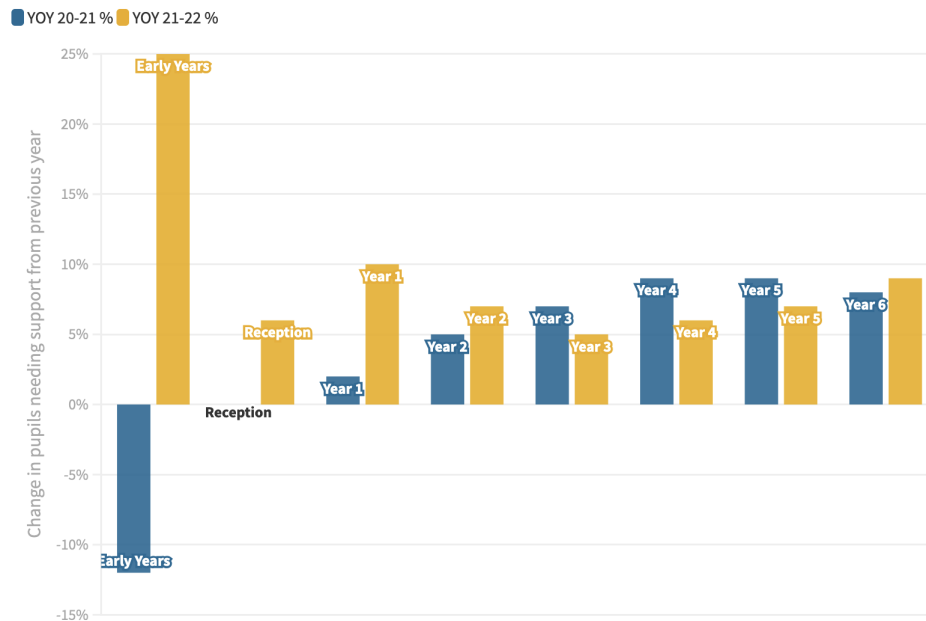
Early Years pupil numbers saw a big dip in 2020/21

2015/16 2016/17 2017/18 2018/19 2019/20 2020/21 2021/22



Those needing language support in this year group dropped by 12% in 20/21 whereas Year 1 - which unlike Early Years is compulsory - increased by 4%. When change is calculated across 2020-2022 instead, Early Years sees a 10% increase compared to a 13% increase in Year 1.

Change in children needing language between 19/20 and 21/22



[A chart showing the differences can be found here.](#) A [chart showing the two-year change is here.](#)

Analysis 6: Looking at the long term trend — is it bounce back?

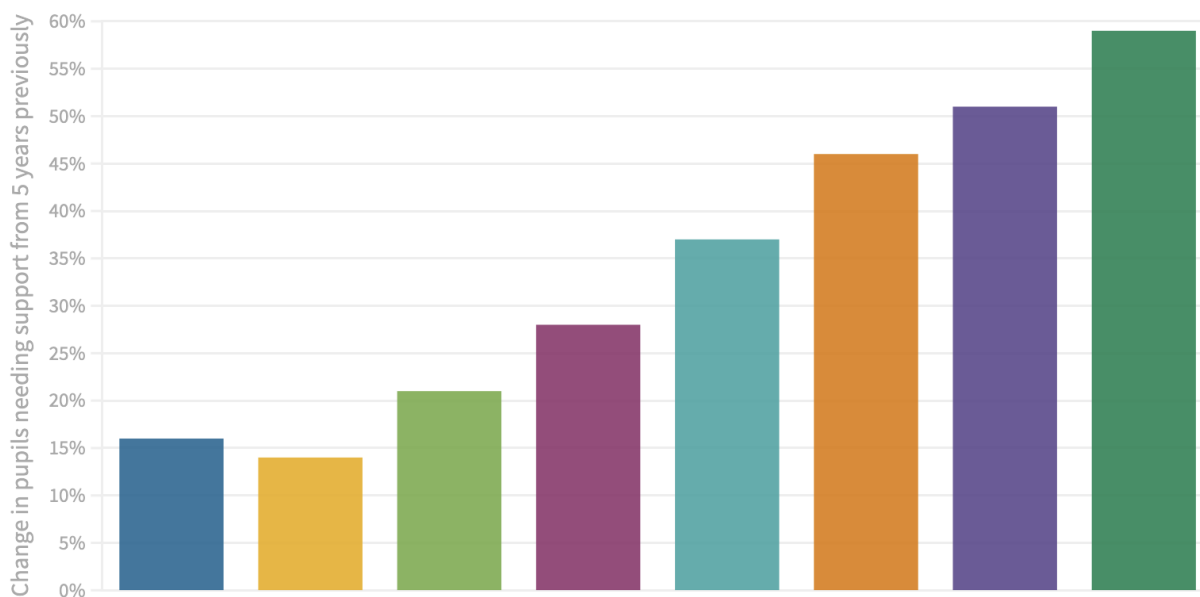
The Early Years 'bounce back' highlights another potential explanation: could it be that the increase in Year 1 reflects some diagnoses that would normally have occurred in earlier years?

[Here's the long term trend:](#)

The higher the age group, the bigger the increase in language support over the last 5 years

The number of children needing speech and language support in Year 1 has increased 21% over the five years up to 2021/22, with other age groups seeing even larger increases.

■ Early Years ■ Reception ■ Year 1 ■ Year 2 ■ Year 3 ■ Year 4 ■ Year 5 ■ Year 6



[Here are the proportions across that period](#) - again this only relates to those actually in school, so those skipping early years during 20/21 would not be included until they reach reception the year after.

There's no evidence here of a dip in 20/21 that would create a 'bounce back' in 21/22:

Proportion of children in each year with speech and language needs							
Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Early Years	3%	3%	4%	4%	4%	4%	5%
Reception	5%	5%	5%	5%	5%	5%	6%
Year 1	5%	5%	6%	6%	6%	6%	7%
Year 2	9%	10%	10%	11%	11%	12%	13%
Year 3	7%	8%	9%	9%	10%	11%	11%
Year 4	3%	3%	4%	4%	4%	4%	5%
Year 5	3%	3%	3%	3%	3%	4%	4%
Year 6	2%	2%	3%	3%	3%	3%	3%