

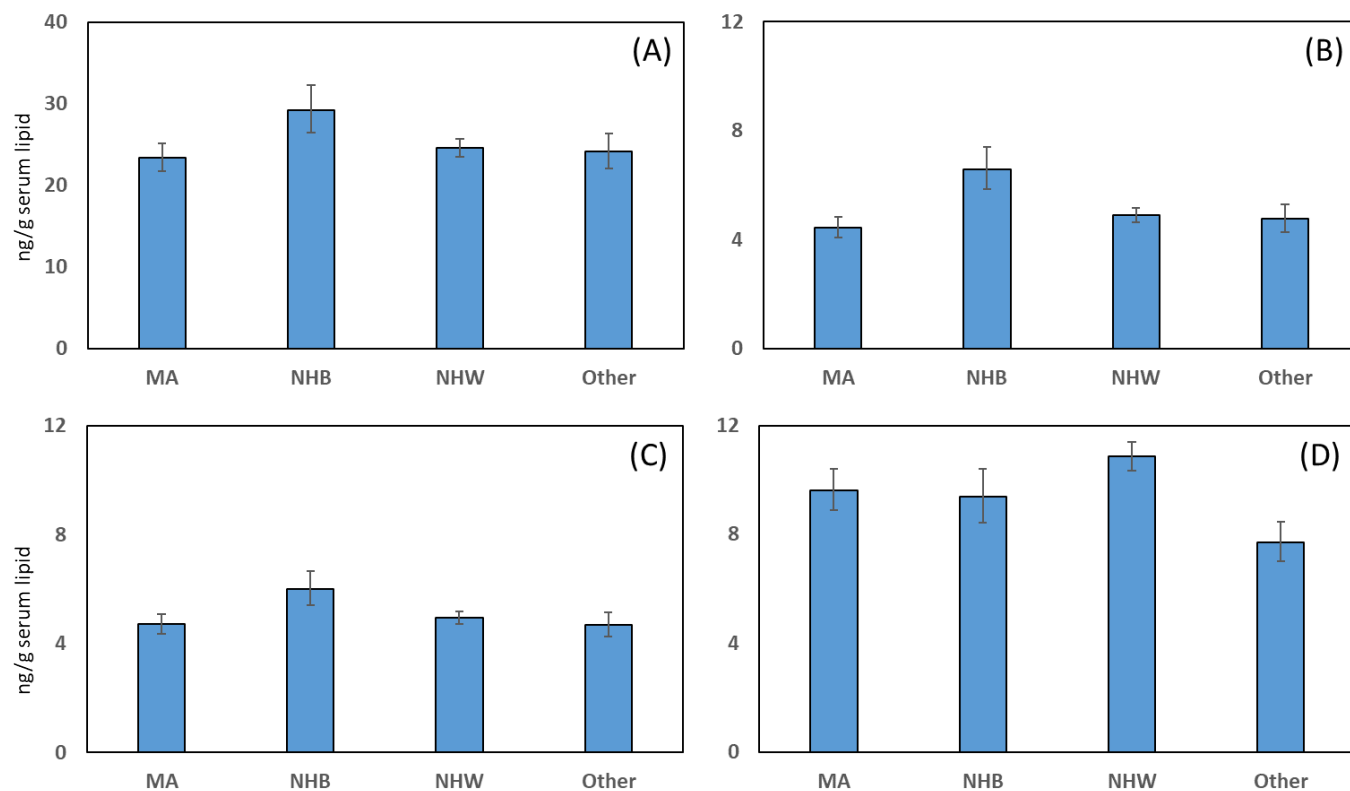
Cover Page for Supporting Information

Manuscript title: POLYBROMINATED DIPHENYL ETHERS, POLYCHLORINATED BIPHENYLS AND PERSISTENT PESTICIDES IN SERUM FROM THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY: 2003 – 2008

Authors: Andreas Sjödin*, Richard S. Jones, Lee-Yang Wong, Samuel P. Caudill, and Antonia M. Calafat.

Affiliation: Centers for Disease Control and Prevention, National Center for Environmental Health, Division of Laboratory Sciences, 4770 Buford Hwy, Atlanta GA 30341, USA.

