

Ages and Stages Questionnaire (ASQ-3) Analysis

Children and Young People's Health Services Data Set (CYPHS), Experimental Statistics, October 2016 - March 2017

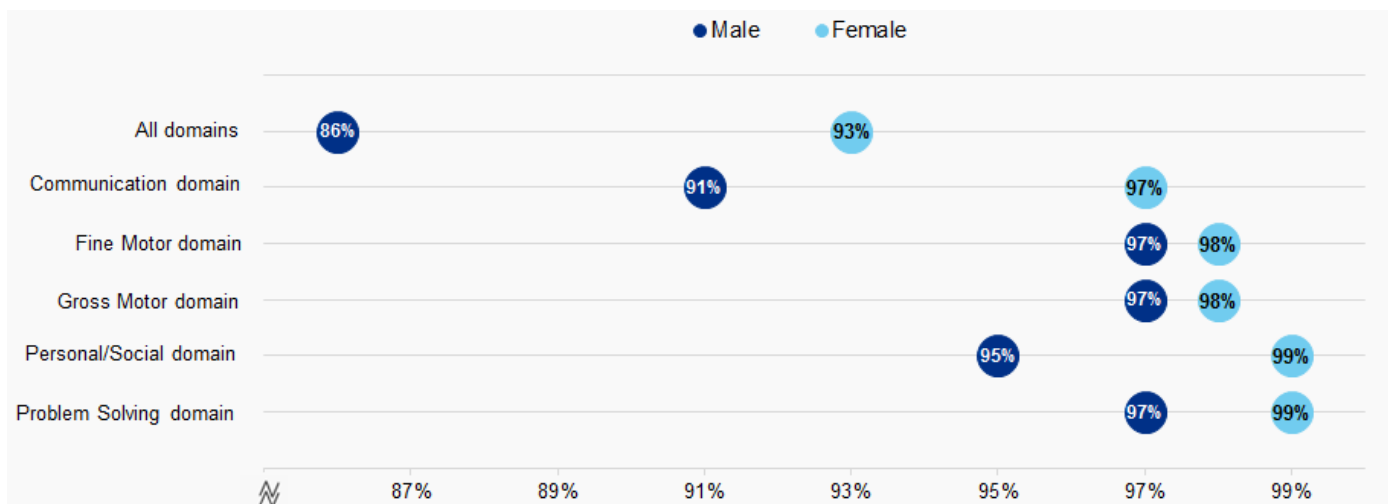
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This collaborative report between NHS Digital and Ofsted investigates how sources of early years data can be used together to enrich analysis and insight into child development.

Key findings

- There were 28,530 children with a recorded age 24, 27 or 30 month ASQ-3 assessment within the CYPHS Data Set. This accounts for approximately 12 per cent of the national total expected for this period.
- 90 per cent of children with an ASQ-3 record scored above threshold overall. Achieving above threshold indicates that a child's development appears to be on schedule.
- 93 per cent of females and 86 per cent of males scored above threshold overall.
- 91 per cent of White children scored above threshold overall, compared to 85 per cent of Asian/Asian British and Black/Black British children.
- Fewer children living in deprived areas scored above threshold. 86 per cent of children scored above threshold overall in the most deprived areas, compared to 94 per cent of children in the least deprived areas.
- The ASQ-3 questionnaire measures development across five domains. The lowest result for either gender was in the Communication domain, where 91 per cent of males scored above threshold.

Figure 1: Percentage of children scoring above threshold by gender and domain, all submitters, October 2016 – March 2017



Author: Community and Mental Health Team, NHS Digital
Responsible Statistician: Dominic Gair, Analytical Section Head

www.digital.nhs.uk
enquiries@nhsdigital.nhs.uk

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This is an Experimental Statistics publication



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Experimental Statistics are official statistics which are published in order to involve users and stakeholders in their development and as a means to build in quality at an early stage. It is important that users understand that limitations may apply to the interpretation of this data. More details are given in the report.

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https://gss.civilservice.gov.uk/wp-content/uploads/2016/02/Guidance-on-Experimental-Statistics_1.0.pdf

This report may be of interest to members of the public, policy officials and other stakeholders to make local and national comparisons and to monitor the quality and effectiveness of health and educational services.

Introduction

All children in England are eligible for a development review around their second birthday, led by the local health visiting service. This is an opportunity to identify children who are not developing as expected and who may require additional support in order to maximise their learning and development so that they are ready for school by age 5. This development review is currently assessed using the Ages and Stages Questionnaire Third Edition (ASQ-3™).

During the review health professionals work with parents to complete the ASQ-3 questionnaire, to measure the development of children at specific ages across five domains: Communication, Gross Motor, Fine Motor, Personal/Social and Problem Solving. Each domain has a minimum score threshold, indicating that a child's development appears to be on schedule.

NHS Digital and Ofsted have produced this collaborative report to describe the results of exploratory analysis on ASQ-3 data relating to the 24, 27 and 30 month questionnaires submitted to the Children and Young People's Health Services (CYPHS) Data Set between October 2016 and March 2017. This is in order to investigate how sources of early years data can be used together to enrich analysis and insight into child development. It is important to note that statistics produced from the CYPHS Data Set in this report are classified as experimental and that certain limitations may apply on interpretation due to data quality. For example, due to inconsistent coverage nationally it is important to be cautious when seeking to draw conclusions around data reported at sub national geographies.

The report has three interconnected focuses: variation in child development by location (region and local authority of residence), by personal characteristics (gender, ethnicity and first language), and by deprivation (income deprivation affecting children index / IDACI). The report also includes an experimental comparison between ASQ-3 scores and the Department for Education's Early Years Foundation Stage Profile (EYFSP) good level of development outcomes.

A workbook containing reference data tables which display the results of this analysis is published alongside this report. Confidence intervals at the 95 per cent significance level are presented in order to assist users in their interpretation of the data. The 95 per cent confidence interval is the range in which one would expect to find the true value 95 per cent of the time. Where the confidence intervals for two values do not overlap, the difference between them is said to be statistically significant, i.e. not due to chance. Where the confidence intervals overlap, significance is not determined.

