

Appendix 1 – Coughlan et al, 2020

Age-standardization

Activity rates in each healthcare setting were age-standardized for each social and ethnic group by comparison to the 2016 mid-year English population estimate. We used the proportions in the table below to calculate these figures.

Age Group	Population	Proportion of total study population
0-1 year	669,103	0.0673985
1-4 years	2,759,943	0.278008
5-9 years	3,428,266	0.3453279
10-14 years	3,070,254	0.3092655
Total	9,927,566	1

Missing Data

Only a small portion of data were missing for our analysis by level of deprivation (accounting for 0.5% of study sample in 2007/8 and 2.2% in 2016/17). These data are summarised for the years 2007 and 2016/17 in the table below.

IMD Group	2007/8	Percentage total study population	2016/17	Percentage total study population
1 (least deprived)	119952	22.9	63017	23.8
2	106334	20.3	48034	18.1
3	103818	19.8	47562	18.0
4	96133	18.3	51103	19.3
5 (most deprived)	96061	18.3	49313	18.6
Missing	2633	0.5	5926	2.2
Total	524931	100	264955	100

The table below presents ethnicity data, including missing data, with reference to official statistics on membership of different ethnic groups by sex and age, as held by the UK Office for National Statistics (ONS). These data are freely available at:

<https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/ethnicity/adhocs/009102ethnicitybysexandagesinenglandandwales2011to2015>

Ethnicity Allocation	2007	Percentage total study population	2016	Percentage total study population	ONS estimate – percentage total population of England for CYP aged 0-14 years
White	315629	60.1	181452	68.5	77.8
Black	9543	1.8	10000	3.8	4.2
Asian	17035	3.2	15257	5.8	9.6
Mixed	8414	1.6	9845	3.7	5.4
Other	41992	8.0	16013	6.0	2.9
Missing	132318	25.5	32388	12.2	N/A
Total	524931	100	264955	100	100

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The completeness of our ethnicity dataset increased from almost 75% in 2007/8 to 87.8% in 2016/17. The significant attrition in the size of our study population – for both IMD and ethnic group analyses – over the study period has been described in other studies employing CPRD data (see manuscript, reference 36) and reflects the transition of GP practices to new electronic patient records.