12 **Figure S1.** Adjusted Geometric Mean (AGM) concentration (ng/g lipid) by race/ethnicity for BDE47 (A), BDE99
13 (B), BDE100 (C), and BDE153 (D). Bars indicate 95% confidence interval. MA = Mexican American; NHB = Non-
14 Hispanic Black; Non-Hispanic White; and Other = subjects not categorized into specific ethnic group.



17 **Figure S2.** Least Square Geometric Mean (LSGM) concentration (ng/g lipid) by age group and survey
 18 period for BDE28 (A) and BB153 (B). Bars indicates 95% confidence interval.

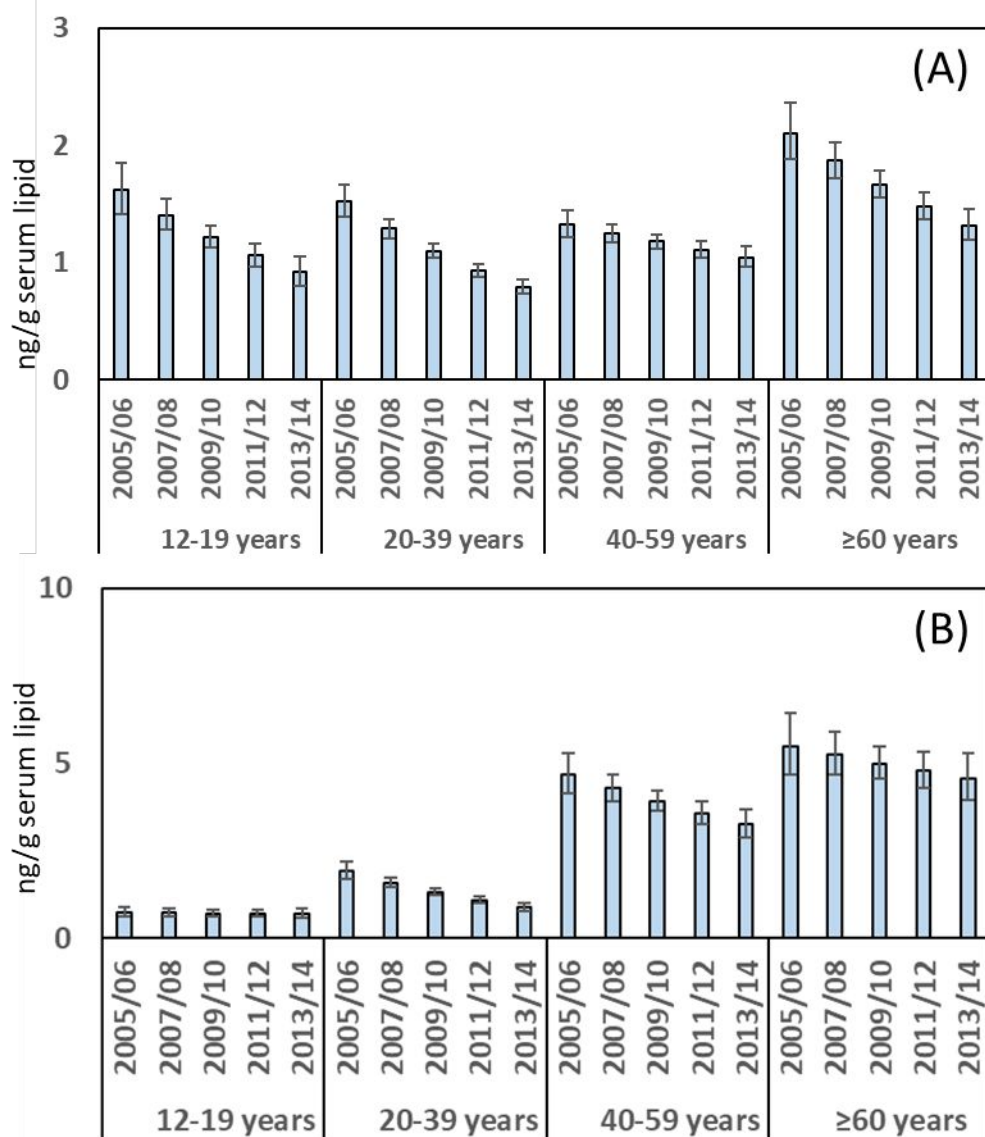


Table S1. Number of pools measured for polybrominated diphenyl ethers and 2,2',4,4',5,5'-hexabromobiphenyl by survey period, race / ethnicity, sex and age group.