In this report, direct comparisons between percentages are only given if the difference between them is significant, except where it is explicitly stated otherwise. When such comparisons are made, the difference is presented as a single figure measured in percentage points, derived by subtracting one percentage from the other. It is also possible to measure the difference as a range based on the 95 per cent confidence intervals, but these ranges are not included in the report. Taking the scores for British Asian males and females for example:

	Percentage of children above the threshold	95% Confidence Interval	
		Lower	Upper
British Asian Males	82%	79%	84%
British Asian Females	88%	86%	90%

While the crude percentage point difference between the two groups is 6 per cent, the difference between the upper confidence interval for males and the lower confidence intervals for females is 2 per cent, and the difference between the lower confidence interval for males and upper confidence limit for females is 11 per cent. Ranges of possible differences are not included in this report, but can be derived using the accompanying workbook of underlying data tables. In all cases, where a difference is presented in the reported, it is given as a single figure based on percentages only.

Main findings

This report contains key information based on data relating to activity that occurred in October 2016 to March 2017.

- There were 28,530 children with a recorded age 24, 27 or 30 month ASQ-3 assessment within the CYPHS Data Set. This accounts for approximately 12 per cent of the national total 237,369¹ expected for this period
- 90 per cent of children with a recorded age 24, 27 or 30 month ASQ-3 assessment scored above threshold overall. Achieving above threshold indicates that a child's development appears to be on schedule.
- 93 per cent of females and 86 per cent of males scored above threshold overall.
- 91 per cent of White children scored above threshold overall, compared to 85 per cent of Asian/Asian British and Black/Black British children.
- Fewer children living in deprived areas scored above threshold, with 86 per cent of children scoring above threshold overall in the most deprived areas, compared to 94 per cent of children in the least deprived areas.
- The lowest result for either gender was in the Communication domain, where 91 per cent of males scored above threshold.
- White females reported the highest percentage above threshold overall (94 per cent), whereas Black/Black British males and the Other Ethnic male groups reported the lowest percentage (81 per cent).
- On average, a higher proportion of children whose first language is English or British Sign Language scored above threshold (90 per cent) than children whose first language is not English (84 per cent).

¹ Public Health England, Health visitor service delivery metrics 2016 to 2017 <<https://www.gov.uk/government/publications/health-visitor-service-delivery-metrics-2016-to-2017>>

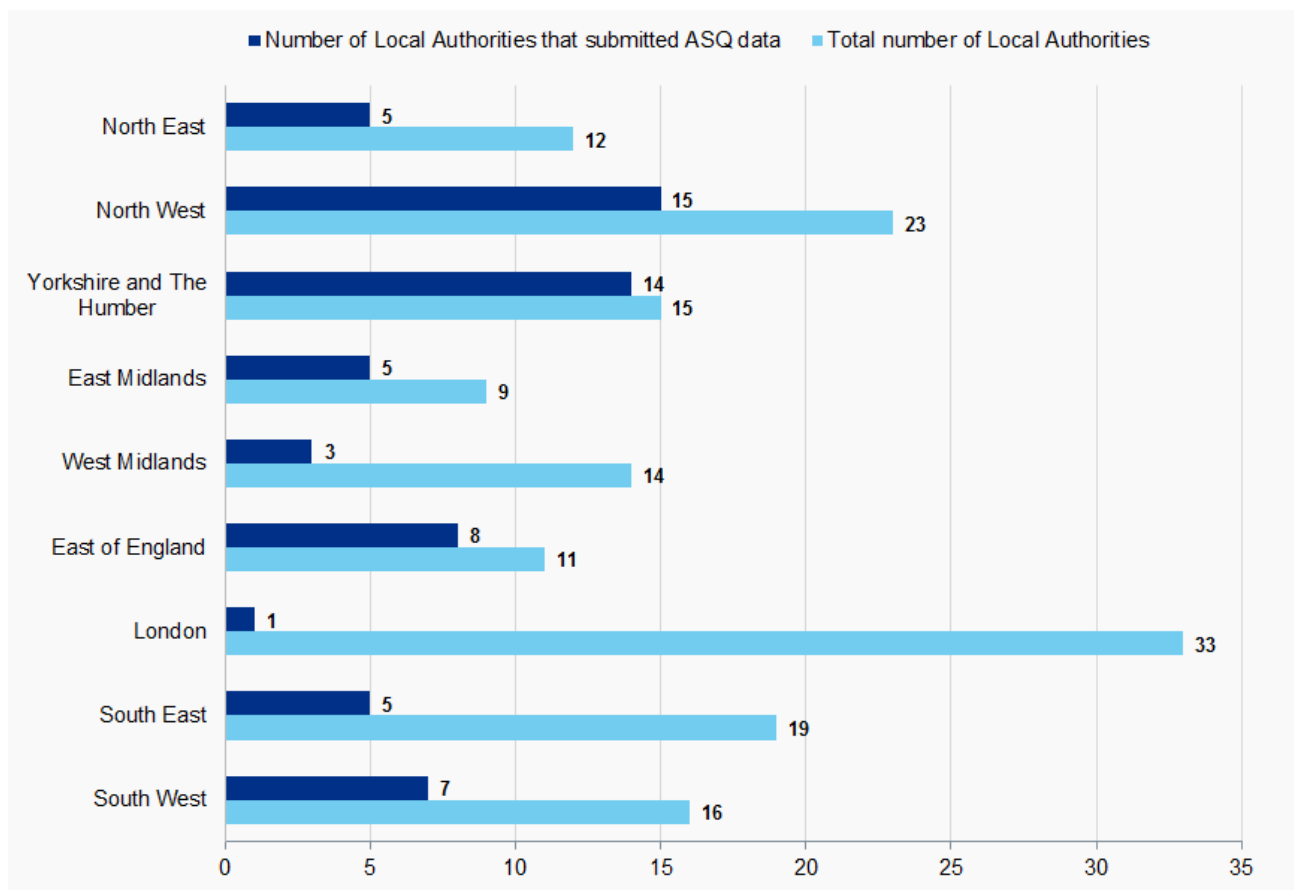
Who submitted?

