Supplemental Material For: Prenatal Perfluoroalkyl Substance Exposure and Child Adiposity at 8 Years of Age: The HOME Study

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Supplemental Table S1: Summary of previous prospective cohort studies examining prenatal or early life PFOA or PFOS exposure and child or adult adiposity

Study	N	Recruitment Period[a]	PFAS Exposure Assessment (Average Week of Measurement)	Median PFOA (Range) (ng/mL)	Median PFOS (Range) (ng/mL)	Adiposity Measurement	Results
Maisonet et al. 2012[16]	447	1991-1992	Maternal serum during pregnancy (15 weeks)	3.7 (1.0-16.4)	19.6 (3.8-112)	Weight and height measured by health professionals.	PFOS associated with increased weight at 20 months.
Halldorsson et al. 2012[15]	665	1988-1989	Maternal serum during pregnancy (30 weeks)	3.7 (0.1-19.8)	21.5 (NA)	BMI and waist circumference measured with standardized methods (64%) or self-report (36%).	PFOA associated with increased BMI, waist circumference, risk of overweight/obesity, leptin, and insulin at 20 years of age. Associations were stronger in females.
Andersen et al. 2013[13]	811	1996-2002	Maternal plasma during pregnancy (8 weeks)	5.3 (0.4-17.6)	33.8 (6.4-107)	BMI and waist circumference based on parent-reported measures (67%) or health professionals (33%).	PFOA/PFOS not associated with BMI, risk of overweight/ obesity, or waist circumference at 7 years of age.
Barry et al. 2014[14]	8,764	1967-1988	Estimated exposure in first 3 years of life (N/A)	3.8 (1.3-2272)	NA	BMI based on self-reported weight and height.	PFOA not associated with BMI or risk of overweight/obesity at 20-40 year of age.

a-Participants were not directly recruited in Barry et al. as their exposure was retrospectively assessed. Thus, we report the years of birth of the participants.

Supplemental Table S2: Descriptive statistics of serum PFAS concentrations (ng/mL) in pregnant women from the NHANES in the US (n=174) and pregnant women from the HOME Study in Cincinnati, OH (n=204) (2003-2006)

PFAS/Study Group	N (%) <LOD	Minimum	25th Percentile	Median	75th Percentile	Maximum
PFOA						
HOME	0 (0)	0.5	3.7	5.3	7.7	25
NHANES	0 (0)	0.1	1.2	2.3	3.3	14
PFOS						
HOME	0 (0)	0.4	9.1	13	18	57
NHANES	0 (0)	0.3	6.0	11	15	39
PFNA						
HOME	0 (0)	0.1	0.7	0.9	1.2	2.9
NHANES	2 (1)	0.07	0.4	0.6	0.8	3.0
PFHxS						
HOME	0 (0)	0.1	0.8	1.4	2.3	33
NHANES	13 (7)	0.07	0.5	1.0	2.0	21

*-LOD: Limit of Detection

Supplemental Table S3: Adjusted difference in child adiposity measures at 8 years of age according to maternal serum PFOA concentrations during pregnancy (n=204)[a,b]

PFOA Concentration (ng/mL)	HOME Percentile	NHANES Percentile	BMI z-Score (95% CI)	Waist Circumference (cm) (95% CI)	Body Fat Percent (95% CI)
2.4	5th	50th	Ref	Ref	Ref
3.3	15th	75th	0.13 (-0.01, 0.26)	1.5 (0.3, 2.6)	1.4 (0.5, 2.2)
5.3	50th	~90th	0.23 (-0.07, 0.52)	3.1 (0.6, 5.7)	2.9 (1.1, 4.7)
7.6	75th	>95th	0.07 (-0.25, 0.40)	2.9 (0.1, 5.7)	2.6 (0.6, 4.6)
10.7	90th	>95th	-0.19 (-0.55, 0.17)	1.9 (-1.3, 5.1)	1.6 (-0.7, 3.9)
12.9	95th	>95th	-0.35 (-0.76, 0.06)	1.3 (-2.3, 4.8)	1.0 (-1.6, 3.5)

a- Adjusted for maternal age, race, education, income, parity, marital status, employment, depressive symptoms, BMI at 16 weeks gestation, fruit/vegetable consumption, fish consumption, prenatal vitamin use, and maternal serum cotinine concentrations. The waist circumference model was also adjusted for child age in months.

b-Differences in adiposity are derived from a covariate adjusted 3-knot restricted cubic polynomial spline using serum PFOA concentrations as the predictor and each adiposity measurement as the outcome. We estimated the difference in adiposity for the concentrations presented in the 1st column compared to a reference concentration of 2.4 ng/mL.

