Maternal serum perfluoroalkyl substance mixtures and thyroid hormone concentrations in maternal and cord sera: The HOME Study

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Table S1: Expanded table of maternal and newborn characteristics.

	Women with cord serum thyroid hormone measurements					Women with maternal serum thyroid hormone measurements				
		PFAS Concentrations (ng/mL)					PFAS Concentrations (ng/mL)			
	***n*(%)**	**PFOA median (IQR)**	**PFOS median (IQR)**	**PFNA median (IQR)**	**PFHxS median (IQR)**	***n*(%)**	**PFOA median (IQR)**	**PFOS median (IQR)**	**PFNA median (IQR)**	**PFHxS median (IQR)**
Overall	256	5.6 (4.1)	14.3 (8.1)	0.9 (0.5)	1.6 (1.5)	185	5.5 (4.5)	14.3 (8.9)	0.9 (0.4)	1.6 (1.5)
Maternal Age (years)										
<25	51 (20)	6.3 (3.5)	14.8 (7.3)	0.9 (0.6)	1.5 (1.6)	37 (20)	6.4 (3.6)	13.4 (8.9)	0.8 (0.3)	1.5 (1.2)
25-35	165 (65)	5.3 (3.4)	13.4 (8.2)	0.9 (0.5)	1.6 (1.5)	114 (62)	5.1 (4.0)	14.7 (9.3)	0.9 (0.4)	1.5 (1.7)
>35	40 (16)	7.3 (5.4)	15.0 (8.7)	1.1 (0.5)	1.7 (1.1)	34 (18)	6.8 (5.1)	14.5 (8.9)	1.0 (0.5)	1.8 (0.9)
Race/Ethnicity										
Non-Hispanic White	165 (65)	6.0 (5.0)	14.4 (8.2)	1.0 (0.5)	1.8 (1.6)	116 (63)	5.9 (5.2)	15.3 (9.6)	0.9 (0.5)	1.8 (1.8)
Black	70 (27)	5.0 (2.5)	13.0 (8.7)	0.8 (0.4)	1.0 (0.7)	51 (28)	4.8 (2.5)	10.1 (9.5)	0.8 (0.4)	0.9 (0.9)
Other	20 (8)	5.9 (4.3)	15.3 (8.8)	1.1 (1.0)	1.8 (1.8)	17 (9)	6.0 (4.7)	15.1 (7.3)	1.0 (1.1)	1.8 (1.3)
Missing	1 (0)	4.8 (0.0)	14.8 (0.0)	0.6 (0.0)	2.7 (0.0)	1 (1)	11.6 (0.0)	13.2 (0.0)	0.8 (0.0)	2.1 (0.0)
Marital Status										
Married	185 (72)	5.9 (4.8)	14.6 (8.4)	1.0 (0.5)	1.7 (1.4)	128 (69)	5.9 (5.2)	15.3 (9.3)	1.0 (0.5)	1.8 (1.9)
Unmarried, cohabiting	26 (10)	5.3 (3.4)	13.5 (9.4)	0.9 (0.5)	1.0 (1.0)	19 (10)	4.0 (2.3)	10.1 (7.0)	0.8 (0.4)	0.9 (0.8)
Unmarried, living alone	44 (17)	5.2 (3.1)	13.3 (7.4)	0.8 (0.4)	1.1 (1.3)	37 (20)	5.8 (3.6)	13.4 (8.6)	0.8 (0.3)	1.1 (1.4)
Missing	1 (0)	4.8 (0.0)	14.8 (0.0)	0.6 (0.0)	2.7 (0.0)	1 (1)	11.6 (0.0)	13.2 (0.0)	0.8 (0.0)	2.1 (0.0)
Household Income ($/year)										
<20,000	48 (19)	5.1 (3.3)	11.9 (7.3)	0.8 (0.4)	1.0 (1.3)	38 (21)	4.8 (3.7)	9.0 (9.2)	0.7 (0.3)	0.9 (1.0)
20-<40,000	43 (17)	5.5 (3.7)	14.2 (9.4)	1.0 (0.6)	1.4 (1.8)	35 (19)	5.5 (3.2)	13.3 (10.2)	0.9 (0.5)	1.4 (1.8)
40-<80,000	87 (34)	5.7 (3.9)	14.6 (7.3)	1.0 (0.5)	1.7 (1.5)	57 (31)	5.1 (4.4)	14.8 (8.2)	1.0 (0.5)	1.8 (1.8)
>80,000	77 (30)	6.3 (5.5)	15.0 (9.7)	1.0 (0.4)	1.7 (1.2)	54 (29)	6.3 (5.3)	16.1 (12.8)	1.0 (0.4)	1.7 (1.0)
Missing	1 (0)	4.8 (0.0)	14.8 (0.0)	0.6 (0.0)	2.7 (0.0)	1 (1)	11.6 (0.0)	13.2 (0.0)	0.8 (0.0)	2.1 (0.0)

Table S1 (cont.): Expanded table of maternal and newborn characteristics.