Providers of NHS-funded community services were required to collect information locally from September 2015, and from October 2015 were required to commence making CYPHS data set submissions in accordance with the Information Standards Notice.² There are issues in terms of non-response from providers to the CYPHS which makes data coverage inconsistent across regions. Therefore caution should be taken when interpreting the data. Because of this no figures derived from the CYPHS data set are presented as England total figures. Instead they are presented in terms of all submitters who provided data for the reporting period in question.

A total of 25 organisations submitted at least one table of ASQ-3 scores as part of a CYPHS submission for the period October 2016 - March 2017. A list of these organisations is included in Appendix A.

In this report we have aggregated figures by children’s upper tier local authorities of residence, not by submitting organisation. Records were submitted for children in 63 of the 152 upper tier local authorities in England for the period October 2016 – March 2017. Figure 2 below shows the number of local authorities within each region with at least one child included in the report. We can see that there are issues in terms of reporting coverage of data regionally most notably in London. Also it is important not to assume that universal coverage of activity has been achieved in the data for those local authorities where activity has been mapped.

Figure 2: Local authority coverage by region, October 2016 – March 2017



² Standardisation Committee for Care Information, Information Standards Notice SCCI1069 Amd 11/2014
<http://content.digital.nhs.uk/media/16993/1069112014isn/pdf/1069112014isn.pdf>

What was analysed?

Patient coverage

6 months of data were used in the analysis to provide a suitable population of recent data for investigation, enabling robust figures to be derived from more granular demographic breakdowns. The data relate to activity within the period October 2016 – March 2017, representing 28,530 children reported in the CYPHS with 24, 27 or 30 month ASQ-3 scores across all domains. For context, Public Health England data³ show that 237,369 children were offered an ASQ-3 assessment in the same period, suggesting that CYPHS data cover around 12 per cent of children with an expected ASQ score in that period.

Moreover, it is important to note that the children represented are not a random sample. As noted in the 'Who submitted?' section above, data were not received from all organisations providing the relevant services, leading to uneven coverage across the country. In fact, the number of children represented in each local authority ranged from fewer than 5 to over 9,000, with London suffering from very poor coverage. Caution should therefore be taken when interpreting percentages in regions and local authorities with low coverage.

Table 1: Number of children with a valid ASQ-3 score in all domains by region, October 2016 – March 2017

	Number of children with a valid score	Number of children above the threshold	Percentage of children above the threshold
All submitters	28,530	25,567	90%
North East	1,770	1,600	90%
North West	5,840	5,200	89%
Yorkshire and The Humber	9,360	8,340	89%
East Midlands	90	75	85%
West Midlands	1,285	1,125	88%
East of England	3,185	2,895	91%
London	*	*	*
South East	5,960	5,390	90%
South West	660	605	92%
Missing or invalid postcode	375	330	88%

Notes:

National figures are unrounded and unsuppressed. Values at lower geographies less than five are replaced with '*'. All other numbers are rounded to the nearest five.

Percentages for figures less than 5 are suppressed.

Percentages for figures equal to 5 or above are rounded to the nearest whole number.

Where we were unable to assign a local authority (due to a missing or invalid postcode) these are counted in the 'Missing' group.

³ Public Health England, Health visitor service delivery metrics 2016 to 2017 <<https://www.gov.uk/government/publications/health-visitor-service-delivery-metrics-2016-to-2017>>

Gender

Across all submitters, 93 per cent of females and 86 per cent of males scored above threshold in all domains, a difference of 7 percentage points. The same trend is largely reflected both at the regional level and at individual domain level. The difference between genders ranged between 6 percentage points in the Communication domain (97 per cent of females to 91 per cent of males), and 1 percentage point in Fine Motor and Gross Motor (98 per cent to 97 per cent). The difference in gender scores in Fine Motor and Gross Motor was not determined to be statistically significant. Therefore, the gender difference in Communication was a substantial contributor towards the lower percentage of males scoring above threshold overall.

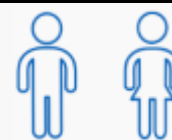
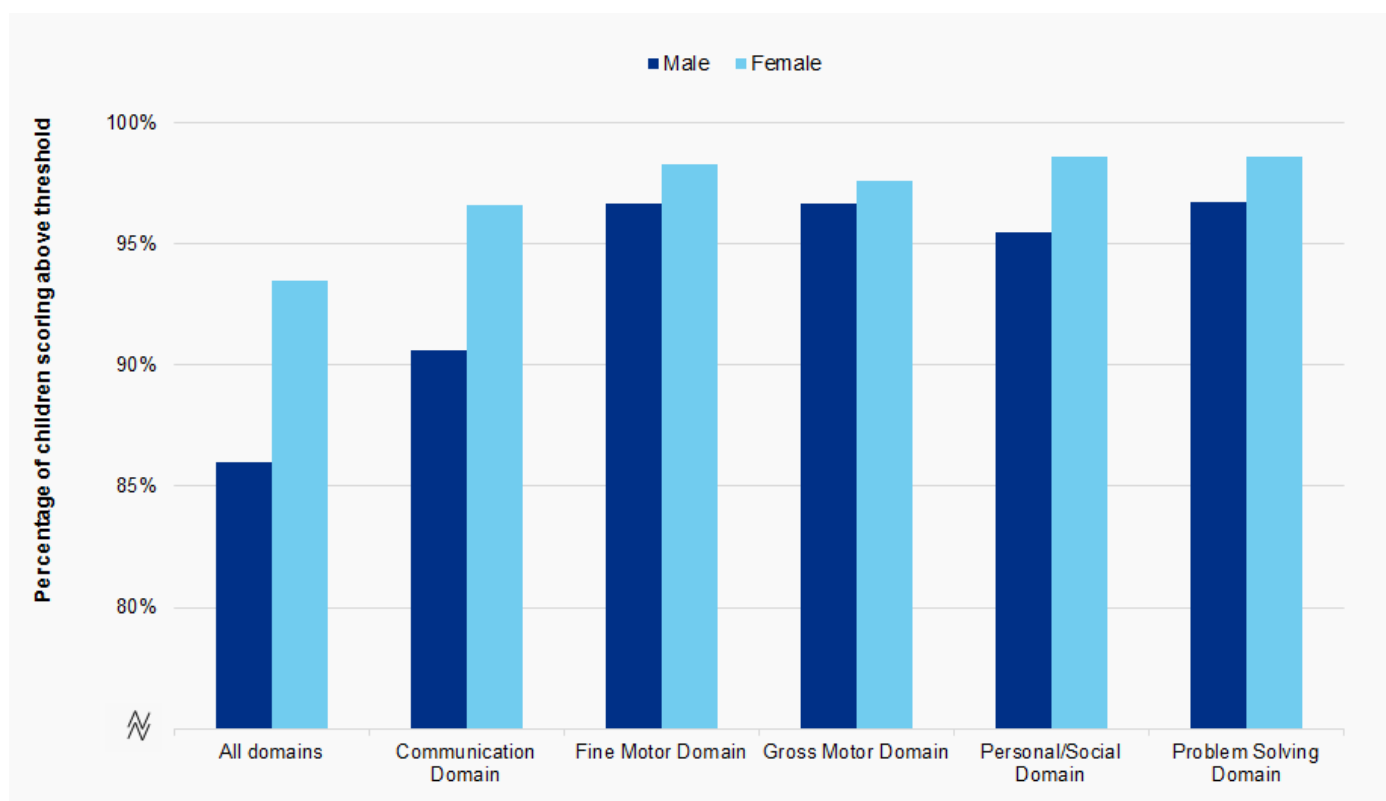