Serum PFOA concentrations and the corresponding percentiles among HOME Study women are shown in the first two columns of the table. In the third column, we show the corresponding percentiles among pregnant women in the NHANES for the same serum PFOA concentrations.

Supplemental Table S4: Adjusted difference in child adiposity measures at 8 years of age according to maternal serum PFOS, PFNA, or PFHxS concentrations during pregnancy (n=204)[a]

PFAS Tercile	N Overweight or Obese/N Total	Median (Range) of Concentrations (ng/mL)	BMI Z-score Adjusted Difference (95% CI)	Waist Circumference (cm) Adjusted Difference (95% CI)	Body Fat Percent Adjusted Difference (95% CI)	RR for Being Overweight or Obese (95% CI)
PFOS Tercile 1	20/68	8.2 (0.4-11)	Ref	Ref	Ref	Ref
PFOS Tercile 2	16/68	13 (11-16)	-0.10 (-0.40, 0.21)	-1.0 (-3.7, 1.7)	-0.2 (-2.1, 1.7)	0.87 (0.48, 1.56)
PFOS Tercile 3	15/68	21 (16-57)	-0.11 (-0.43, 0.21)	0.2 (-2.6, 2.9)	0.0 (-2.0, 1.9)	1.08 (0.59, 1.95)
PFNA Tercile 1	15/65	0.6 (0.1-0.7)	Ref	Ref	Ref	Ref
PFNA Tercile 2	19/70	0.9 (0.8-1.0)	-0.12 (-0.43, 0.19)	-0.2 (-2.8, 2.5)	-0.4 (-2.3, 1.5)	1.18 (0.63, 2.22)
PFNA Tercile 3	17/69	1.3 (1.1-2.9)	-0.05 (-0.36, 0.26)	1.1 (-1.6, 3.8)	0.2 (-1.7, 2.2)	1.26 (0.64, 2.48)
PFHxS Tercile 1	17/67	0.7 (0.1-0.9)	Ref	Ref	Ref	Ref
PFHxS Tercile 2	17/68	1.4 (1.0-1.9)	0.22 (-0.10, 0.54)	2.7 (0.0, 5.4)	2.3 (0.3, 4.2)	1.33 (0.72, 2.48)
PFHxS Tercile 3	17/68	2.9 (2.0-33)	0.12 (-0.21, 0.45)	1.1 (-1.7, 3.9)	1.1 (-0.9, 3.1)	1.48 (0.75, 2.96)

a- Adjusted for maternal age, race, education, income, parity, marital status, employment, depressive symptoms, BMI at 16 weeks gestation, fruit/vegetable consumption, fish consumption, prenatal vitamin use, and maternal serum cotinine concentrations. The waist circumference model was also adjusted for child age in months.