Education										
Less than high school	54 (21)	5.4 (3.3)	13.3 (8.6)	0.9 (0.4)	1.2 (1.3)	43 (23)	4.9 (4.8)	10.1 (7.9)	0.8 (0.4)	1.2 (1.2)
High school or some college	64 (25)	5.6 (4.1)	14.4 (8.5)	1.0 (0.6)	1.4 (1.9)	38 (21)	6.1 (3.5)	15.0 (8.5)	0.9 (0.5)	1.6 (2.5)
Bachelor's or more	137 (54)	5.7 (4.4)	14.4 (8.6)	0.9 (0.5)	1.7 (1.3)	103 (56)	5.6 (4.6)	15.1 (9.0)	1.0 (0.5)	1.7 (1.8)
Missing	1 (0)	4.8 (0.0)	14.8 (0.0)	0.6 (0.0)	2.7 (0.0)	1 (1)	11.6 (0.0)	13.2 (0.0)	0.8 (0.0)	2.1 (0.0)
Insurance										
Private	198 (77)	5.9 (4.9)	14.7 (8.4)	1.0 (0.5)	1.7 (1.5)	140 (76)	5.7 (5.1)	15.2 (9.3)	1.0 (0.5)	1.7 (1.9)
Public/uninsured	57 (22)	5.3 (3.1)	12.6 (6.9)	0.8 (0.4)	0.9 (1.0)	44 (24)	5.1 (3.2)	9.7 (7.5)	0.8 (0.4)	0.9 (0.9)
Missing	1 (0)	4.8 (0.0)	14.8 (0.0)	0.6 (0.0)	2.7 (0.0)	1 (1)	11.6 (0.0)	13.2 (0.0)	0.8 (0.0)	2.1 (0.0)
Prenatal vitamins										
Regular use	223 (87)	5.8 (4.4)	14.3 (8.0)	0.9 (0.5)	1.6 (1.6)	163 (88)	5.7 (4.7)	14.6 (8.8)	0.9 (0.5)	1.6 (1.6)
Never/infrequent use	32 (13)	5.1 (1.7)	11.3 (7.6)	0.9 (0.4)	1.2 (1.1)	21 (11)	4.8 (2.2)	10.2 (10.6)	0.8 (0.4)	1.3 (1.1)
Missing	1 (0)	4.8 (0.0)	14.8 (0.0)	0.6 (0.0)	2.7 (0.0)	1 (1)	11.6 (0.0)	13.2 (0.0)	0.8 (0.0)	2.1 (0.0)
Alcohol consumption										
Any	100 (39)	6.4 (4.6)	14.8 (7.7)	0.9 (0.4)	1.7 (1.9)	73 (40)	5.6 (4.4)	14.6 (8.5)	0.9 (0.4)	1.6 (2.0)
None	147 (57)	5.2 (3.7)	13.6 (8.8)	0.9 (0.5)	1.5 (1.5)	108 (58)	5.4 (3.8)	14.3 (9.7)	0.9 (0.5)	1.5 (1.5)
Missing	9 (4)	8.2 (3.2)	13.8 (5.9)	1.2 (1.0)	1.7 (1.3)	4 (2)	10.7 (6.6)	14.7 (5.9)	1.2 (0.6)	1.7 (0.5)
Serum cotinine (ng/mL)										
<0.015 (Unexposed)	110 (43)	5.6 (4.3)	14.4 (7.7)	1.0 (0.5)	1.7 (1.4)	73 (40)	5.3 (5.0)	15.2 (9.6)	1.0 (0.4)	1.7 (1.5)
0.015-3 (Secondhand)	120 (47)	5.9 (4.0)	14.5 (9.1)	0.9 (0.5)	1.5 (1.7)	90 (49)	5.8 (4.0)	14.1 (9.0)	0.9 (0.5)	1.5 (1.7)
>3 (Active smoker)	26 (10)	5.1 (3.2)	12.4 (6.5)	0.9 (0.5)	1.3 (1.2)	22 (12)	5.1 (3.4)	10.4 (7.1)	0.8 (0.4)	1.2 (1.2)
Maternal BMI (kg/m2)										
<24.9 (Underweight-normal)	131 (51)	5.9 (4.4)	14.3 (8.2)	0.9 (0.5)	1.7 (1.5)	102 (55)	5.9 (4.1)	14.9 (9.1)	0.9 (0.5)	1.7 (1.6)
25-29.9 (Overweight)	67 (26)	5.0 (4.4)	14.4 (7.1)	1.0 (0.6)	1.6 (1.7)	44 (24)	4.4 (4.9)	15.7 (10.7)	0.9 (0.4)	1.6 (2.1)
≥30 (Obese)	49 (19)	5.6 (3.6)	13.3 (8.4)	0.9 (0.4)	1.4 (1.5)	31 (17)	5.6 (3.8)	13.2 (10.3)	0.9 (0.4)	1.5 (1.6)
Missing	9 (4)	4.8 (2.2)	12.3 (4.9)	0.7 (0.3)	1.7 (1.2)	8 (4)	6.0 (4.0)	8.8 (4.5)	0.8 (0.3)	1.4 (1.1)
Mode of delivery										
Vaginal delivery	187 (73)	5.5 (3.8)	14.2 (7.7)	0.9 (0.5)	1.5 (1.5)	128 (69)	5.6 (4.5)	14.7 (9.4)	0.9 (0.4)	1.5 (1.5)
Cesarean section	66 (26)	6.0 (3.9)	14.3 (10.0)	0.9 (0.5)	1.7 (1.7)	56 (30)	5.5 (4.5)	13.7 (10.2)	0.9 (0.5)	1.8 (2.1)

Table S1 (cont.): Expanded table of maternal and newborn characteristics.

Missing	3 (1)	9.2 (5.8)	15.7 (4.0)	1.2 (0.8)	2.9 (1.3)	1 (1)	13.1 (0.0)	14.0 (0.0)	1.2 (0.0)	1.7 (0.0)
Parity										
Nulliparous	108 (42)	5.9 (4.3)	13.7 (7.7)	0.9 (0.5)	1.5 (1.4)	83 (45)	6.1 (4.6)	14.7 (8.8)	0.9 (0.4)	1.7 (1.7)
Primiparous	77 (30)	5.6 (3.8)	14.3 (10.4)	0.9 (0.5)	1.6 (1.5)	50 (27)	5.0 (4.0)	14.6 (11.4)	1.0 (0.4)	1.5 (1.5)
Multiparous	65 (25)	5.2 (4.0)	14.3 (7.0)	0.9 (0.5)	1.5 (1.4)	48 (26)	5.1 (4.3)	13.6 (9.0)	0.8 (0.5)	1.6 (1.6)
Missing	6 (2)	7.6 (3.7)	14.7 (1.9)	1.1 (0.5)	2.3 (1.4)	4 (2)	7.6 (4.8)	14.7 (4.8)	1.2 (0.3)	1.7 (3.3)
Newborn Sex										
Female	135 (53)	5.5 (4.1)	14.3 (8.3)	0.9 (0.5)	1.6 (1.7)	101 (55)	5.3 (4.4)	14.3 (9.1)	0.9 (0.5)	1.5 (1.6)
Male	121 (47)	5.7 (3.7)	14.2 (8.6)	0.9 (0.5)	1.5 (1.5)	84 (45)	5.8 (4.5)	14.7 (9.0)	0.9 (0.4)	1.7 (1.5)
Maternal urinary iodine										
Normal (≥100 ug/L)	139 (54)	5.6 (4.4)	14.8 (10.4)	1.0 (0.6)	1.6 (1.4)	109 (59)	5.5 (4.5)	15.1 (10.3)	0.9 (0.5)	1.6 (1.3)
Low (<100 ug/L)	57 (22)	6.2 (3.5)	13.2 (6.6)	0.9 (0.5)	1.6 (2.0)	38 (21)	7.1 (4.3)	14.5 (7.8)	1.0 (0.4)	2.1 (2.2)
Missing	60 (23)	5.4 (3.9)	13.7 (7.3)	0.9 (0.5)	1.4 (1.5)	38 (21)	5.3 (4.0)	10.9 (7.7)	0.9 (0.5)	1.2 (1.1)
TPOAb (maternal)										
High (≥9 IU/mL)	13 (5)	6.1 (2.5)	15.3 (7.2)	1.0 (0.4)	1.7 (1.1)	15 (8)	6.1 (2.5)	15.3 (7.2)	1.0 (0.4)	1.7 (1.6)
Normal (<9 IU/mL)	122 (48)	5.4 (4.7)	14.5 (8.7)	0.9 (0.5)	1.6 (1.6)	169 (91)	5.5 (4.6)	13.8 (8.9)	0.9 (0.5)	1.5 (1.5)
Missing	121 (47)	5.7 (3.3)	13.4 (8.1)	0.9 (0.6)	1.4 (1.4)	1 (1)	10.1 (0.0)	22.8 (0.0)	0.9 (0.0)	3.3 (0.0)
TgAb (maternal)										
Detectable	53 (21)	5.5 (3.3)	14.8 (7.1)	0.9 (0.5)	1.5 (2.1)	69 (37)	5.3 (3.8)	14.6 (7.9)	0.8 (0.5)	1.4 (2.0)
Not detectable	82 (32)	5.3 (5.2)	14.5 (10.4)	0.9 (0.5)	1.7 (1.5)	115 (62)	5.6 (4.6)	14.0 (9.7)	0.9 (0.5)	1.7 (1.4)
Missing	121 (47)	5.7 (3.3)	13.4 (8.1)	0.9 (0.6)	1.4 (1.4)	1 (1)	10.1 (0.0)	22.8 (0.0)	0.9 (0.0)	3.3 (0.0)
Iodine Status										
Normal (≥100 ug/L)	139 (54)	5.6 (4.4)	14.8 (10.4)	1.0 (0.6)	1.6 (1.4)	109 (59)	5.5 (4.5)	15.1 (10.3)	0.9 (0.5)	1.6 (1.3)
Low (<100 ug/L)	57 (22)	6.2 (3.5)	13.2 (6.6)	0.9 (0.5)	1.6 (2.0)	38 (21)	7.1 (4.3)	14.5 (7.8)	1.0 (0.4)	2.1 (2.2)
Missing	60 (23)	5.4 (3.9)	13.7 (7.3)	0.9 (0.5)	1.4 (1.5)	38 (21)	5.3 (4.0)	10.9 (7.7)	0.9 (0.5)	1.2 (1.1)

Table S2: Baseline characteristics by gestational age of PFAS measurement among mother-infant dyads with at least one thyroid hormone measured (n = 305).