Figure 3: Percentage of children scoring above threshold by domain and gender, all submitters, Oct 2016 – March 2017



On a regional level, the largest difference between genders across all domains was seen in South West (12 percentage points: 98 per cent of females to 86 per cent of males) and the smallest difference was in East Midlands (1 percentage point: 84 per cent to 85 per cent). The difference in gender scores in East Midlands was not determined to be statistically significant.

The Gross Motor domain had the highest number of local authorities showing no gender difference. There were 10 local authorities with no gender difference in Gross Motor scores.

Table 2: Percentage of children scoring above threshold in all domains by gender, October 2016 – March 2017

	Percentage of children above the threshold	
	Male	Female
All submitters	86%	93%
North East	88%	94%
North West	85%	94%
Yorkshire and The Humber	86%	93%
East Midlands	85%	84%
West Midlands	83%	93%
East of England	88%	94%
London	*	*
South East	87%	94%
South West	86%	98%

Notes:

Percentages for figures less than 5 are suppressed with an '*'.

Percentages for figures equal to 5 or above are rounded to the nearest whole number.

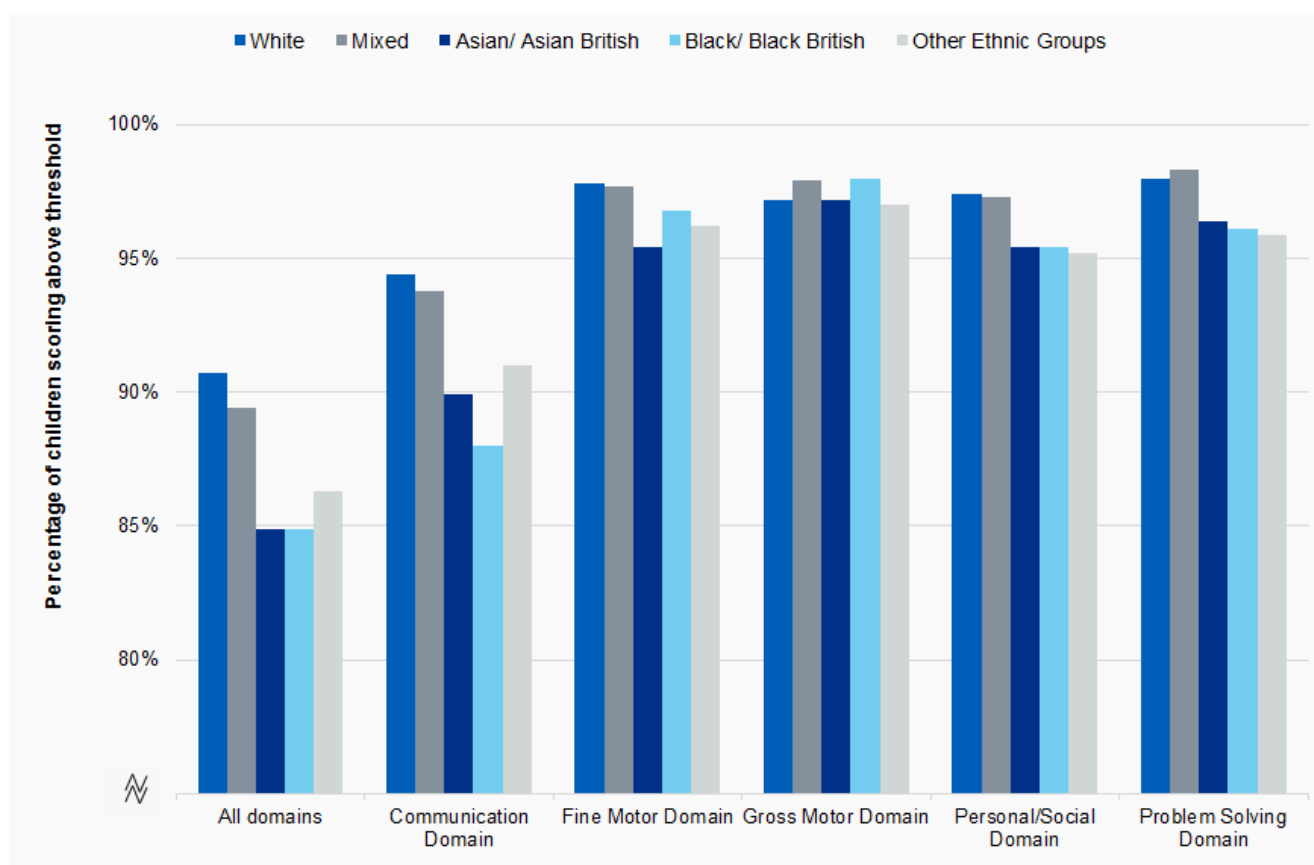
Ethnicity

91 per cent of White children scored above threshold overall, compared to 85 per cent of Asian/Asian British and Black/Black British children.



