

Supplementary Appendix 1: Description of the datasets, main variables and coverage of the administrative cohort

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Dataset	Brief Description	Main variables	Period of data inclusion
<i>National Records of Scotland (NRS) Births</i>	Registration of all births registered in Scotland since 1975	<ul style="list-style-type: none"> • Scottish Index of Multiple Deprivation (SIMD) • National Statistics Socio-economic Classification (NS-SEC) of the mother and father (where applicable) • Relationship status of the parents 	Births between October 2009 and March 2013
<i>Scottish Morbidity Record 02 (SMR02)</i>	All maternity and infant inpatient and day case episodes in Scotland. Around 50% episodes relate to births and it was these records that were requested for the purposes of the cohort. Includes data collected during the ante-natal booking (~8–12 weeks of pregnancy)	<ul style="list-style-type: none"> • Child sex • Ethnicity • Number of births this pregnancy • Mother's country of birth • Mother's age (in years) at cohort birth • Mother's height and weight at booking • Smoking in pregnancy (never, former, current) • Number of previous live births • Delivery mode • Apgar score • Birthweight • Gestational age (weeks) • Breastfeeding initiation and infant feeding upon discharge • Health Board • Local authority • Scottish Index of Multiple Deprivation (SIMD) 	Hospital births between October 2009 and March 2013
<i>The Scottish Birth Record (SBR)</i>	A web-based system used to record all infant neonatal care in Scotland, including home births. Used to supplement SMR02 (hospital births).	As for SMR02 above, only for home births	Home births between October 2009 and March 2013
<i>Scottish Morbidity Record 01 (SMR01)</i>	Episode-based patient record for all non-obstetric and non-psychiatric admissions to general hospitals. For the purposes of this study only admissions for unintentional injury among children were requested	Unintentional injuries (ICD codes V00-X59; Y85-Y86), allowing identification of: <ul style="list-style-type: none"> • Any injury • Injury type (falls, strikes/cuts/piercings/crushes, scalds, poisonings, transport-related, drowning/submersion, threats to breathing, smoke/fire/flame) • Severity (requiring transfer to another ward or death) • Location (home vs. elsewhere) • Scottish Index of Multiple Deprivation (SIMD) 	Relevant episodes occurring to cohort children between October 2009 and April 2018



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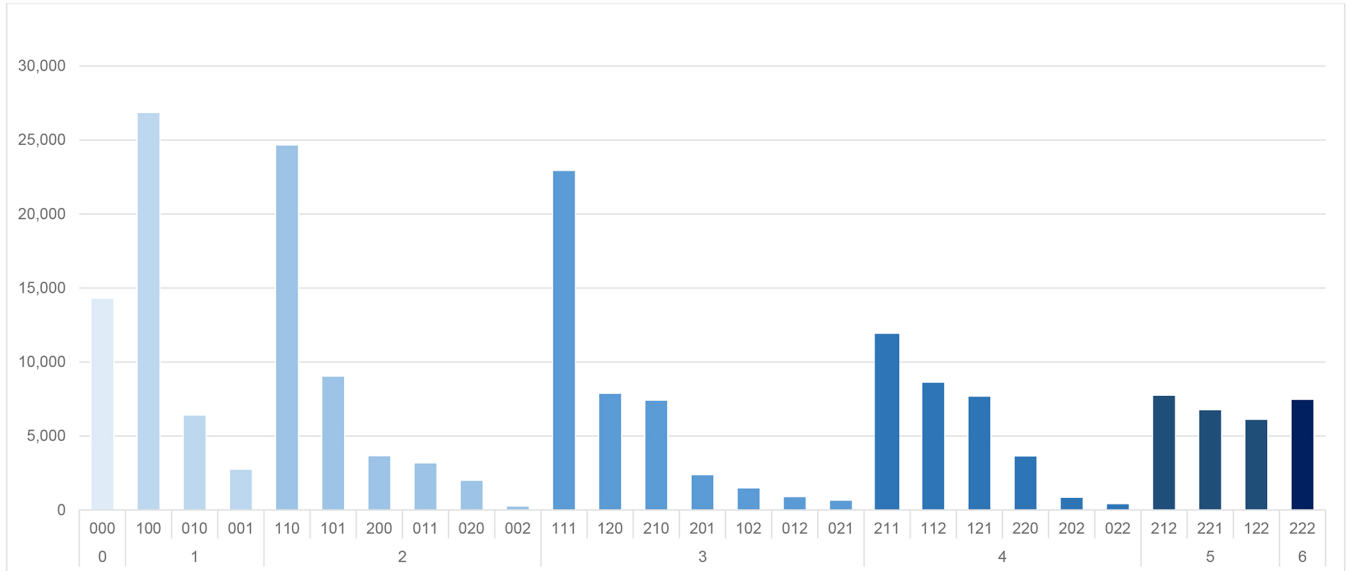
Table Appendix 1: Continued