	16 Weeks	26 Weeks	Delivery
n	258	32	15
Gestational Age of PFAS Measurement (median [IQR])	15.86 [14.71, 17.54]	26.79 [25.00, 27.50]	39.00 [38.43, 39.79]
PFOA (median [IQR])	5.80 [4.00, 8.05]	5.00 [3.77, 7.92]	4.90 [3.65, 6.30]
PFOS (median [IQR])	14.25 [10.03, 18.28]	14.20 [10.07, 19.27]	9.00 [8.05, 12.50]
PFNA (median [IQR])	1.00 [0.70, 1.20]	0.70 [0.60, 0.90]	0.70 [0.60, 0.85]
PFHxS (median [IQR])	1.60 [0.90, 2.40]	1.50 [0.90, 2.02]	0.90 [0.80, 1.35]
Race/Ethnicity (%)			
White and non-Hispanic	162 (62.8)	23 (71.9)	6 (40.0)
Other	94 (36.4)	9 (28.1)	9 (60.0)
Missing	2 (0.8)	0 (0.0)	0 (0.0)
Marital Status (%)			
Married	181 (70.2)	23 (71.9)	4 (26.7)
Not married, but living with someone	27 (10.5)	4 (12.5)	3 (20.0)
Not married, living alone	48 (18.6)	5 (15.6)	8 (53.3)
Missing	2 (0.8)	0 (0.0)	0 (0.0)
Educational Status (%)			
Less than Bachelor's	121 (46.9)	14 (43.8)	12 (80.0)
Equal to or higher than a Bachelors	135 (52.3)	18 (56.2)	3 (20.0)
Missing	2 (0.8)	0 (0.0)	0 (0.0)
Gender			
Female	137 (53.1)	19 (59.4)	7 (46.7)
Male	121 (46.9)	13 (40.6)	8 (53.3)
Delivery Mode			
C-section	74 (28.7)	10 (31.2)	4 (26.7)
Vaginal	181 (70.2)	22 (68.8)	11 (73.3)
Missing	3 (1.2)	0 (0.0)	0 (0.0)
Alcohol Usage During Pregnancy			
Never	152 (58.9)	12 (37.5)	9 (60.0)
Ever	98 (38.0)	20 (62.5)	5 (33.3)
Missing	8 (3.1)	0 (0.0)	1 (6.7)
Nulliparous			
No	140 (54.3)	15 (46.9)	12 (80.0)
Yes	111 (43.0)	17 (53.1)	3 (20.0)
Missing	7 (2.7)	0 (0.0)	0 (0.0)
Maternal Age at Delivery (median [IQR])	30.18 [25.69, 33.44]	29.79 [25.79, 32.21]	25.38 [23.45, 29.17]
Household Income (median [IQR]) in $/year	55000.00 [27500.00, 85000.00]	65000.00 [21250.00, 85000.00]	17500.00 [7500.00, 35000.00]
Serum Cotinine (median [IQR]) in ng/mL	-1.58 [-2.23, -0.61]	-1.88 [-2.44, -1.47]	-0.29 [-1.03, 0.91]
Maternal BMI (median [IQR]) in kg/m2	24.86 [21.82, 29.25]	23.00 [21.06, 26.25]	23.87 [22.09, 29.46]

Table S3: Association between PFAS concentrations and thyroid hormones measured in maternal and cord sera across multivariable models.

		Cord Serum						**Maternal Serum**					
		Model 1: Crude		Model 2: Adjusted[1]		Model 3: Adjusted[1] + log_2(PCB-153), log_2(BDE-47), log_2(BDE-28)		Model 1: Crude		Model 2: Adjusted[1]		Model 3: Adjusted[1] + log_2(PCB-153), log_2(BDE-47), log_2(BDE-28)	
Outcome	**PFAS**	***n***	**β (95% CI)**	***n***	**β (95% CI)**	***n***	**β (95% CI)**	***n***	**β (95% CI)**	***n***	**β (95% CI)**	***n***	**β (95% CI)**
log_2(TSH)	log_2(PFOA)	236	0.07 (-0.07, 0.21)	236	0.06 (-0.08, 0.19)	202	-0.01 (-0.15, 0.14)	171	0.08 (-0.13, 0.29)	171	0.09 (-0.14, 0.33)	142	0.17 (-0.11, 0.45)
	log_2(PFOS)	236	0.14 (-0.01, 0.29)	236	0.09 (-0.06, 0.25)	202	0.04 (-0.13, 0.21)	171	0.07 (-0.16, 0.30)	171	0.02 (-0.24, 0.28)	142	0.16 (-0.17, 0.49)
	log_2(PFNA)	236	0.08 (-0.11, 0.27)	236	0.04 (-0.16, 0.24)	202	0.04 (-0.18, 0.26)	171	-0.16 (-0.46, 0.14)	171	-0.23 (-0.56, 0.10)	142	-0.13 (-0.54, 0.28)
	log_2(PFHxS)	236	0.10 (0.00, 0.20)	236	0.05 (-0.05, 0.16)	202	0.01 (-0.10, 0.13)	171	-0.02 (-0.17, 0.13)	171	-0.06 (-0.23, 0.11)	142	-0.08 (-0.29, 0.12)
log_2(TT_4)	log_2(PFOA)	231	0.02 (-0.03, 0.07)	231	0.03 (-0.02, 0.08)	198	0.02 (-0.03, 0.07)	171	-0.04 (-0.11, 0.02)	171	-0.03 (-0.10, 0.04)	142	-0.02 (-0.10, 0.06)
	log_2(PFOS)	231	0.01 (-0.04, 0.06)	231	0.01 (-0.04, 0.07)	198	0.03 (-0.03, 0.09)	171	-0.01 (-0.08, 0.06)	171	0.002 (-0.08, 0.08)	142	0.02 (-0.08, 0.12)
	log_2(PFNA)	231	-0.004 (-0.07, 0.06)	231	0.002 (-0.07, 0.07)	198	0.04 (-0.04, 0.11)	171	-0.08 (-0.17, 0.02)	171	-0.07 (-0.17, 0.03)	142	-0.05 (-0.18, 0.07)
	log_2(PFHxS)	231	0.02 (-0.02, 0.05)	231	0.02 (-0.01, 0.06)	198	0.04 (-0.00, 0.08)	171	-0.02 (-0.07, 0.03)	171	0.003 (-0.05, 0.06)	142	0.02 (-0.04, 0.08)
log_2(TT_3)	log_2(PFOA)	236	-0.02 (-0.09, 0.05)	236	-0.01 (-0.09, 0.06)	202	-0.01 (-0.09, 0.07)	171	-0.01 (-0.05, 0.03)	171	-0.01 (-0.05, 0.04)	142	-0.01 (-0.06, 0.04)
	log_2(PFOS)	236	-0.01 (-0.09, 0.06)	236	-0.02 (-0.10, 0.06)	202	-0.02 (-0.12, 0.07)	171	-0.04 (-0.08, 0.01)	171	-0.02 (-0.07, 0.03)	142	-0.02 (-0.08, 0.04)
	log_2(PFNA)	236	-0.03 (-0.13, 0.07)	236	-0.04 (-0.14, 0.07)	202	-0.03 (-0.15, 0.09)	171	-0.05 (-0.11, 0.01)	171	-0.03 (-0.09, 0.03)	142	-0.02 (-0.09, 0.05)
	log_2(PFHxS)	236	-0.01 (-0.06, 0.04)	236	-0.02 (-0.08, 0.03)	202	-0.02 (-0.08, 0.05)	171	-0.02 (-0.05, 0.00)	171	-0.01 (-0.04, 0.02)	142	-0.01 (-0.05, 0.02)
log_2(FT_4)	log_2(PFOA)	236	-0.004 (-0.04, 0.03)	236	-0.005 (-0.04, 0.03)	202	-0.01 (-0.05, 0.03)	171	-0.01 (-0.05, 0.03)	171	-0.01 (-0.06, 0.03)	142	-0.01 (-0.06, 0.03)
	log_2(PFOS)	236	-0.02 (-0.06, 0.02)	236	-0.02 (-0.06, 0.02)	202	-0.002 (-0.05, 0.04)	171	0.03 (-0.01, 0.07)	171	0.02 (-0.02, 0.07)	142	0.02 (-0.03, 0.08)
	log_2(PFNA)	236	-0.004 (-0.06, 0.05)	236	-0.01 (-0.07, 0.04)	202	0.01 (-0.05, 0.07)	171	-0.01 (-0.07, 0.05)	171	-0.01 (-0.07, 0.05)	142	0.01 (-0.05, 0.08)
	log_2(PFHxS)	236	-0.001 (-0.03, 0.03)	236	-0.01 (-0.04, 0.02)	202	-0.001 (-0.03, 0.03)	171	0.01 (-0.01, 0.04)	171	0.02 (-0.01, 0.05)	142	0.03 (-0.01, 0.06)
log_2(FT_3)	log_2(PFOA)	234	-0.02 (-0.06, 0.03)	234	-0.01 (-0.06, 0.03)	200	-0.01 (-0.05, 0.04)	171	-0.01 (-0.03, 0.02)	171	-0.01 (-0.04, 0.01)	142	-0.01 (-0.03, 0.02)
	log_2(PFOS)	234	-0.02 (-0.07, 0.02)	234	-0.03 (-0.07, 0.02)	200	-0.03 (-0.09, 0.02)	171	-0.03 (-0.05, 0.00)	171	-0.03 (-0.06, 0.00)	142	-0.02 (-0.05, 0.01)
	log_2(PFNA)	234	-0.01 (-0.07, 0.04)	234	-0.02 (-0.08, 0.04)	200	-0.02 (-0.09, 0.05)	171	-0.01 (-0.05, 0.02)	171	-0.02 (-0.05, 0.02)	142	-0.01 (-0.05, 0.03)
	log_2(PFHxS)	234	-0.01 (-0.04, 0.02)	234	-0.02 (-0.05, 0.02)	200	-0.01 (-0.05, 0.02)	171	-0.02 (-0.03, 0.00)	171	-0.02 (-0.04, 0.00)	142	-0.01 (-0.04, 0.01)