The Communication domain recorded the lowest percentage of children above threshold for every ethnic group. The Asian/Asian British, Black/Black British and Other Ethnic Groups categories had a lower percentage of children scoring above threshold than the White and Mixed ethnic groups.

Figure 4: Percentage of children scoring above threshold by domain and ethnicity, all submitters, October 2016 – March 2017



The percentage of children above threshold in all domains observed at the regional level remains similar to that observed for all submitters. It should be noted that the confidence intervals for the figures in Table 3 at regional level are wide, and so users are advised to refer to the reference tables accompanying this report when interpreting differences between regions.

Table 3: Percentage of children scoring above threshold in all domains by ethnicity, October 2016 – March 2017

	Percentage of children above the threshold				
	White	Mixed	Asian/ Asian British	Black/ Black British	Other Ethnic Groups
All submitters	91%	89%	85%	85%	86%
North East	91%	91%	85%	88%	84%
North West	91%	88%	82%	92%	88%
Yorkshire and The Humber	90%	92%	85%	85%	82%
East Midlands	87%	*	80%	*	85%
West Midlands	89%	90%	84%	79%	91%
East of England	91%	87%	92%	84%	92%
London	*	*	*	*	*
South East	91%	87%	81%	83%	88%
South West	92%	100%	*	*	*

Notes:

Percentages for figures less than 5 are suppressed with an '*'.

Percentages for figures equal to 5 or above are rounded to the nearest whole number.

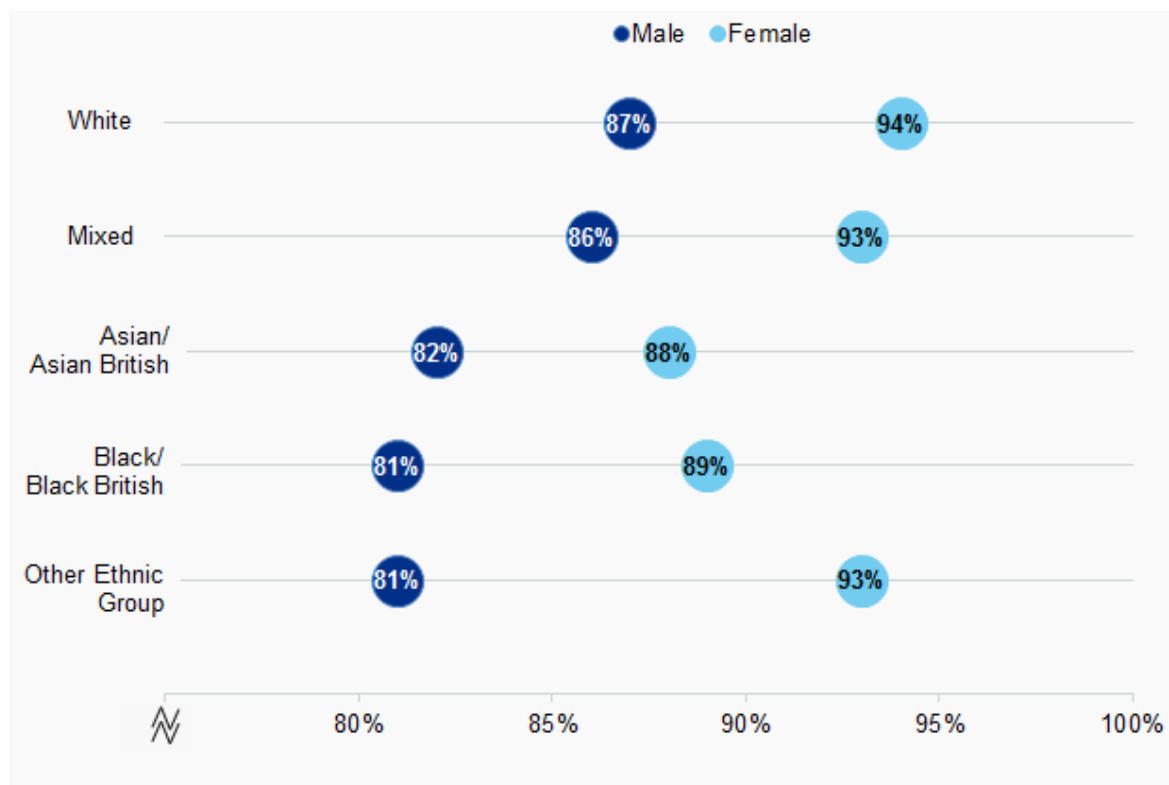
Gender and Ethnicity

More White females scored above threshold than any other gender and ethnicity (excluding the Mixed and Other Ethnic female groups where significance cannot be determined), with 94 per cent scoring above threshold overall. Black/Black British males and Other Ethnic males reported the lowest observed value overall, with 81 per cent – a 13 percentage point difference.



The largest observed gender difference in overall scores was the 12 percentage point gap between Other Ethnic females and males (93 per cent to 81 per cent). The smallest difference was the 6 percentage point gap between Asian/Asian British females and males (88 per cent to 82 per cent).

Figure 5: Percentage of children scoring above threshold by gender and ethnicity, all submitters, October 2016 – March 2017



The largest gender difference within individual domains was seen in the Communication domain. The percentage of Black/Black British males scoring above threshold in Communication was 84 per cent. The difference between Black/Black British females and males scoring above threshold was 9 percentage points (93 per cent to 84 per cent), whereas White females and males had a 5 percentage point difference (97 per cent to 92 per cent).

The percentage of children above threshold in all domains observed at the regional level remains similar to that observed for all submitters. It should be noted that the confidence intervals for the figures in Table 4 at regional level are wide, and so users are advised to refer to the reference tables accompanying these reports when interpreting differences between regions.