Supplemental Figure S1: Adjusted weight and height z-scores slopes between 2 and 8 years of age by maternal PFOA concentration tercile among Cincinnati, OH women and their children [a,b]
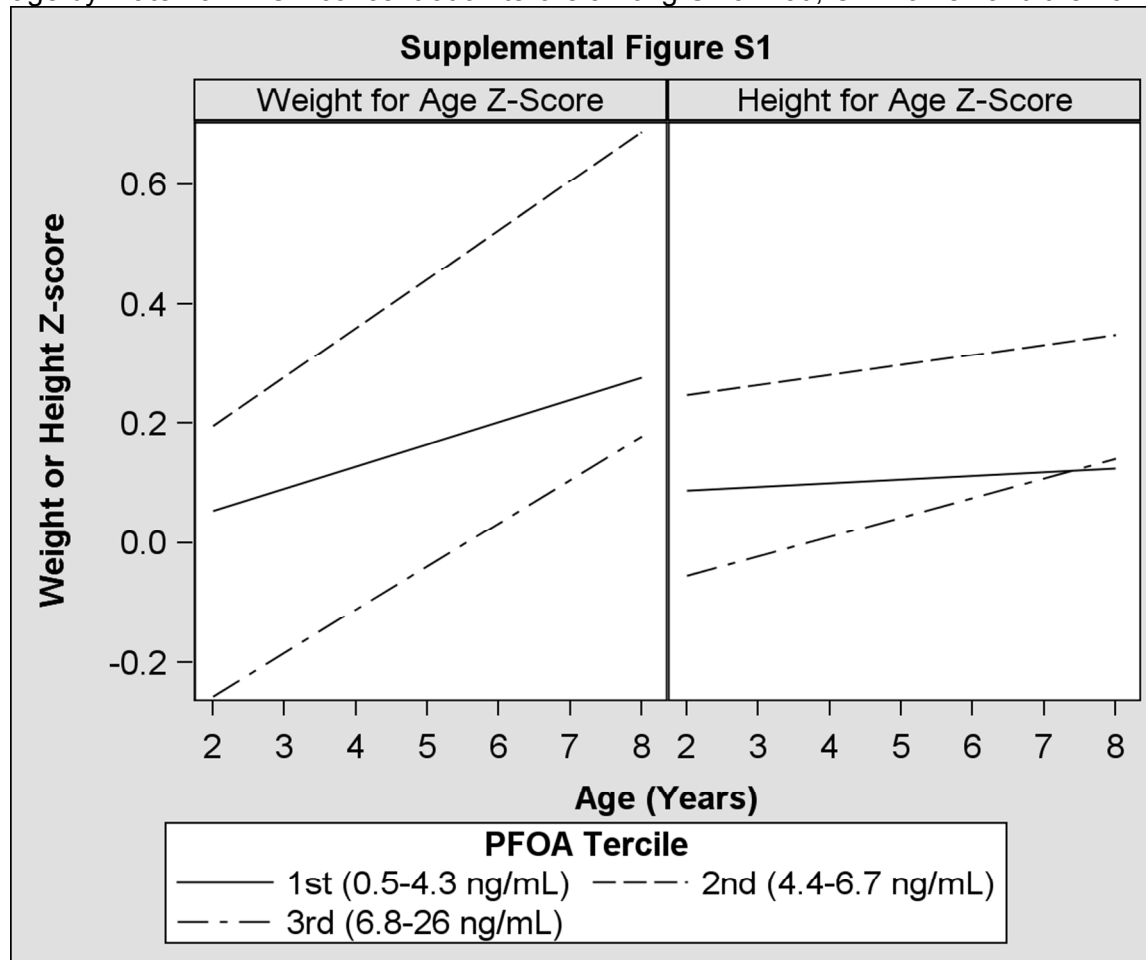
a- Adjusted for maternal age, race, education, income, parity, marital status, employment, depressive symptoms, BMI at 16 weeks gestation, fruit/vegetable consumption, fish consumption, prenatal vitamin use, maternal serum cotinine concentrations, and child age in months.

b-n=285 children with 1,027 (weight) or 1,023 (height) repeated observations.

Children born to women in the 2nd (Change in weight-for-age z-score: 0.49, 95% CI: 0.31, 0.67; 2nd PFOA tercile x age p-value=0.042) and 3rd (Change in weight-for-age z-score: 0.43, 95% CI: 0.23, 0.64; 3rd PFOA tercile x age p-value=0.138) PFOA terciles had greater increases in weight-for-age z-scores between 2 and 8 years of age compared to children in the 1st tercile (Change in weight-for-age z-score: 0.22, 95% CI: 0.04, 0.41).

Height-for-age z-scores were greater among children born to women in the 3rd (Change in height-for-age z-score: 0.20, 95% CI: 0.06, 0.34; 3rd PFOA tercile x age p-value=0.106) PFOA tercile compared to children in the 1st tercile (Change in height-for-age z-score: 0.04, 95% CI: -0.09, 0.17). There was a less pronounced increase in height-for-age z-scores between 2 and 8 years of age among children in the 2nd PFOA tercile (Change in height-for-age z-score: 0.10, 95% CI: -0.02, 0.22; 2nd PFOA tercile x age p-value=0.487).