Table S4: Associations between PFAS and thyroid hormones by thyroid antibody levels in multivariable models.

Thyroid Hormones by Maternal Thyroid Antibody and PFAS	Cord Serum				Maternal Serum			
	n	Interaction *p*-value	PFAS with TPOAb ≤ median or TgAb = 0.0 β (95% CI)	PFAS with TPOAb > median or TgAb > 0.0 β (95% CI)	*n*	Interaction *p*-value	PFAS with TPOAb ≤ median or TgAb = 0.0 β (95% CI)	PFAS with TPOAb > median or TgAb > 0.0 β (95% CI)
$\log_2$(TSH)								
TPOAb x $\log_2$(PFOA)	126	0.24	-0.06 (-0.33, 0.21)	0.18 (-0.12, 0.47)	170	0.63	0.13 (-0.17, 0.42)	0.02 (-0.34, 0.37)
TPOAb x $\log_2$(PFOS)	126	0.21	0.06 (-0.25, 0.38)	0.34 (0.01, 0.67)	170	0.58	-0.06 (-0.41, 0.29)	0.07 (-0.29, 0.44)
TPOAb x $\log_2$(PFNA)	126	0.91	0.14 (-0.27, 0.56)	0.11 (-0.31, 0.53)	170	0.83	-0.27 (-0.72, 0.18)	-0.20 (-0.66, 0.26)
TPOAb x $\log_2$(PFHxS)	126	0.92	0.11 (-0.10, 0.33)	0.10 (-0.12,0.32)	170	0.14	0.03 (-0.18, 0.25)	-0.20 (-0.44, 0.04)
TgAb x $\log_2$(PFOA)	126	0.96	0.05 (-0.19, 0.30)	0.06 (-0.30, 0.42)	170	0.65	0.12 (-0.16, 0.40)	0.01 (-0.38, 0.40)
TgAb x $\log_2$(PFOS)	126	0.87	0.19 (-0.09, 0.47)	0.23 (-0.19, 0.66)	170	0.92	-0.002 (-0.31, 0.31)	0.02 (-0.42, 0.46)
TgAb x $\log_2$(PFNA)	126	0.66	0.14 (-0.24, 0.52)	0.01 (-0.47, 0.49)	170	0.20	-0.40 (-0.81, 0.01)	0.03 (-0.50, 0.55)
TgAb x $\log_2$(PFHxS)	126	0.42	0.15 (-0.04, 0.35)	0.03 (-0.22, 0.27)	170	0.66	-0.03 (-0.26, 0.19)	-0.11 (-0.35, 0.14)
$\log_2$(TT_4)								
TPOAb x $\log_2$(PFOA)	123	0.01*	0.11 (0.03, 0.19)	-0.04 (-0.12, 0.04)	170	0.54	-0.01 (-0.10, 0.08)	-0.05 (-0.16, 0.05)
TPOAb x $\log_2$(PFOS)	123	0.38	0.001 (-0.09, 0.10)	-0.06 (-0.15, 0.04)	170	0.34	0.04 (-0.06, 0.15)	-0.03 (-0.14, 0.08)
TPOAb x $\log_2$(PFNA)	123	0.77	-0.02 (-0.15, 0.10)	0.001 (-0.12, 0.12)	170	0.82	-0.06 (-0.20, 0.07)	-0.09 (-0.22, 0.05)
TPOAb x $\log_2$(PFHxS)	123	0.28	0.002 (-0.06, 0.06)	-0.04 (-0.11, 0.02)	170	0.94	0.01 (-0.06, 0.07)	0.01 (-0.07, 0.08)
TgAb x $\log_2$(PFOA)	123	0.60	0.02 (-0.05, 0.09)	0.05 (-0.05, 0.15)	170	0.74	-0.03 (-0.11, 0.06)	-0.05 (-0.17, 0.07)
TgAb x $\log_2$(PFOS)	123	0.61	-0.04 (-0.12, 0.04)	-0.001 (-0.12, 0.12)	170	0.24	0.03 (-0.07, 0.12)	-0.07 (-0.20, 0.07)
TgAb x $\log_2$(PFNA)	123	0.81	-0.01 (-0.12, 0.10)	0.01 (-0.13, 0.15)	170	0.49	-0.08 (-0.21, 0.04)	-0.02 (-0.18, 0.14)
TgAb x $\log_2$(PFHxS)	123	0.92	-0.02 (-0.08, 0.03)	-0.02 (-0.09, 0.05)	170	0.78	-0.005 (-0.07, 0.06)	0.01 (-0.07, 0.08)

*p-value < 0.05
Median values for TPOAb ranged between 0.6 and 0.7 IU/mL

These models have been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean $\log_{10}$-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, and gestational week at blood draw for PFAS measurement. Thyroid hormone cord serum models also included delivery mode as a covariate.

Table S4 (cont.): Associations between PFAS and thyroid hormones by thyroid antibody levels in multivariable models.