Table 4: Percentage of children scoring above threshold in all domains by gender and ethnicity, October 2016 – March 2017

	Percentage of children above the threshold									
	White		Mixed		Asian/ Asian British		Black/ Black British		Other Ethnic Groups	
	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
All submitters	87%	94%	86%	93%	82%	88%	81%	89%	81%	93%
North East	88%	94%	86%	100%	79%	90%	86%	91%	83%	85%
North West	87%	94%	83%	94%	75%	88%	92%	91%	83%	94%
Yorkshire and The Humber	87%	93%	88%	95%	82%	88%	82%	88%	71%	95%
East Midlands	85%	89%	*	*	89%	*	*	*	85%	85%
West Midlands	83%	95%	83%	96%	81%	88%	73%	85%	92%	91%
East of England	89%	94%	87%	87%	93%	91%	72%	96%	85%	100%
London	*	*	*	*	*	*	*	*	*	*
South East	88%	95%	85%	90%	76%	88%	75%	91%	85%	90%
South West	87%	97%	*	100%	*	*	*	*	*	*

Notes:

Percentages for figures less than 5 are suppressed with an '*'.

Percentages for figures equal to 5 or above are rounded to the nearest whole number.

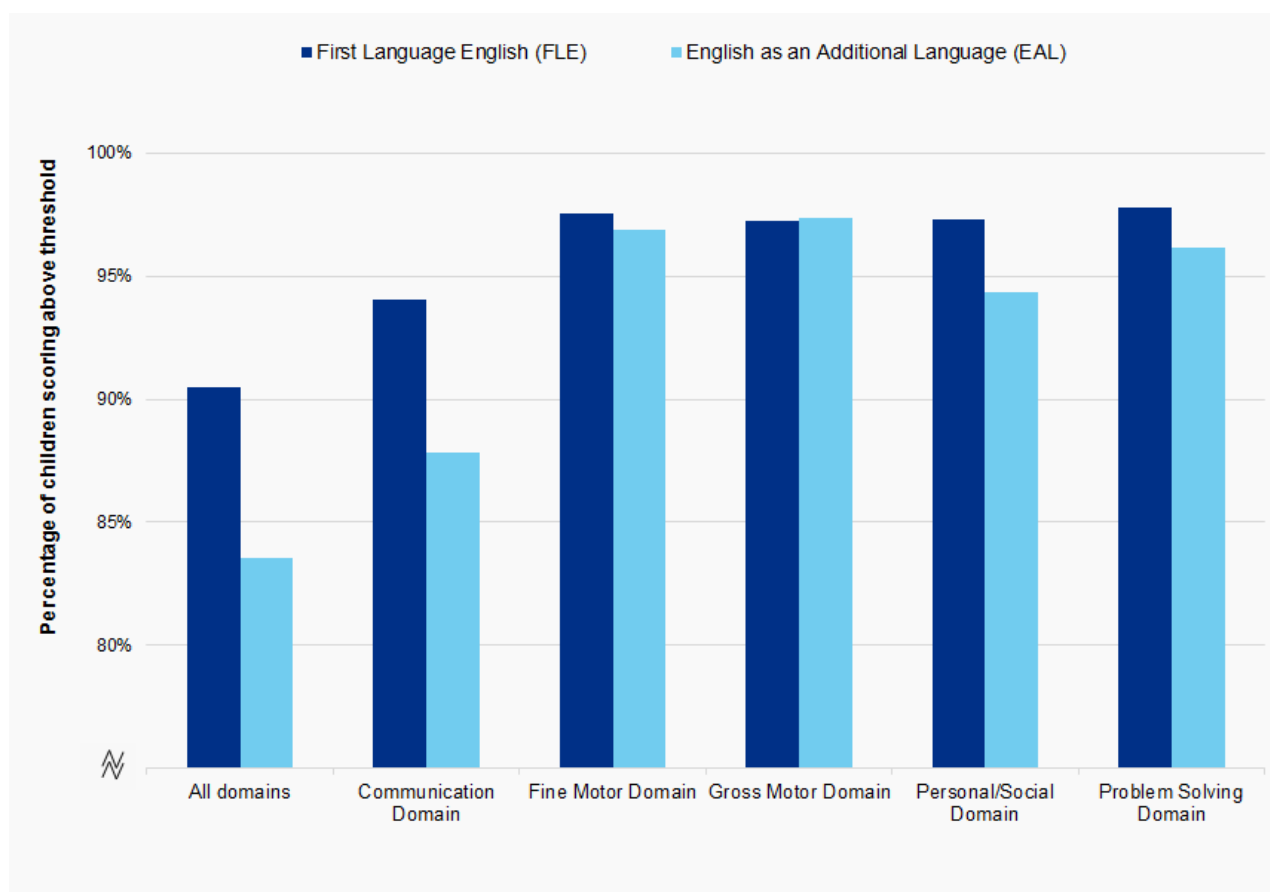
First Language

90 per cent of children whose first language is English (FLE) scored above threshold compared to 84 per cent of children with English as an additional language (EAL); a 6 percentage point difference.



By domain, the largest difference was seen in Communication – 94 per cent above threshold for FLE compared to 88 per cent EAL – whereas there was no observed difference in scores for Gross Motor (97 per cent).

Figure 6: Percentage of children scoring above threshold by domain and first language, all submitters, October 2016 – March 2017



It should be noted that considerable data quality issues do exist in current recording of language status within the CYPHS. Data coverage varies markedly between geographical areas. 59 per cent of all submissions did not specify the child's first language, leaving a much smaller sample size of defined FLE and EAL records. On a regional level, the percentage of Blank or Invalid records ranged from 5 per cent in West Midlands, to 83 per cent in East Midlands.

Regional level data comparing FLE can be found within the reference tables accompanying this analysis, which should be interpreted with caution due to the data quality issues indicated above.

