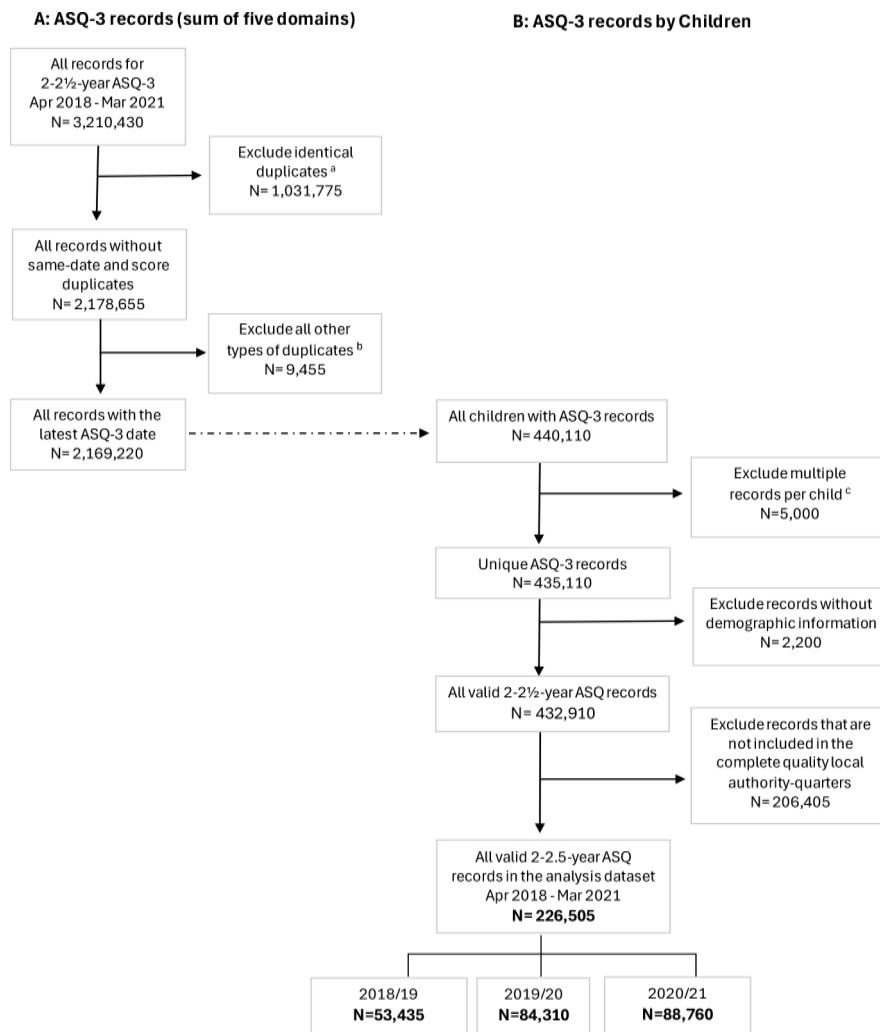


Appendix Figure 1: Flow chart to identify the child development (ASQ-3) records in Community Services Dataset from April 2018 to March 2021 for inclusion in the analysis dataset



Notes: ^a 'identical duplicates' were records for which the ASQ-3 records per child were identical based on ASQ-3 domain, assessment date, and score. ^b Other types of duplicates include: (i) the same score recorded on different dates, (ii) different scores recorded on the same date, and (iii) different scores recorded on different dates. ^c Multiple ASQ-3 records per child in different years or done using different ASQ-3-months questionnaires.



Appendix Table 1: Example questions for each ASQ-3 domain

Domain	Example question
Communication	<i>'Does your child use all of the words in a sentence (for example, "a," "the," "am," "is," and "are") to make complete sentences, such as "I am going to the park," or "Is there a toy to play with?" or "Are you coming, too?"'</i>
Gross motor	<i>'Does your child climb the rungs of a ladder of a playground slide and slide down without help?'</i>
Fine motor	<i>'Using child-safe scissors, does your child cut a paper in half on a more or less straight line, making the blades go up and down? (Carefully watch your child's use of scissors for safety reasons.)'</i>
Problem solving	<i>'When shown objects and asked, "What color is this?" does your child name five different colors, like red, blue, yellow, orange, black, white, or pink? (Mark "yes" only if your child answers the question correctly using five colors.)'</i>
Personal-social	<i>'Does your child wash his hands using soap and water and dry off with a towel without help?'</i>

Note: Example questions are copied from 48-month ASQ-3 sample questionnaire [15] which is available from Ages and Stages Questionnaire webpage [78].