$log_2(TT_3)$								
TPOAb x log_2(PFOA)	125	0.79	0.02 (-0.13, 0.16)	0.05 (-0.10, 0.20)	170	0.17	-0.03 (-0.09, 0.02)	0.03 (-0.04, 0.09)
TPOAb x log_2(PFOS)	125	0.36	-0.07 (-0.24, 0.10)	0.04 (-0.14, 0.21)	170	0.14	-0.05 (-0.12, 0.01)	0.01 (-0.05, 0.08)
TPOAb x log_2(PFNA)	125	0.15	-0.17 (-0.37, 0.04)	0.05 (-0.17, 0.26)	170	0.22	-0.07 (-0.15, 0.02)	0.004 (-0.08, 0.09)
TPOAb x log_2(PFHxS)	125	0.71	-0.01 (-0.12, 0.10)	0.02 (-0.09, 0.13)	170	0.09	-0.03 (-0.07, 0.01)	0.01 (-0.03, 0.06)
TgAb x log_2(PFOA)	125	0.91	0.03 (-0.10, 0.16)	0.04 (-0.14, 0.22)	170	0.73	-0.01 (-0.06, 0.04)	-0.02 (-0.09, 0.05)
TgAb x log_2(PFOS)	125	0.06	-0.09 (-0.24, 0.05)	0.15 (-0.06, 0.37)	170	0.74	-0.02 (-0.08, 0.03)	-0.04 (-0.12, 0.04)
TgAb x log_2(PFNA)	125	0.96	-0.05 (-0.24, 0.14)	-0.06 (-0.30, 0.19)	170	0.32	-0.04 (-0.12, 0.03)	0.01 (-0.08, 0.11)
TgAb x log_2(PFHxS)	125	0.30	-0.02 (-0.12, 0.08)	0.06 (-0.07, 0.19)	170	0.97	-0.02 (-0.06, 0.02)	-0.01 (-0.06, 0.03)
$log_2(FT_4)$								
TPOAb x log_2(PFOA)	126	0.12	0.02 (-0.06, 0.09)	-0.07 (-0.14, 0.01)	170	0.70	-0.02 (-0.07, 0.04)	-0.002 (-0.07, 0.06)
TPOAb x log_2(PFOS)	126	0.09	0.01 (-0.08, 0.09)	-0.09 (-0.18, -0.01)	170	0.80	0.03 (-0.03, 0.10)	0.02 (-0.04, 0.09)
TPOAb x log_2(PFNA)	126	0.81	0.01 (-0.10, 0.12)	-0.01 (-0.12, 0.10)	170	0.37	0.02 (-0.07, 0.10)	-0.04 (-0.12, 0.05)
TPOAb x log_2(PFHxS)	126	0.08	-0.001 (-0.06, 0.05)	-0.07 (-0.13, -0.01)	170	0.83	0.02 (-0.02, 0.06)	0.02 (-0.03, 0.06)
TgAb x log_2(PFOA)	126	0.33	-0.04 (-0.10, 0.03)	0.02 (-0.08, 0.11)	170	0.36	-0.0001 (-0.05, 0.05)	-0.04 (-0.11, 0.03)
TgAb x log_2(PFOS)	126	0.77	-0.05 (-0.12, 0.03)	-0.03 (-0.14, 0.09)	170	0.05	0.05 (0.00, 0.11)	-0.04 (-0.12, 0.04)
TgAb x log_2(PFNA)	126	0.69	-0.02 (-0.12, 0.09)	0.02 (-0.11, 0.14)	170	0.10	0.03 (-0.04, 0.11)	-0.07 (-0.16, 0.03)
TgAb x log_2(PFHxS)	126	0.84	-0.04 (-0.09, 0.01)	-0.03 (-0.09, 0.04)	170	0.02*	0.05 (0.01, 0.09)	-0.02 (-0.06, 0.03)

*p-value < 0.05
Median values for TPOAb ranged between 0.6 and 0.7 IU/mL

These models have been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean log_{10}-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, and gestational week at blood draw for PFAS measurement. Thyroid hormone cord serum models also included delivery mode as a covariate.

Table S4 (cont.): Associations between PFAS and thyroid hormones by thyroid antibody levels in multivariable models.

$log_2(FT_3)$								
TPOAb x log_2(PFOA)	124	0.35	-0.02 (-0.11, 0.06)	0.03 (-0.05, 0.12)	170	0.18	-0.03 (-0.06, 0.00)	0.004 (-0.03, 0.04)
TPOAb x log_2(PFOS)	124	0.34	-0.06 (-0.15, 0.04)	0.004 (-0.09, 0.10)	170	0.52	-0.04 (-0.08, 0.00)	-0.02 (-0.06, 0.02)
TPOAb x log_2(PFNA)	124	0.23	-0.10 (-0.22, 0.01)	-0.003 (-0.12, 0.12)	170	0.64	-0.03 (-0.08, 0.02)	-0.01 (-0.06, 0.04)
TPOAb x log_2(PFHxS)	124	0.78	-0.01 (-0.08, 0.05)	-0.001 (-0.06, 0.06)	170	0.47	-0.02 (-0.05, 0.00)	-0.01 (-0.04, 0.02)
TgAb x log_2(PFOA)	124	0.44	-0.01 (-0.09, 0.06)	0.04 (-0.07, 0.14)	170	0.35	-0.01 (-0.04, 0.02)	-0.03 (-0.08, 0.01)
TgAb x log_2(PFOS)	124	0.02*	-0.08 (-0.16, 0.00)	0.09 (-0.03, 0.21)	170	0.12	-0.02 (-0.05, 0.02)	-0.06 (-0.11, -0.01)
TgAb x log_2(PFNA)	124	0.57	-0.06 (-0.17, 0.05)	-0.01 (-0.15, 0.13)	170	0.12	-0.04 (-0.08, 0.01)	0.02 (-0.04, 0.08)
TgAb x log_2(PFHxS)	124	0.10	-0.04 (-0.09, 0.02)	0.04 (-0.03, 0.11)	170	0.55	-0.01 (-0.04, 0.01)	-0.02 (-0.05, 0.00)

*p-value < 0.05
Median values for TPOAb ranged between 0.6 and 0.7 IU/mL

These models have been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean log_{10}-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, and gestational week at blood draw for PFAS measurement. Thyroid hormone cord serum models also included delivery mode as a covariate.