Deprivation

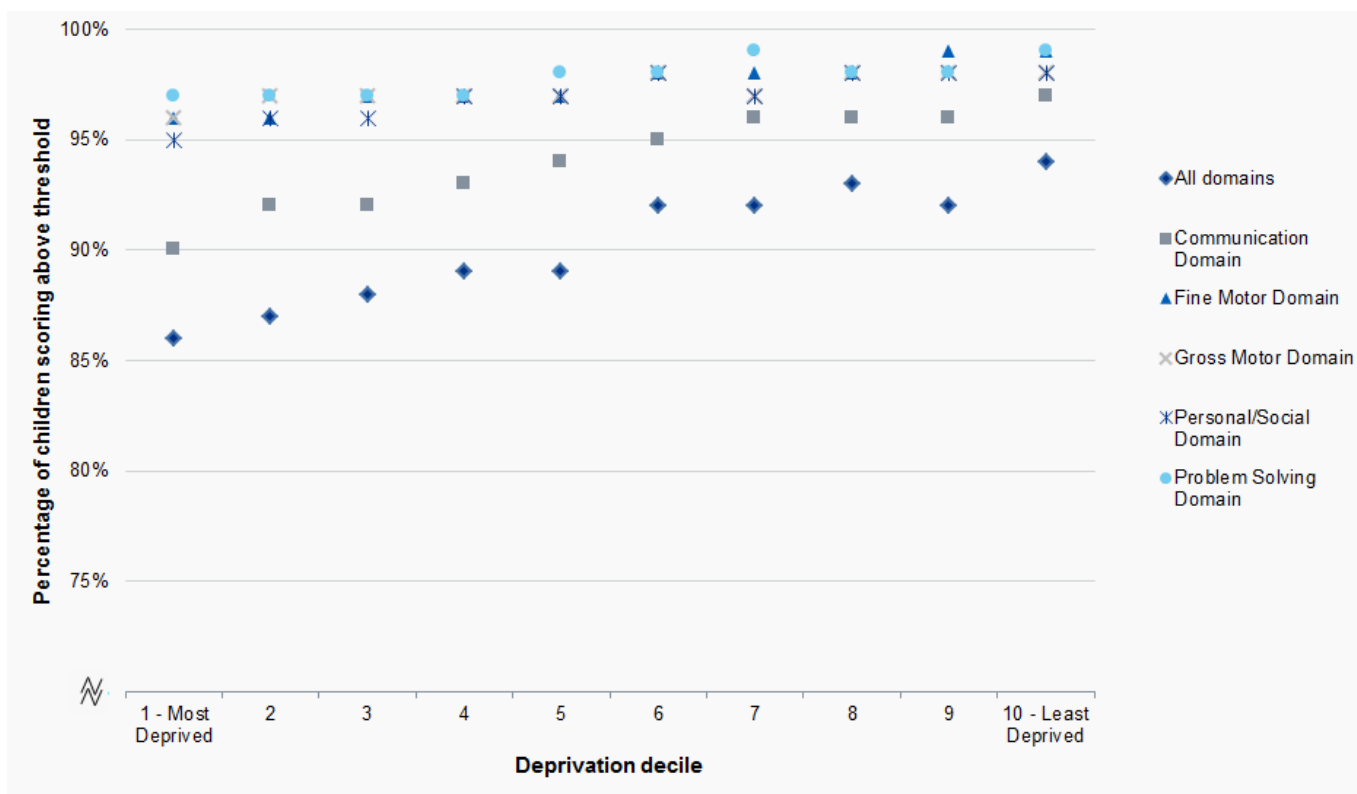
The income deprivation affecting children index (IDACI) is an index of deprivation used in the United Kingdom. It measures the proportion of children under the age of 16 that live in low income households in a local area. It is supplementary to the Indices of Multiple Deprivation and is used for calculation of the contextual value added score, measuring children's educational progress.

Results from the analysis shown in Figure 7 indicate that a relationship exists between deprivation and ASQ-3 achievement: in areas where a higher proportion of children are affected by income deprivation, a lower proportion of children scored above threshold.

Comparing results from the most and least deprived areas showed that 86 per cent of children scored above threshold overall in the most deprived areas, compared to 94 per cent of children in the least deprived areas.

Some domains appear to be more sensitive than others to deprivation. Communication was most affected, with an observed 7 percentage point difference.

Figure 7: Percentage of children scoring above threshold by domain and Income Deprivation Affecting Children Index (IDACI) decile, all submitters, October 2016 – March 2017



CYPHS and Early Years Foundation Stage Profile (EYFSP) comparison

The Department for Education captures and reports on information relating to the educational attainment of children during their Early Year Foundation Stage when they are aged 4-5 years of age. These data are reported in The Department for Education's Early Years Foundation Stage Profile (EYFSP)⁴ at local authority level.

Analysis has been undertaken to compare the percentage of 2-2.5 year olds scoring above threshold in all domains of ASQ-3 within the CYPHS Data Set, against the percentage of Reception pupils achieving a good level of development in the EYFSP, reported at local authority level. This is to help identify any possible relationship between EYFSP and ASQ-3 results of children within the same local authority.

EYFSP data covers 99.9 per cent of all children in receipt of a government-funded early education place.⁵ However, only those local authorities with at least 100 records of ASQ-3 scores have been included for comparison, meaning that the pattern presented is incomplete. It is also important to note that the two data sets report on different cohorts of children, with varying population sizes.

