

## **SUPPLEMENTARY FILE 7 – SENSITIVITY ANALYSES**

Note: all numbers are rounded to nearest 10, and all percentages to one decimal place, in compliance with statistical disclosure rules. This may result in rounding error.

This supplementary file provides an overview and detailed breakdowns of the calculations in the sensitivity analyses of the cumulative incidence of referrals, assessments, child in need (CiN) status and being subject to a child protection plan (CPP). In the principal analyses, we used children’s PMR where available, otherwise the LA child-ID. In the sensitivity analyses, we used PMR only for records aged 5+ (children without PMRs were excluded); for records aged <5, we used the PMR where available, otherwise the LA child-ID. The denominators remained the same throughout as the mid-year estimates by single year of age and calendar year published by the Office for National Statistics.

SUPPLEMENTARY FILE 7 – SENSITIVITY ANALYSES

Table S7.1. Cumulative incidence of referral, assessment, CiN status and CPP to age 6 in cohort 1; sensitivity analysis.

Within age	Number of new events	ONS mid-year estimate	Population at risk	Age-specific hazard	Integrated hazard	Cumulative incidence
<i>Referrals</i>						
Pre-birth	23120	696440	696440	3.3%	3.3%	3.3%
0	37420	696440	673330	5.6%	8.9%	8.5%
1	22620	701280	640750	3.5%	12.4%	11.7%
2	18390	707020	623870	2.9%	15.4%	14.2%
3	17650	712590	611050	2.9%	18.2%	16.7%
4	16960	717900	598700	2.8%	21.1%	19.0%
5	15570	721710	585560	2.7%	23.7%	21.1%
<i>Assessments</i>						
Pre-birth	21900	696440	696440	3.1%	3.1%	3.1%
0	33690	696440	674550	5.0%	8.1%	7.8%
1	20670	701280	645690	3.2%	11.3%	10.7%
2	17370	707020	630770	2.8%	14.1%	13.1%
3	16790	712590	618960	2.7%	16.8%	15.5%
4	16100	717900	607490	2.6%	19.5%	17.7%
5	14950	721710	595200	2.5%	22.0%	19.7%
<i>CiN</i>						
Pre-birth	18290	696440	696440	2.6%	2.6%	2.6%
0	25580	696440	678150	3.8%	6.4%	6.2%
1	14830	701280	657410	2.3%	8.7%	8.3%
2	12070	707020	648320	1.9%	10.5%	10.0%
3	11580	712590	641820	1.8%	12.3%	11.6%
4	10910	717900	635550	1.7%	14.0%	13.1%
5	10740	721710	628450	1.7%	15.7%	14.6%
<i>CPP</i>						
Pre-birth	7470	696440	696440	1.1%	1.1%	1.1%
0	5980	696440	688980	0.9%	1.9%	1.9%
1	3830	701280	687840	0.6%	2.5%	2.5%
2	3400	707020	689750	0.5%	3.0%	2.9%
3	3130	712590	691910	0.5%	3.4%	3.4%
4	3000	717900	694090	0.4%	3.9%	3.8%
5	2550	721710	694900	0.4%	4.2%	4.2%

SUPPLEMENTARY FILE 7 – SENSITIVITY ANALYSES

Table S7.2. Cumulative incidence of **referrals** in cohorts 2; sensitivity analysis.

Within age	Observed number of referrals	Discount for recurrent referrals	Corrected n referrals	ONS mid-year estimate	Population at risk	Age-specific hazard	Integrated hazard	Cumulative incidence
<i>Cohort 2</i>								
6	23020	7280	15740	638420	503540	3.1%	3.1%	3.1%
7	19580	4410	15170	641070	625320	2.4%	5.6%	5.4%
8	17100	2830	14270	644280	613370	2.3%	7.9%	7.6%
9	14510	1870	12640	647550	602370	2.1%	10.0%	9.5%
10	13520	1220	12290	651140	593330	2.1%	12.0%	11.4%
11	12890	770	12110	654370	584250	2.1%	14.1%	13.2%
12	12650	490	12170	658110	575890	2.1%	16.2%	15.0%
<i>Cohort 3</i>								
13	13860	5300	8560	620280	396280	2.2%	2.2%	2.1%
14	12550	3200	9350	623250	614690	1.5%	3.7%	3.6%
15	11060	2050	9020	627180	609270	1.5%	5.2%	5.0%
16	8100	1350	6750	631640	604710	1.1%	6.3%	6.1%
17	5700	890	4810	638470	604800	0.8%	7.1%	6.8%

SUPPLEMENTARY FILE 7 – SENSITIVITY ANALYSES

Table S7.3. Cumulative incidence of **assessments** in cohorts 2; sensitivity analysis.