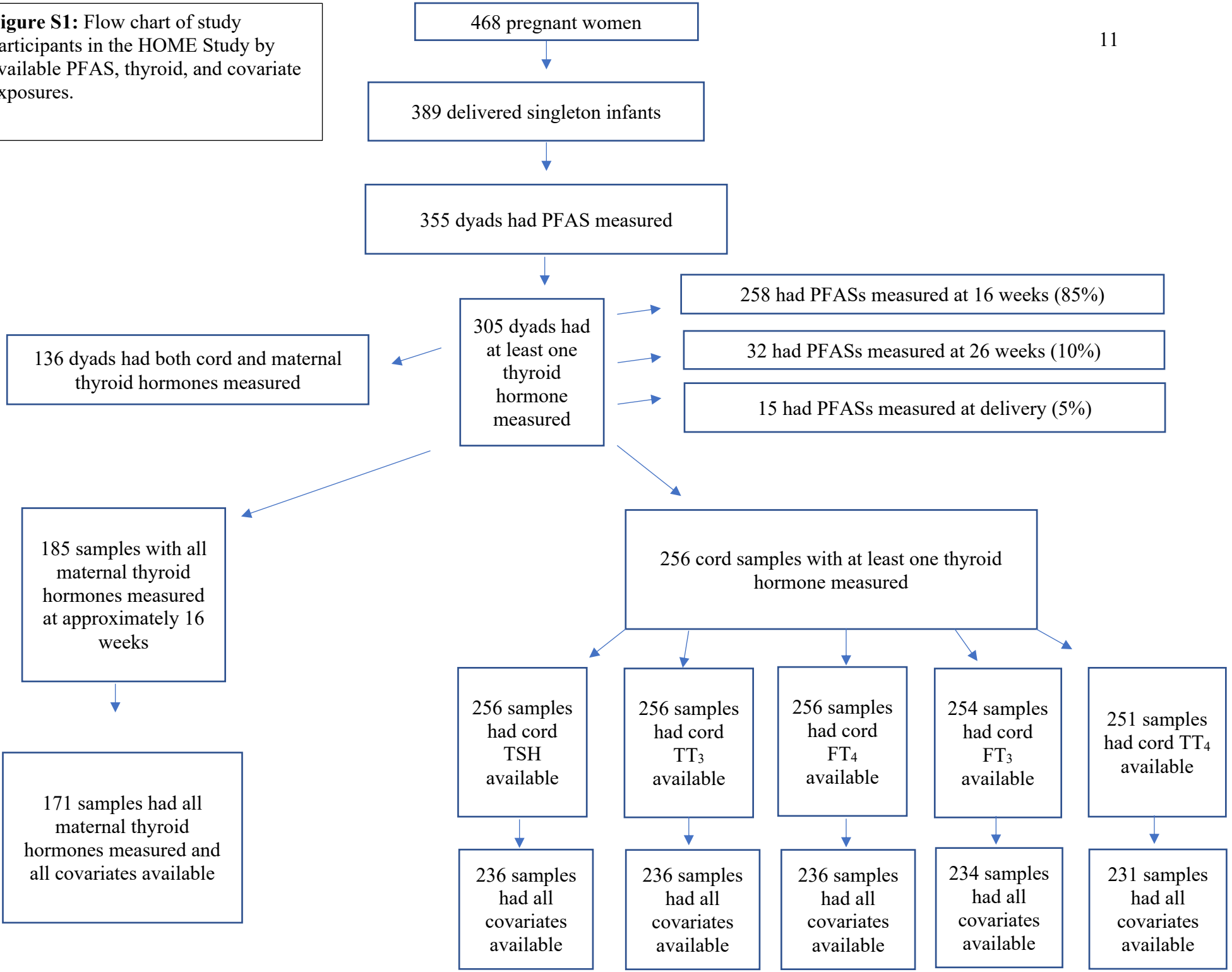
Table S5: Associations between PFAS and thyroid hormones by iodine deficiency status.

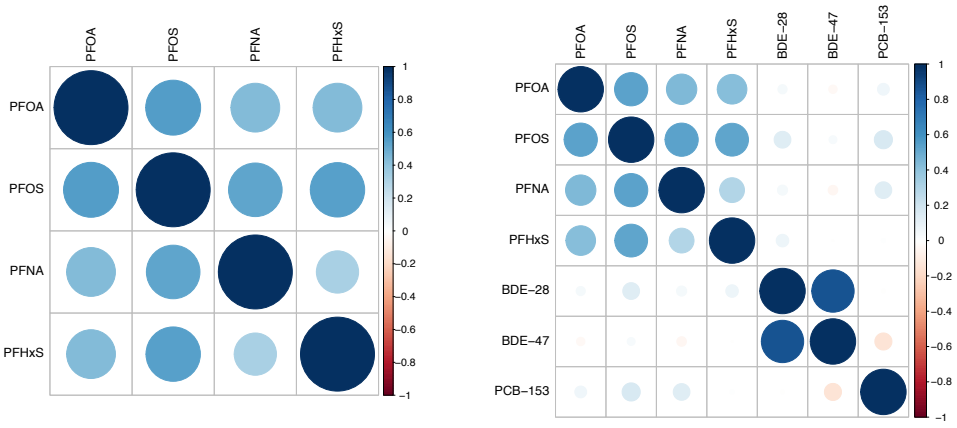
Thyroid Hormones by iodine deficiency and PFAS	Cord Serum				Maternal Serum			
	n	Interaction *p*-value	PFAS with Iodine ≥ 150µg I/g Cr β (95% CI)	PFAS with Iodine <150µg I/g Cr β (95% CI)	*n*	Interaction *p*-value	PFAS with Iodine ≥ 150ug I/g β (95% CI)	PFAS with Iodine <150ug I/g β (95% CI)
$\log_2$(TSH)								
IDS x $\log_2$(PFOA)	180	0.12	0.17 (-0.02, 0.37)	-0.15 (-0.50, 0.21)	135	0.51	0.14 (-0.19, 0.46)	-0.08 (-0.67, 0.50)
IDS x $\log_2$(PFOS)	180	0.39	0.22 (0.01, 0.43)	0.01 (-0.42, 0.44)	135	0.26	-0.07 (-0.44, 0.30)	-0.45 (-1.02, 0.12)
IDS x $\log_2$(PFNA)	180	0.55	0.17 (-0.10, 0.44)	0.02 (-0.41, 0.45)	135	0.80	-0.28 (-0.74, 0.19)	-0.38 (-1.09, 0.33)
IDS x $\log_2$(PFHxS)	180	0.11	0.21 (0.06, 0.36)	-0.01 (-0.23, 0.21)	135	0.60	-0.10 (-0.33, 0.13)	0.01 (-0.33, 0.34)
$\log_2(TT_4)$								
IDS x $\log_2$(PFOA)	176	0.18	0.03 (-0.03, 0.10)	-0.06 (-0.17, 0.06)	135	0.93	-0.04 (-0.14, 0.06)	-0.03 (-0.22, 0.15)
IDS x $\log_2$(PFOS)	176	0.36	-0.01 (-0.08, 0.06)	-0.08 (-0.22, 0.06)	135	0.24	-0.02 (-0.14, 0.10)	0.10 (-0.08, 0.28)
IDS x $\log_2$(PFNA)	176	0.23	0.03 (-0.06, 0.11)	-0.07 (-0.21, 0.07)	135	0.90	-0.04 (-0.19, 0.10)	-0.06 (-0.29, 0.16)
IDS x $\log_2$(PFHxS)	176	0.03*	0.03 (-0.02, 0.07)	-0.08 (-0.15, 0.00)	135	0.40	0.02 (-0.05, 0.10)	-0.03 (-0.14, 0.07)
$\log_2(TT_3)$								
IDS x $\log_2$(PFOA)	180	0.27	0.02 (-0.08, 0.13)	-0.10 (-0.28, 0.09)	135	0.83	-0.00 (-0.06, 0.05)	0.01 (-0.10, 0.11)
IDS x $\log_2$(PFOS)	180	0.71	0.01 (-0.11, 0.12)	-0.04 (-0.27, 0.18)	135	0.92	-0.01 (-0.08, 0.06)	-0.00 (-0.11, 0.10)
IDS x $\log_2$(PFNA)	180	0.38	0.02 (-0.11, 0.16)	-0.09 (-0.31, 0.13)	135	0.58	-0.02 (-0.11, 0.06)	0.02 (-0.11, 0.15)
IDS x $\log_2$(PFHxS)	180	0.03*	0.03 (-0.05, 0.11)	-0.12 (-0.24, 0.01)	135	0.74	-0.01 (-0.05, 0.03)	-0.00 (-0.06, 0.06)
$\log_2(FT_4)$								
IDS x $\log_2$(PFOA)	181	0.81	-0.01 (-0.06, 0.05)	0.01 (-0.09, 0.11)	135	0.68	-0.02 (-0.08, 0.03)	-0.00 (-0.10, 0.10)
IDS x $\log_2$(PFOS)	181	0.56	-0.04 (-0.10, 0.03)	-0.08 (-0.20, 0.05)	135	0.96	0.01 (-0.05, 0.08)	0.01 (-0.09, 0.11)
IDS x $\log_2$(PFNA)	181	0.87	-0.01 (-0.09, 0.06)	-0.00 (-0.13, 0.12)	135	0.73	-0.01 (-0.09, 0.07)	0.02 (-0.10, 0.14)
IDS x $\log_2$(PFHxS)	181	0.08	0.01 (-0.04, 0.05)	-0.06 (-0.13, 0.00)	135	0.53	0.02 (-0.02, 0.06)	-0.00 (-0.06, 0.05)
$\log_2(FT_3)$								
IDS x $\log_2$(PFOA)	179	0.54	0.01 (-0.05, 0.06)	-0.03 (-0.13, 0.07)	135	0.17	-0.01 (-0.04, 0.02)	-0.06 (-0.12, 0.00)
IDS x $\log_2$(PFOS)	179	0.15	-0.01 (-0.07, 0.05)	-0.11 (-0.24, 0.01)	135	0.14	-0.02 (-0.06, 0.01)	-0.07 (-0.13, 0.02)
IDS x $\log_2$(PFNA)	179	0.25	0.04 (-0.04, 0.12)	-0.04 (-0.17, 0.08)	135	0.72	-0.01 (-0.06, 0.04)	0.00 (-0.07, 0.08)
IDS x $\log_2$(PFHxS)	179	0.001*	0.02 (-0.02, 0.06)	-0.11 (-0.17, 0.05)	135	0.33	-0.01 (-0.03, 0.01)	-0.03 (-0.07, 0.00)