Dataset	Brief Description	Main variables	Period of data inclusion
<i>The Prescribing Information System (PIS)</i>	National database of all medicines prescribed and dispensed in the community. For this cohort we requested drug dispensations that could relate maternal mental health and childhood attention deficit and hyperactivity disorder (ADHD)	<ul style="list-style-type: none"> • Maternal anxiety/depression (receipt of Hypnotics and Anxiolytics, Anti-depressants, Psychoses and related disorders) • Child ADHD (in receipt of atomoxetine, dexamfetamine sulphate, guanfacine, lisdexamfetamine mesilate, methylphenidate hydrochloride) • Scottish Index of Multiple Deprivation (SIMD) 	<p>Month of relevant dispensations occurring to cohort children and their mothers between January 2009 (mothers) / October 2009 (children) and April 2018. Any dispensation was captured for various periods.</p> <p>Conception was estimated from month of birth and length of gestation to identify the pregnancy period. Pre-pregnancy period was as defined 12 months prior to estimated conception date.</p>
<i>Scottish Immunisation Recall System (SIRS)</i>	SIRS calls and recalls children for immunisation according to the UK childhood immunisation schedule and records details and dates of administered immunisations up until the age of six	<ul style="list-style-type: none"> • Primary immunisations 1st, 2nd and 3rd doses [1] • Measles, mumps and rubella, 1st dose, booster • Preschool booster [2] • Scottish Index of Multiple Deprivation (SIMD) <p>[1] DTaP/IPV/Hib (pertussis, diphtheria, tetanus, polio, Haemophilus influenzae type b) × 3; PCV (pneumococcal) × 2; MenC (Meningitis C) × 1*).</p> <p>[2] dTaP/IPV (pertussis, diphtheria, tetanus, and polio).</p> <p>*MenC2 was phased out in June 2013</p>	Age at immunisation for all calls and recalls to cohort children between October 2009 and April 2018
<i>Child Health Systems Programme (CHSP)</i>	This system automatically calls and recalls children for scheduled child health according to the Healthy Child Programme and records data collected during those reviews. For the period covered by the cohort, the reviews comprised: <ol style="list-style-type: none"> 1. CHSP 1st visit (first fortnight) 2. CHSP 6-8w visit 3. CHSP 27-30m visit 4. CHSP Primary 1 visit (4-5 years) 	<ul style="list-style-type: none"> • Infant feeding (first and 6-8wk) • Smoking behaviours of caregivers (all reviews) • Developmental concerns (new or existing at 27-30m) [1]: <ul style="list-style-type: none"> ○ Cognitive (speech and language) ○ Vision & Eyesight ○ Gross and fine motor skills ○ Socio-emotional wellbeing • Height, weight (27-30mth and Primary 1) [2] • Scottish Index of Multiple Deprivation (SIMD) (all reviews) • Health plan indicator (all reviews) [3] <p>[1] Recorded by health visitors using an approved instrument (these varied locally, but most commonly used were the Ages and Stages Questionnaire and the Strengths and Difficulties Questionnaire).</p> <p>[2] used to classify children as experiencing thinness, healthy weight, overweight or obesity using age and sex standardised International Obesity TaskForce (IOTF) cut-offs for 2-18 year olds[43]</p> <p>[3] used by health practitioners to allocate children to core, additional or intensive programme of support, depending on assessed level of need</p>	Health reviews taking place for cohort children, between October 2009 and April 2018.