Within age	Observed number of assessments	Discount for recurrent assessments	Corrected n assessments	ONS mid-year estimate	Population at risk	Age-specific hazard	Integrated hazard	Cumulative incidence
<i>Cohort 2</i>								
6	20910	7070	13840	638420	633340	2.2%	2.2%	2.2%
7	18030	4430	13600	641070	627230	2.2%	4.4%	4.3%
8	15760	2910	12860	644280	616840	2.1%	6.4%	6.2%
9	13790	1960	11830	647550	607250	1.9%	8.4%	8.0%
10	13000	1300	11700	651140	599020	2.0%	10.3%	9.8%
11	12380	840	11540	654370	590540	2.0%	12.3%	11.6%
12	12130	540	11590	658110	582750	2.0%	14.3%	13.3%
<i>Cohort 3</i>								
13	12940	5120	7820	620280	532790	1.5%	1.5%	1.5%
14	12190	3190	8990	623250	615420	1.5%	2.9%	2.9%
15	10940	2090	8850	627180	610360	1.4%	4.4%	4.3%
16	8010	1410	6600	631640	605970	1.1%	5.5%	5.3%
17	5560	940	4620	638470	606200	0.8%	6.2%	6.0%

SUPPLEMENTARY FILE 7 – SENSITIVITY ANALYSES

Table S7.4. Cumulative incidence of **child in need status** in cohorts; sensitivity analysis.

Within age	Observed number of need episodes	Discount for recurrent need episodes	Corrected n need episodes	ONS mid-year estimate	Population at risk	Age-specific hazard	Integrated hazard	Cumulative incidence
<i>Cohort 2</i>								
6	15410	4420	10980	638420	633550	1.7%	1.7%	1.7%
7	14200	2940	11270	641070	630080	1.8%	3.5%	3.5%
8	11650	2070	9580	644280	622030	1.5%	5.1%	4.9%
9	9970	1490	8480	647550	615720	1.4%	6.4%	6.2%
10	8930	1060	7870	651140	610840	1.3%	7.7%	7.4%
11	8690	730	7960	654370	606190	1.3%	9.0%	8.6%
12	9050	500	8540	658110	601980	1.4%	10.5%	9.9%
<i>Cohort 3</i>								
13	9740	3310	1820	620280	553960	0.3%	0.3%	0.3%
14	9260	2190	7070	623250	621420	1.1%	1.5%	1.5%
15	8100	1530	6560	627180	618280	1.1%	2.5%	2.5%
16	5920	1100	4820	631640	616180	0.8%	3.3%	3.3%
17	4380	790	3590	638470	618200	0.6%	3.9%	3.8%

SUPPLEMENTARY FILE 7 – SENSITIVITY ANALYSES

Table S7.5. Cumulative incidence of **child protection plans** in cohorts 2; sensitivity analysis.

Within age	Observed number of CPP	Discount for recurrent CPP	Corrected n need CPP	ONS mid-year estimate	Population at risk	Age-specific hazard	Integrated hazard	Cumulative incidence
<i>Cohort 2</i>								
6	2440	680	1750	638420	634720	0.3%	0.3%	0.3%
7	2580	460	2110	641070	639310	0.3%	0.6%	0.6%
8	2590	340	2250	644280	640410	0.4%	1.0%	1.0%
9	2460	260	2200	647550	641430	0.3%	1.3%	1.3%
10	2310	190	2120	651140	642830	0.3%	1.6%	1.6%
11	2230	130	2100	654370	643930	0.3%	2.0%	1.9%
12	1980	100	1880	658110	645590	0.3%	2.2%	2.2%
<i>Cohort 3</i>								
13	1980	460	1520	620280	602900	0.3%	0.3%	0.3%
14	1860	310	1550	623250	621730	0.2%	0.5%	0.5%
15	1390	230	1160	627180	624110	0.2%	0.7%	0.7%
16	750	170	580	631640	627410	0.1%	0.8%	0.8%
17	200	130	70	638470	633680	k	0.8%	0.8%

k suppressed percentage <0.05%