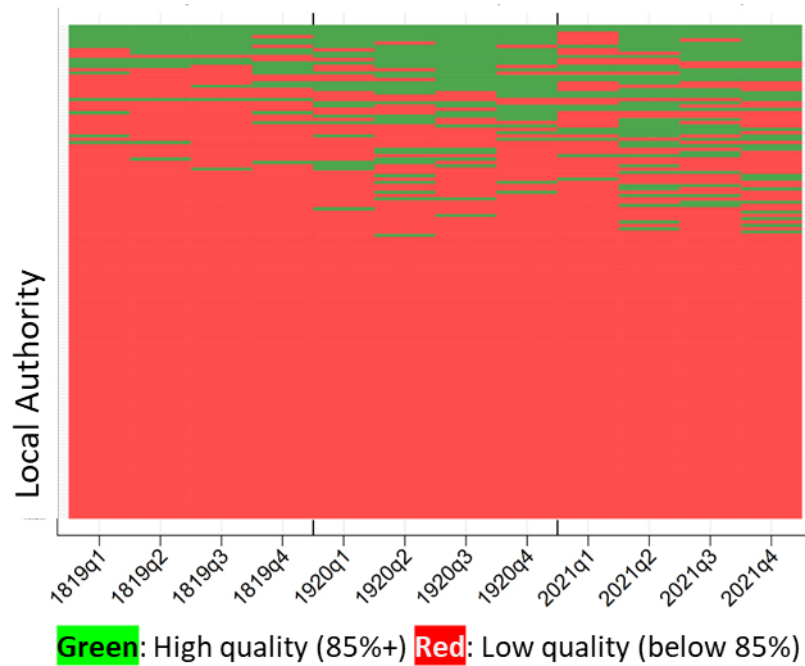
Appendix Table 2: Cut-off scores for each ASQ-3 domain

Domain	24 month	27 month	30 month
Communication	25.17	24.02	33.30
Gross Motor	38.07	28.01	36.14
Fine Motor	35.16	18.42	19.25
Problem Solving	29.78	27.62	27.08
Personal-Social	31.54	25.31	32.01

Source: Ages & stages questionnaires 3rd Edition (ASQ-3) [15].



Appendix Figure 2: Completeness of CSDS ASQ-3 (2018/19 – 2020/21)

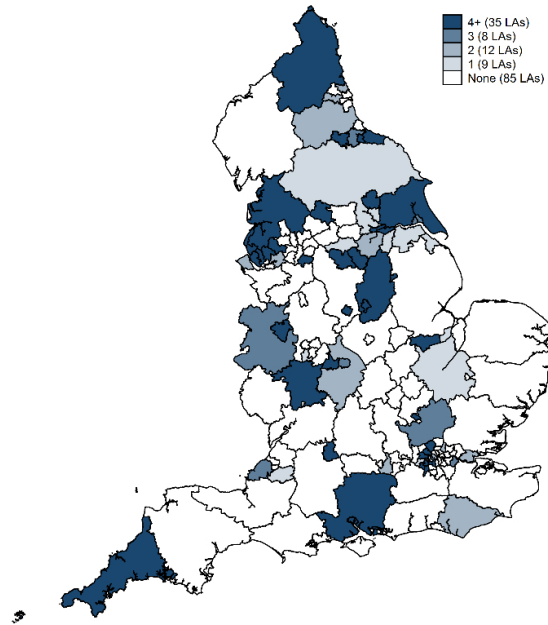


As there are 149 local authorities in England (health visiting in City of London is delivered by Hackney and in the Isles of Scilly it is delivered by Cornwall), this study had reference data for 1,788 local authority-quarters (12 quarters $\times$ 149 local authorities).

In our previous studies, this study has used a $\pm 15\%$ margin to identify completed CSDS data for health visiting contacts [3, 38, 46, 79] based on the observed difference between counts of mandated contacts recorded in HVSDM and local health visiting activity data. However, in this study it was assumed that if a child had plausible scores across all five domains of ASQ-3 in the CSDS data that this was likely to accurately reflect that ASQ-3 has been administered and this study therefore included local authority quarters of data where ASQ-3 records in CSDS exceeded numbers in the reference data (85%+). Where there were more ASQ-3 records in CSDS than the HVSDM for a given local authority quarter, this study included that local authority quarter of data (no upper limit).



