

WEB APPENDIX

Bayesian Methods

The model had an underlying linear regression model of the form $Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots, n$.

The hierarchical model was of the following form:

$$Y_i | \beta_j \sim N\left(\sum_{j=1}^k \beta_j X_{ij}, \sigma^2\right)$$
$$\beta \sim N(0, \Phi^2) \quad \Phi^2 \sim \text{Half-}N(0, 0.01)$$

Analysis in the Bayesian hierarchical model was run using OpenBUGS, version 322, and R, version 3.0.3 (R Foundation for Statistical Computing, Vienna, Austria). The R2OpenBUGS package was used in R to run OpenBUGS. The following OpenBUGS code was used.

```
# Linear regression
y[i] ~ dnorm(mu[i],tau.c)
mu[i] <- alpha + b[1]*x1[i] + b[2]*x2[i] + b[3]*x3[i]
+ b.par*par[i] + b.bmi*bmi[i] + b.inc*inc[i] + b.smok*smok[i] + b.age*age[i]
}
for (j in 1:J) {
b[j] ~ dnorm (0,phi) }
alpha ~ dnorm(0.0,0.01)
b.par ~ dnorm(0.0,0.01)
b.bmi ~ dnorm(0.0,0.01)
b.inc ~ dnorm(0.0,0.01)
b.smok ~ dnorm(0.0,0.01)
b.age ~ dnorm(0.0,0.01)
phi ~ dnorm(0,0.01)|(0, )
tau.c ~ dgamma(0.001,0.001)
sigma <- 1/sqrt(tau.c)
}
```

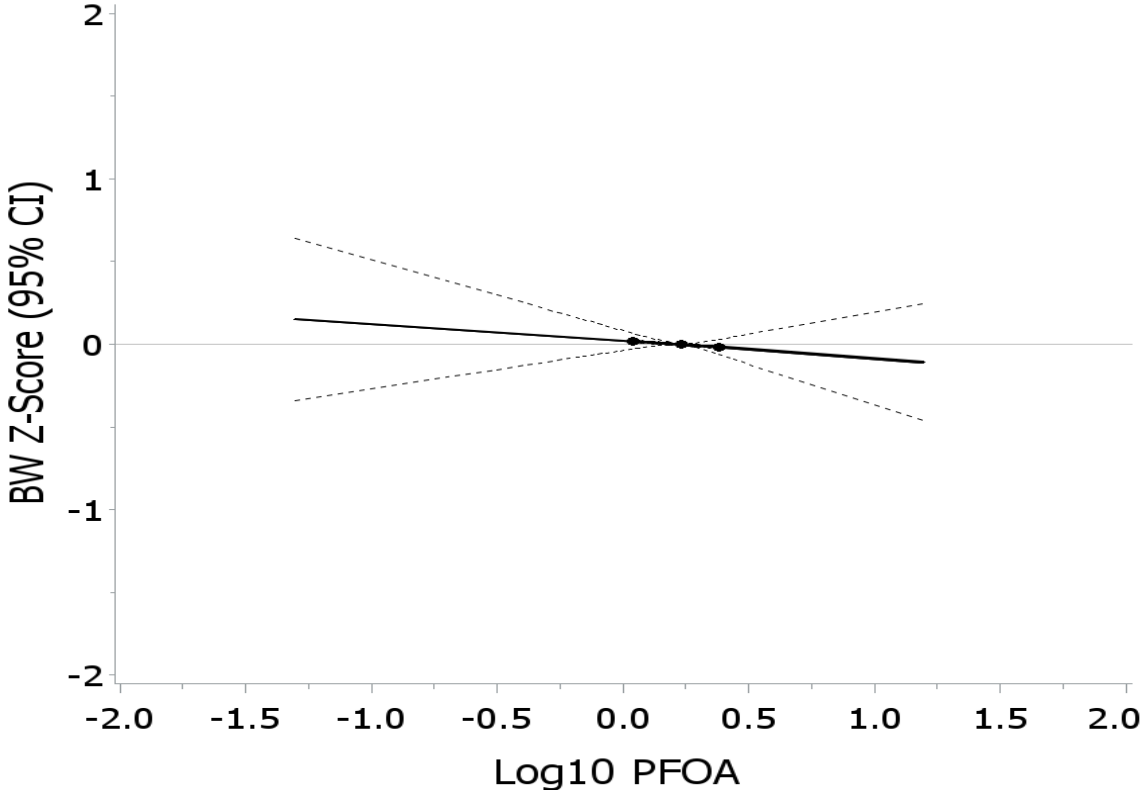
Web Table 1. Pearson Correlation Coefficients for Maternal log₁₀ PFAS Concentrations

	PFOA	PFOS	PFHxS
PFOA	1	0.59	0.47
PFOS		1	0.55
PFHxS			1

Abbreviations: PFAS, perfluoroalkyl substances; PFHxS, perfluorohexanesulfanoate;

PFOA, perfluorooctanoic acid; PFOS, perfluorooctanesulfonate.

Web Figure 1. Restricted cubic spline curve of the relationship between maternal PFOA concentrations (ng/mL) and birth weight z score.



BW, birth weight; CrI, credible interval; PFOA, perfluorooctanoic acid.

Web Table 2. Linear Regression Estimates of Log₁₀ Perfluoroalkyl Substances (ng/mL) and Umbilical Cord Blood Log₁₀ Leptin (ng/mL), Log₁₀ Adiponectin (µg/mL), and Birth Weight z Score, MIREC Study, 2008–2011

	Leptin (n = 1,176)				Adiponectin (n = 1,175)				Birth Weight z Score (n = 1,509)			
	Crude		Adjusted ^a		Crude		Adjusted ^a		Crude		Adjusted ^b	
	β	95% CrI	β	95% CrI	β	95% CrI	β	95% CrI	β	95% CrI	β	95% CrI
PFOA	0.04	-0.11, 0.18	-0.01	-0.15, 0.14	0.05	-0.03, 0.13	0.04	-0.05, 0.13	-0.22	0.45, 0.01	-0.13	-0.39, 0.13
PFOS	-0.09	-0.25, 0.06	-0.10	-0.24, 0.05	-0.02	-0.11, 0.07	-0.02	-0.11, 0.07	0.11	0.14, 0.24	0.07	-0.18, 0.33
PFHxS	0.04	-0.06, 0.14	0.01	-0.08, 0.11	-0.02	-0.08, 0.04	-0.02	-0.08, 0.04	0.08	-0.14, 0.36	0.04	-0.13, 0.21

Abbreviations: CrI, credible interval; MIREC, Maternal-Infant Research on Environmental Contaminants; PFAS, perfluoroalkyl substances; PFHxS, perfluorohexanesulfanoate; PFOA, perfluorooctanoic acid; PFOS, perfluorooctanesulfonate.

^a Adjusted for maternal age, prepregnancy body mass index, sex, and parity.

^b Adjusted for maternal age, prepregnancy body mass index, parity, household income, and smoking; all 3 PFAS were entered into one model.