*p-value < 0.05
Cr= creatinine, IDS = Iodine deficiency status

These models have been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean $\log_{10}$-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, and gestational week at blood draw for PFAS measurement. Thyroid hormone cord serum models also included delivery mode as a covariate.

Figure S1: Flow chart of study participants in the HOME Study by available PFAS, thyroid, and covariate exposures.





(a) (b)

Figure S2: Correlation between PFAS, BDE-28, BDE-47, and PCB-153. (a) The plot compares the Spearman correlation between chemicals among the 305 samples with PFAS and at least one thyroid hormone measured (n = 305). (b) The plot compares the Spearman correlation between chemicals among the samples with all PFAS, BDE-28, BDE-47, and PCB-153, and at least one thyroid hormone measure (n = 262).

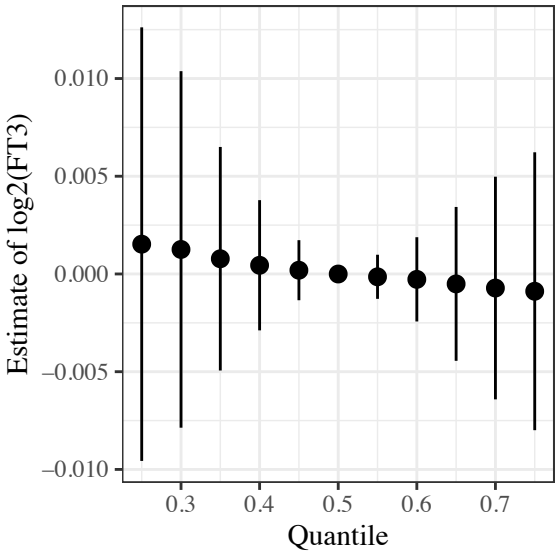
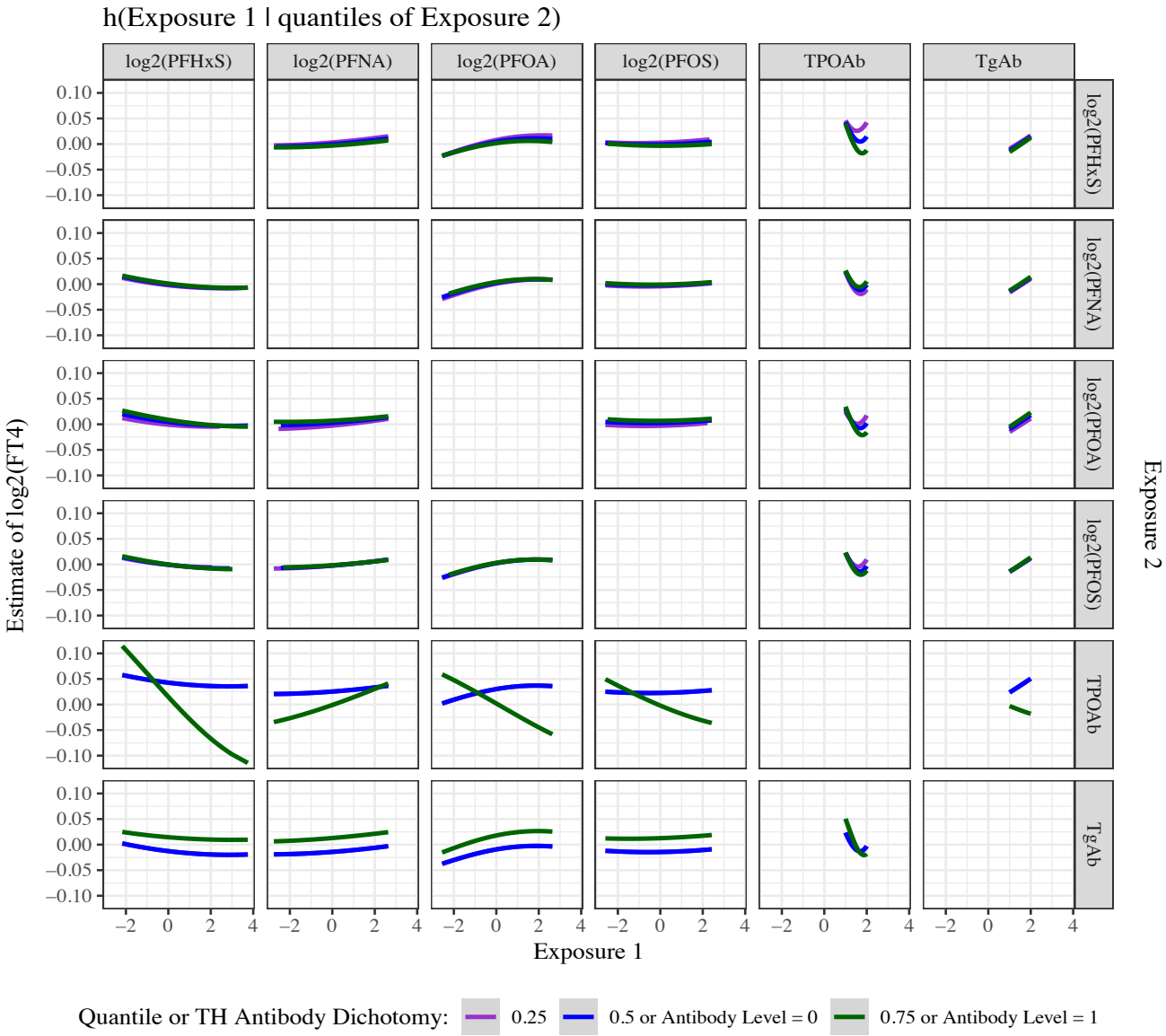


Figure S3: Adjusted association of the overall PFAS mixture on $\log_2$-transformed cord FT_3 from BKMR analysis (n = 171). The plot compares the value of the estimate when all the $\log_2$-transformed PFAS are at the respective quantile compared to when they are at the median. Variation is expressed using 95% credible intervals. The model has been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean $\log_{10}$-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, and gestational week at blood draw for PFAS measurement. All predictors and continuous covariates were also centered to 0 and scaled to a standard deviation of 1.



TH = thyroid hormone

Figure S4: Interactions between exposures within the $\log_2$-transformed cord serum FT_4 BKMR model (n = 236). The plot demonstrates the outcome estimate (y-axis) given different quartiles of exposure 2 (right-hand side) on values of exposure 1 (x-axis). The purple, royal blue, and dark green lines indicate the 25th, 50th, and 75th percentile of exposure 2 respectively. Alternatively, the royal blue line represents the less than or equal to the median value for TPOAb and no detection for TgAb and the dark green line represents greater than the median for TPOAb and detection for TgAb. The model has been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean $\log_{10}$-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, gestational week at blood draw for PFAS measurement, and delivery mode. All predictors and continuous covariates were also centered to 0 and scaled to a standard deviation of 1.