Supplementary Appendix 2: Prevalences and numbers for the socio-economic score and inequalities in longitudinal outcomes, by the socio-economic score

Figure Appendix 2: Prevalence of different combinations of area deprivation, occupational status and relationship status, according to the combined socio-economic score



Key for socio-economic combinations; there are three digits, shown in order of: area deprivation, occupational status, relationships status:	
0	least disadvantaged group for that socio-economic measure (SIMD quintile 5, managerial & professional, married)
1	middle group(s) for that socio-economic measure (SIMD quintiles 2-4, routine/managerial/intermediate, cohabiting)
2	most disadvantaged group for that socio-economic measure (SIMD quintile 1, economically inactive, lone [sole or separated])
For example:	
000	most advantaged SIMD quintile, managerial & professional occupation, married parents
111	middle three SIMD quintiles, intermediate/routine & manual occupations, cohabiting parents
222	most disadvantaged SIMD quintile, unemployed/other occupation, lone parent



Table Appendix 2: Prevalences and numbers for inequalities in longitudinal outcomes by the socio-economic score (most and least deprived groups only), % (*n*)

Health outcome	Category of outcome	Socio-economic score	
		6*	0*
Exposure to smoking, <i>n</i> = 57,910	Never exposed (over period)	28.5 (607)	92.7 (4,002)
	Pregnancy only	8.5 (181)	1.0 (41)
	Post birth	21.6 (460)	5.6 (242)
	Pregnancy and post-birth	41.4 (881)	0.7 (32)
Breastfeeding, <i>n</i> = 169,745	Never	72.6 (4,636)	10.4 (1,289)
	Initiated only	13.1 (835)	10.9 (1,349)
	Breastfeeding at first visit	5.8 (373)	11.5 (1,419)
	Breastfeeding at 6-8 weeks	8.5 (543)	67.2 (8,320)
Mother prescribed medication for anxiety/depression, <i>n</i> = 188,010*	Never	39.6 (2,874)	76.6 (10,133)
	Pre-pregnancy-toddler only	10.2 (737)	5.0 (663)
	Childhood only	11.2 (811)	7.1 (932)
	From infancy-toddler onwards	16.9 (1,226)	6.5 (862)
	Pre-preg + relapse	8.2 (594)	2.0 (267)
	Across most or whole period	13.9 (1,009)	2.8 (367)
Immunisation status by start of school, <i>n</i> = 188,010	Fully immunised	91.0 (6,595)	96.0 (12,696)
	Partially immunised	8.6 (625)	3.5 (456)
	Unimmunised	0.4 (31)	0.5 (72)
Overweight (& obesity), <i>n</i> = 63,222	Healthy at 27-30m & 4-5y	69.0 (1,359)	75.2 (3,563)
	Became overweight	9.2 (182)	5.7 (269)
	Became healthy	9.8 (192)	11.8 (558)
	Overweight at 27-30m & 4-5y	12.0 (237)	7.3 (346)
Hospitalisation due to unintentional injury (count), <i>n</i> = 188,010*	0	90.8 (6,587)	95.2 (12,587)
	1	8.6 (625)	4.6 (609)
	2+	0.5 (39)	0.2 (28)
New/existing development concerns (27-30m), <i>n</i> = 91,139	0	66.5 (2,187)	90.4 (5,964)
	1	16.5 (544)	6.9 (5454)
	2+	17.0 (560)	2.7 (179)

Preg: Pregnancy; M: Month; Y: Year.

*6 = most disadvantaged SIMD quintile, unemployed/other occupation, lone parent.

0 = most advantaged SIMD quintile, managerial & professional occupation, married parents.



Supplementary Appendix 3: Details of the imputation and inequalities in the longitudinal outcomes, post-imputation

Details of imputation

Multiple imputation by chained equations was employed in Stata 16.0 under a missing at random assumption, to create twenty imputation datasets. Imputation specific estimates were combined using Rubin's rules. The augment function used to overcome the presence of empty cells (so that any empty cells in the observed data remained empty in the imputed data).

Three imputed datasets were produced, corresponding to three different samples required for the following longitudinal outcomes:

1. Smoking: exposure to tobacco smoke during pregnancy through to 27-30 months of age. This required data from the birth, infant and toddler samples. The complete case sample was 57,910. After imputing item missingness, the imputed sample was 98,323.