Appendix Figure 3: Total N of quarters included in the analysis dataset (2018/19–2020/21)

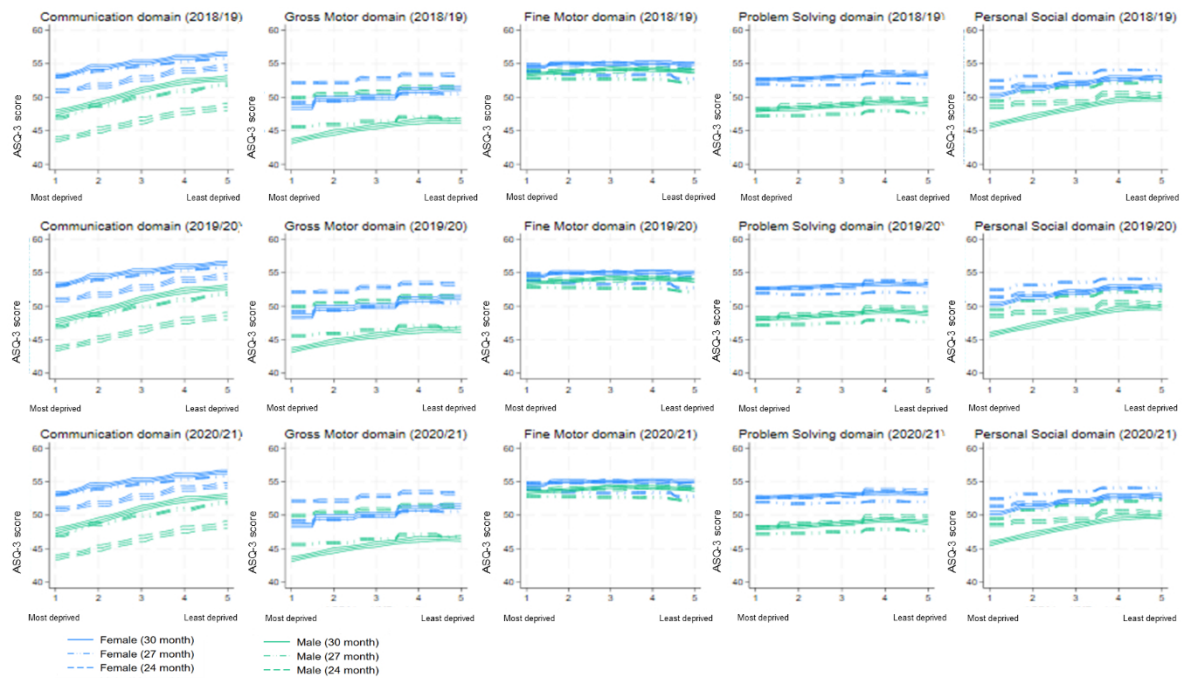


Appendix Table 3: Number and percentage of children eligible for the 2-2½-years review using the ASQ-3 in CSDS compared to ONS Data (2018/19–2020/21)

All children aged 2-2½-years ONS ^a	Aged 2-2½-years with ASQ-3 record CSDS	
	N (%) ^b	N (%) ^c
N		
3,015,809	2,994,828 (99.3)	432,910 (14.5)

^aSince the ONS data only provides ages in years, this study created the 2-2½ years age group by adding the number of 2-year-olds with 50% of 3-year-olds. ^bDenominator is ONS all children aged 2-2½-years ^c Denominator is CSDS all children aged 2-2½-years.

Appendix Figure 4: Average ASQ-3 score by Index of Multiple Deprivation (quintiles) and gender of the child by ASQ-3 domain and financial year



Appendix Table 4: Characteristics of local authorities included in the analysis dataset compared to all local authorities in England

Local Authority Characteristics	149 local authorities in England N (%)	64 local authorities included in the analysis dataset N (%)	P value comparing local authorities included with those not included in the analysis CSDS dataset
Region			
East Midlands	9 (6.0)	2 (3.1)	0.12
East of England	12 (8.1)	5 (7.8)	
London	32 (21.5)	12 (18.8)	
North East	12 (8.1)	8 (12.5)	
North West	23 (15.4)	9 (14.1)	
South East	18 (12.1)	5 (7.8)	
South West	14 (9.4)	5 (7.8)	
West Midlands	14 (9.4)	7 (10.9)	
Yorkshire and The Humber	15 (10.1)	11 (17.2)	
Geographical area classification^a			
Predominantly Rural	20 (13.4)	7 (10.9)	0.74
Predominantly Urban	108 (72.5)	48 (75.0)	
Urban with significant rural	21 (14.1)	9 (14.1)	
Income deprivation affecting children index (IDACI) quintiles^b			
Most deprived	29 (19.5)	7 (10.9)	0.02
2	30 (20.1)	18 (28.1)	
3	30 (20.1)	17 (26.6)	
4	30 (20.1)	10 (15.6)	
Least deprived	30 (20.1)	12 (18.8)	
Index of multiple deprivation (IMD) quintiles^b			
Most deprived	29 (19.5)	7 (10.9)	0.05
2	30 (20.1)	17 (26.6)	
3	30 (20.1)	17 (26.6)	
4	30 (20.1)	12 (18.8)	
Least deprived	30 (20.1)	11 (17.2)	

Note: There are a total of 149 local authorities in the analysis as City of London is combined with Hackney and Isles of Scilly is combined with Cornwall. ^aGeographical area type was categorised using the Office for National Statistics (ONS) Rural Urban Classification lookup table for local authority areas [80]. ^bIDACI and IMD quintiles were based on the English Indices of Deprivation 2019, as published by the Ministry of Housing, Communities and Local Government [41].