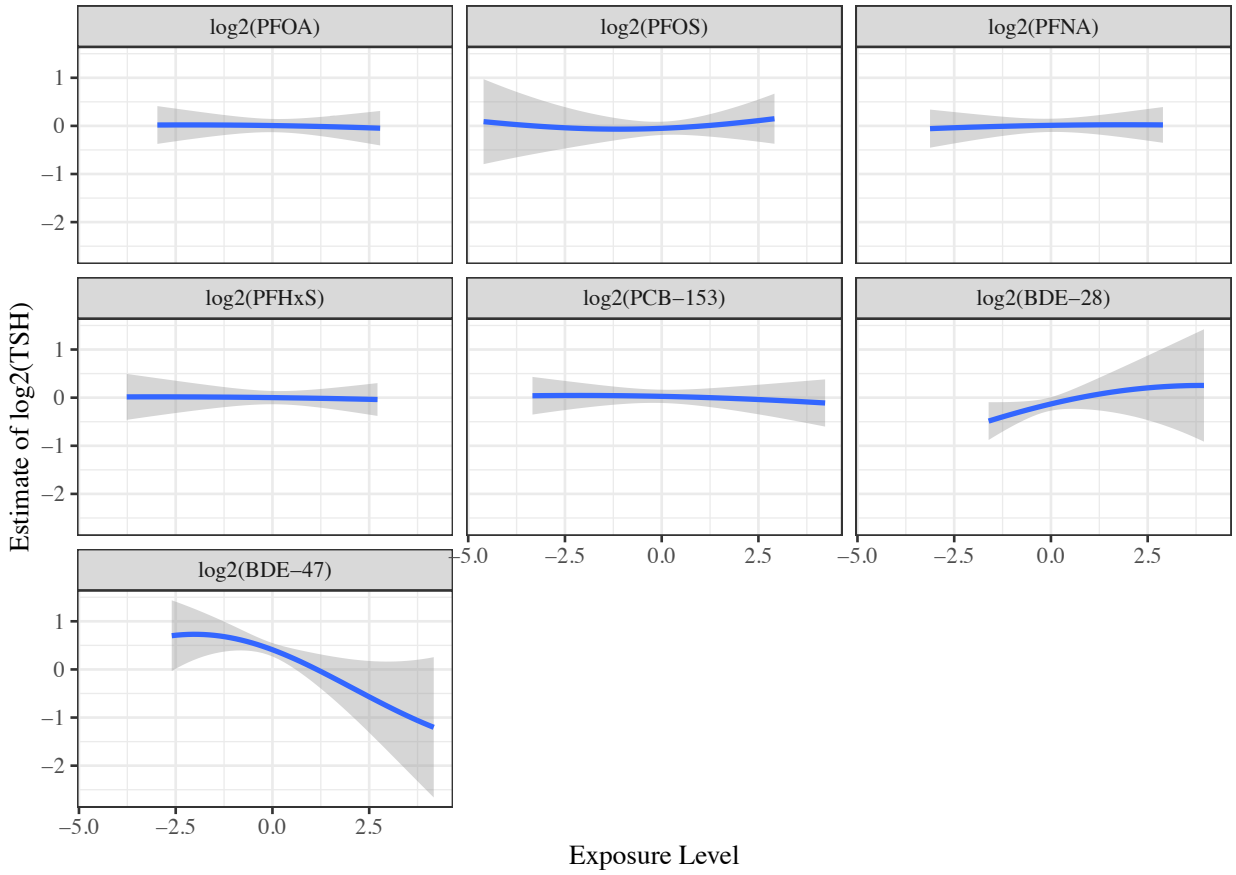


Figure S5: Adjusted associations of $\log_2$-transformed PFAS, BDE-28, BDE-47, and PCB-153 as exposures on $\log_2$-transformed cord serum TSH using BKMR (n = 202). The plot assesses the association between each exposure and the estimate of $\log_2$-transformed TSH while fixing the other exposures to their 50th percentile. 95% CrI are shown in grey to depict variability. The models have been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean $\log_{10}$-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, gestational week at blood draw for PFAS measurement, and delivery mode. All predictors and continuous covariates were also centered to 0 and scaled to a standard deviation of 1.

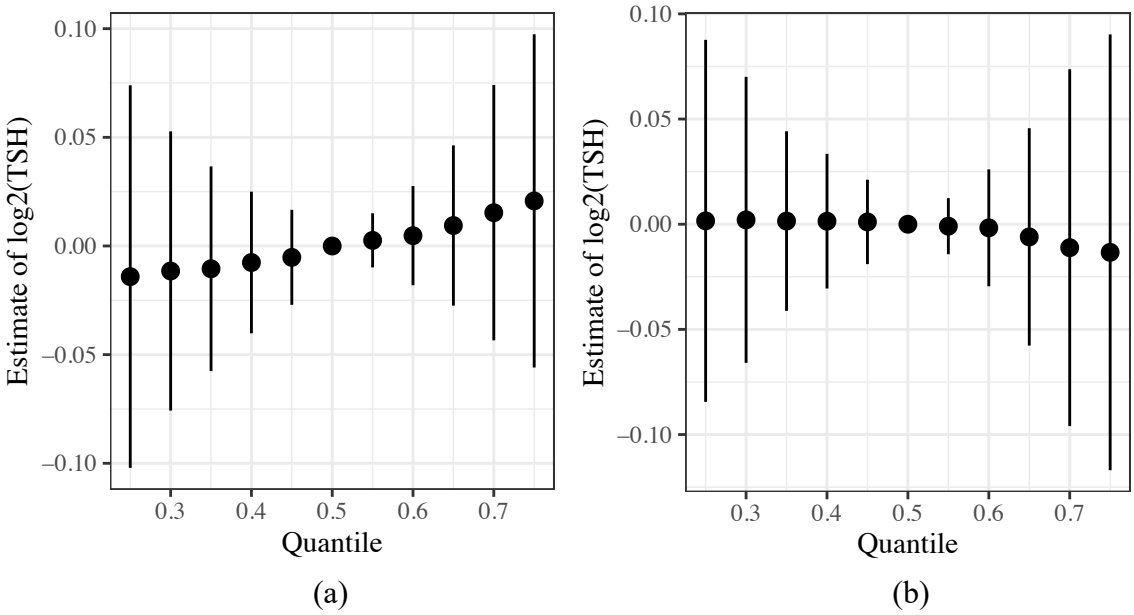


Figure S6: Adjusted association of the overall PFAS mixture on cord serum TSH. Models include (a) $\log_2$-transformed PFOA, PFOS, PFNA, and PFHxS among individuals with PBDE information (n = 202) and (b) PFOA, PFOS, PFNA, PFHxS, BDE-28, BDE-47, and PCB-153 among participants with gestational age of PFAS measurement < 22 weeks (n = 186). The plots compare the value of the estimate when all the $\log_2$-transformed PFAS are at the respective quantile compared to when they are at the median. Variation is expressed using 95% CrI. The models have been adjusted for maternal age at delivery, race/ethnicity, marital status at baseline, maternal education level, household income, mean $\log_{10}$-transformed cotinine, maternal alcohol usage during pregnancy, nulliparity, maternal body mass index based on pre-pregnancy weight in pounds, the child's sex, gestational week at blood draw for PFAS measurement, and delivery mode. All predictors and continuous covariates were also centered to 0 and scaled to a standard deviation of 1.