- a. Information was imputed for the following variables, listed according to model:

- i. Binary logistic regression: low birthweight, smoking during pregnancy, moderately or severely depressed Apgar score, exposure to second hand smoke at first visit, exposure to second hand smoke smoking at 6-8 week visit, exposure to second hand smoke at 27-30 month visit;
- ii. Ordered (proportional odds) logistic regression: Scottish Index of Multiple Deprivation (SIMD) quintile, gestational age;
- iii. Multinomial logistic regression: Scottish region of residence, mother's country of birth, mode of delivery.

- b. The following regular variables were included in the imputation model as predictor variables:

- i. Regular: child sex, mother's occupational status, parents' relationship status, number of births, mother's age at current birth.

2. Infant feeding: infant feeding from birth through to the 6-8 week visit required data in the birth and infant sample. The complete case sample was 169,745; after imputing item missingness, the imputed sample was 182,666.

- a. Information was imputed for the following variables, listed according to model:

- i. Binary logistic regression: low birthweight, initiation of breastfeeding, breastfeeding at first visit, breastfeeding at 6-8 week visit, moderately or severely depressed Apgar score;
- ii. Ordered (proportional odds) logistic regression: SIMD quintile, gestational age;
- iii. Multinomial logistic regression: Scottish region of residence, mother's country of birth.

- b. The following regular and auxiliary variables were included in the imputation model as predictor variables:

- i. Regular: child sex, mother's occupational status, parents' relationship status, number of births.

3. Overweight and obesity: overweight and obesity status at 27-30 months and 4-5 years; this required data from the birth, toddler and child samples. The complete case sample was 63,222, the imputed sample, imputing only for item missingness, was 86,726.

- a. Information was imputed for the following variables, listed according to model:

- i. Binary logistic regression: moderately or severely depressed Apgar score, BMI status at 27-30 months, BMI status at primary 1 check, gestational age,
- ii. Ordered (proportional odds) logistic regression: SIMD quintile, gestational age,
- iii. Multinomial logistic regression: Scottish region of residence, mother's country of birth.

- b. The following regular and auxiliary variables were included in the imputation model as predictor variables:

- i. child sex, mother's occupational status, parents' relationship status, number of births, mother's age at current birth.



Table Appendix 3: Prevalence of the longitudinal outcomes overall and according to the least and most advantaged socio-economic groups: imputed results

		Total	Relationship status of parents		NS-SEC of mother		SIMD	
			Sole registration	Married	Economically inactive	Managerial & professional	SIMD Q1	SIMD Q5
Exposure to smoking [1], <i>n</i> = 98,323	Never exposed (over period)	65.2	36.6	82.1	44.9	84.0	48.3	84.4
	Pregnancy only	4.7	10.6	2.3	6.8	2.3	6.8	2.1
	From infancy/toddlerhood	16.0	18.2	11.5	20.0	10.1	19.7	10.3
	Across all time points	14.1	34.6	4.1	28.3	3.4	25.3	3.2
Breastfeeding [2], <i>n</i> = 182,666	Never	36.8	61.4	22.7	49.3	18.5	53.2	17.7
	Initiated only	15.4	15.3	13.8	13.7	14.0	15.6	13.3
	Breastfeeding at first visit	11.6	9.0	12.2	9.9	12.5	9.7	12.6
	Breastfeeding at 6-8 weeks	36.2	14.2	51.3	27.0	55.0	21.5	56.3
Overweight (& obesity) [3], <i>n</i> = 86,726	Healthy at 27-30m & 4-5y	71.1	66.0	73.5	69.0	73.7	69.3	74.1
	Became overweight	8.9	11.2	7.8	9.9	7.5	10.4	6.7
	Became healthy	9.8	10.0	9.8	9.7	10.3	8.9	11.2
	Overweight at 27-30m & 4-5y	10.2	12.8	8.9	11.4	8.6	11.4	8.1

NS-SEC: National Statistics Socio-economic Classification; SIMD: Scottish Index of Multiple Deprivation; Q: quintile; M: Month; Y: Year.

Requires inclusion in the birth sample and: [1] the infant and toddler samples, complete case sample was 57,910; [2] the infant sample, complete case sample was 169,745; [3] the toddler and child sample, complete case sample was 63,222.