Appendix Table 5: Comparing the percentage of children reaching the expected level of development in the analysis data to the national data (HVSDM) (2018/19 - 2020/21)

Range (%)	Analysis data N (%)	HVSDM N (%)
Under 75	0 (0.0)	22 (15.7)
75.0-79.9	8 (12.5)	17 (12.1)
80.0-84.9	20 (31.3)	29 (20.7)
85.0-89.9	27 (42.2)	55 (39.3)
90.0-94.9	9 (14.1)	17 (12.1)
Average	64 (86.2)	140 (83.4)

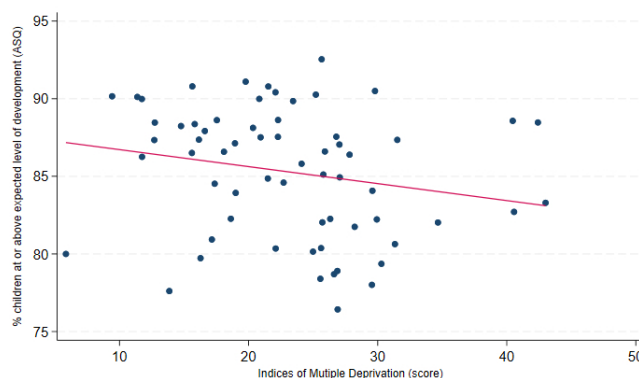
Appendix Table 6: Percentage of children reaching expected level of development by deprivation and ethnicity; % (95% Confidence interval [CI])

	Most deprived % (CI)	2nd quintile % (CI)	3rd quintile % (CI)	4th quintile % (CI)	Least deprived % (CI)	Total % (CI)
White	82.9 (82.5–83.3)	85.9 (85.5–86.3)	87.8 (87.4–88.2)	89.4 (89.0–89.8)	90.2 (89.8–90.5)	86.8 (86.6–87.0)
Asian	79.4 (78.3–80.4)	80.5 (79.2–81.8)	79.9 (78.3–81.4)	81.5 (79.5–83.4)	82.2 (80.2–84.1)	80.3 (79.7–80.9)
Mixed	83.3 (82.0–84.5)	84.6 (83.1–86.0)	87.3 (86.0–88.6)	89.1 (87.8–90.4)	89.9 (88.7–91.0)	86.6 (86.0–87.2)
Black	77.3 (75.5–79.1)	79.3 (77.0–81.5)	81.1 (78.3–83.7)	79.3 (75.3–82.8)	82.9 (77.9–87.2)	78.9 (77.8–80.0)
Other	80.7 (79.1–82.3)	82.9 (80.8–84.9)	83.4 (81.1–85.6)	87.5 (85.0–89.7)	87.2 (84.8–89.4)	83.3 (82.4–84.2)
Total	82.5 (82.2–82.8)	85.0 (84.7–85.4)	87.1 (86.8–87.4)	88.8 (88.5–89.2)	89.7 (89.4–90.0)	86.1 (86.0–86.3)

Appendix Table 7: Percentage of children reaching expected level of development by local authority-level and LSOA-level Index of Multiple Deprivation (IMD) and gender; % (95% Confidence interval [CI])

Local authority level IMD	LSOA level IMD			
	Most deprived quintile		Least deprived quintile	
	Female % (CI)	Male % (CI)	Female % (CI)	Male % (CI)
Most deprived	89.7 (89.1–90.3)	79.2 (78.4–80.0)	94.1 (91.2–96.3)	86.5 (82.7–89.7)
2nd quintile	86.7 (86.0–87.3)	74.4 (73.6–75.2)	93.4 (92.3–94.3)	84.4 (82.9–85.8)
3rd quintile	89.4 (88.5–90.2)	79.7 (78.6–80.8)	94.4 (93.3–95.3)	89.3 (87.9–90.5)
4th quintile	87.1 (86.0–88.1)	76.0 (74.7–77.3)	92.2 (91.3–93.0)	84.5 (83.4–85.6)
Least deprived	87.5 (85.9–89.0)	77.2 (75.2–79.1)	94.0 (93.5–94.5)	86.3 (85.6–87.0)

Appendix Figure 5: Association between local authority level deprivation (IMD score) and percentage of children meeting or exceeding the expected level of development (ASQ-3)



Appendix Figure 6: Association between local authority level deprivation (IMD quintile) and percentage of children meeting or exceeding the expected level of development (ASQ-3)