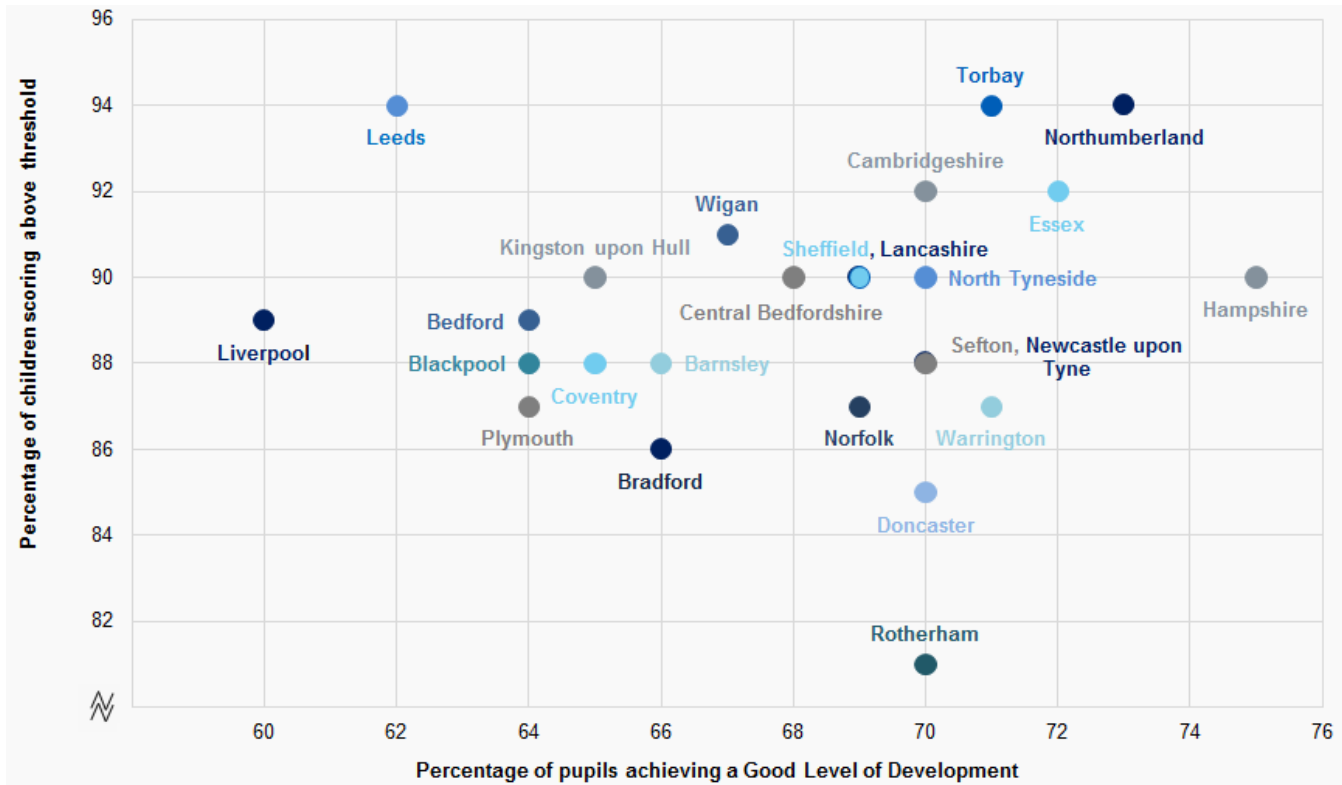
Figure 8 shows that the percentage of children scoring above threshold overall in ASQ-3 correlates weakly with the percentage of Reception pupils achieving a good level of development in the EYFSP, for those areas where sufficient data has been reported within the CYPHS. The figure also shows that the percentage of children above ASQ-3 threshold is far higher and less variable than the percentage of children who achieve a good level of development in the EYFSP. This may reflect the differences in the nature of the two assessments; ASQ-3 is primarily a developmental delay screening assessment whereas the EYFSP is an educational assessment of children at the end of the early years foundation stage.

Further investigation will be undertaken as the data quality from the CYPHS improves and as the data set matures.

⁴ Department for Education, Early Years Foundation Stage Profile <<https://www.gov.uk/government/collections/statistics-early-years-foundation-stage-profile>>

⁵ Department for Education, Early Years Foundation Stage Profile Results in England, 2015/16, Technical Document, p.11 <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/561122/SFR50_2016_Technical_Document.pdf>

Figure 8: Comparison of ASQ-3 scores in all domains, October 2016 to March 2017, to the Department for Education's Early Years Foundation Stage Profile (EYFSP) good level of development outcomes, 2016



Notes:

This figure includes only local authorities with a minimum of 100 children with an ASQ-3 score in all domains.

Appendix A

List of organisations submitting at least one table of ASQ-3 scores as part of a CYPHS submission for the period October 2016 - March 2017

204 - BARNSELY METROPOLITAN BOROUGH COUNCIL
216 - NORTH EAST LINCOLNSHIRE COUNCIL
NNF - CITY HEALTH CARE PARTNERSHIP CIC
NR3 - NOTTINGHAM CITYCARE PARTNERSHIP
NR5 - LIVEWELL SOUTHWEST
RA9 - TORBAY AND SOUTH DEVON NHS FOUNDATION TRUST
RCU - SHEFFIELD CHILDREN'S NHS FOUNDATION TRUST
RFR - THE ROTHERHAM NHS FOUNDATION TRUST
RJL - NORTHERN LINCOLNSHIRE AND GOOLE NHS FOUNDATION TRUST
RT1 - CAMBRIDGESHIRE AND PETERBOROUGH NHS FOUNDATION TRUST
RTD - THE NEWCASTLE UPON TYNE HOSPITALS NHS FOUNDATION TRUST
RTF - NORTHUMBRIA HEALTHCARE NHS FOUNDATION TRUST
RW1 - SOUTHERN HEALTH NHS FOUNDATION TRUST
RWN - SOUTH ESSEX PARTNERSHIP UNIVERSITY NHS FOUNDATION TRUST
RWY - CALDERDALE AND HUDDERSFIELD NHS FOUNDATION TRUST
RXE - ROTHERHAM DONCASTER AND SOUTH HUMBER NHS FOUNDATION TRUST
RXL - BLACKPOOL TEACHING HOSPITALS NHS FOUNDATION TRUST
RXM - DERBYSHIRE HEALTHCARE NHS FOUNDATION TRUST
RY1 - LIVERPOOL COMMUNITY HEALTH NHS TRUST
RY2 - BRIDGEWATER COMMUNITY HEALTHCARE NHS FOUNDATION TRUST
RY6 - LEEDS COMMUNITY HEALTHCARE NHS TRUST
RYG - COVENTRY AND WARWICKSHIRE PARTNERSHIP NHS TRUST
RYV - CAMBRIDGESHIRE COMMUNITY SERVICES NHS TRUST
TAD - BRADFORD DISTRICT CARE NHS FOUNDATION TRUST
TAH - SHEFFIELD HEALTH & SOCIAL CARE NHS FOUNDATION TRUST

Contact Us

We welcome any questions, comments or feedback relating to this exploratory analysis, including:

- How useful you found the content in this report
- What the report was used for
- Which information was the most useful
- Any changes you would like to see to improve reports on similar analysis in the future

Please quote “CYPHS ASQ Analysis October 2016 - March 2017” in the subject title of any correspondence via the contact methods listed below.

Email: enquiries@nhsdigital.nhs.uk

Telephone: 0300 303 5678

NHS Digital
1 Trevelyan Square
Boar Lane
Leeds
LS1 6AE

Information and technology for better health and care

www.digital.nhs.uk

0300 303 5678

enquiries@nhsdigital.nhs.uk

 [@nhsdigital](https://twitter.com/nhsdigital)

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