Race / Ethnicity	Sex	Age Group	Survey period				
			2005/06	2007/08	2009/10	2011/12	2013/14
MexicanAmerican	Female	12-19 Years	16	5	7	4	7
		20-39 Years	9	8	10	4	5
		40-59 Years	6	6	9	3	6
		≥60+ Years	3	5	6	3	5
	Male	12-19 Years	11	6	8	5	7
		20-39 Years	9	9	8	4	5
		40-59 Years	4	6	8	4	5
		≥60+ Years	4	5	5	2	4
Non-Hispanic_Black	Female	12-19 Years	14	5	6	6	6
		20-39 Years	7	8	7	8	8
		40-59 Years	7	8	7	8	8
		≥60+ Years	5	7	7	8	8
	Male	12-19 Years	13	6	6	7	6
		20-39 Years	6	6	7	9	7
		40-59 Years	5	6	7	7	7
		≥60+ Years	5	8	9	9	9
Non-Hispanic_White	Female	12-19 Years	10	7	8	5	6
		20-39 Years	16	13	19	13	15
		40-59 Years	13	17	17	11	16
		≥60+ Years	17	21	22	14	20
	Male	12-19 Years	9	6	10	6	8
		20-39 Years	12	15	17	12	14
		40-59 Years	12	16	17	12	14
		≥60+ Years	15	23	21	12	17
Other	Female	12-19 Years	3	3	5	8	8
		20-39 Years	4	7	8	12	11
		40-59 Years	2	6	8	11	12
		≥60+ Years	1	6	7	7	8
	Male	12-19 Years	2	4	5	6	7
		20-39 Years	3	6	8	12	9
		40-59 Years	3	6	7	10	10
		≥60+ Years	1	4	5	9	6

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Table S2. Adjusted geometric mean (AGM, ng/g lipid) and 95% confidence interval (CI) by demographic groups for 2,4,4'-tribromodiphenyl ether (BDE28).

Category	AGM	95% CI	Pairwise comparison: Level of significance (p)		
Race/Ethnicity (p = 0.026)			MA	NHB	NHW
Mexican American	1.21	(1.14 - 1.29)	---		
Non-Hispanic - Black	1.28	(1.17 - 1.40)	0.3	---	
Non-Hispanic - White	1.29	(1.24 - 1.35)	0.07	0.9	---
Other	1.28	(1.18 - 1.38)	0.3	1.0	0.8
Sex (p < 0.05)			Sex		
Female	1.22	(1.17 - 1.28)	<0.05		
Male	1.31	(1.25 - 1.37)			
Age and Survey (Interaction term): p < 0.001					
Survey NHANES 2005/06			12-19 years	20-39 years	40-59 years ≥60 years
12-19 years	1.62	(1.41 - 1.85)	---		
20-39 years	1.52	(1.39 - 1.66)	0.4	---	
40-59 years	1.33	(1.22 - 1.45)	<0.05	<0.05	---
≥60 years	2.10	(1.88 - 2.36)	<0.01	<0.0001	<0.0001 ---
Survey NHANES 2007/08					
12-19 years	1.40	(1.28 - 1.55)	---		
20-39 years	1.29	(1.21 - 1.37)	0.1	---	
40-59 years	1.25	(1.17 - 1.33)	<0.05	0.5	---
≥60 years	1.87	(1.72 - 2.03)	<0.0001	<0.0001	<0.0001 ---
Survey NHANES 2009/10					
12-19 years	1.22	(1.13 - 1.32)	---		
20-39 years	1.10	(1.04 - 1.16)	<0.05	---	
40-59 years	1.18	(1.12 - 1.24)	0.5	<0.05	---
≥60 years	1.66	(1.56 - 1.78)	<0.0001	<0.0001	<0.0001 ---
Survey NHANES 2011/12					
12-19 years	1.06	(0.96 - 1.16)	---		
20-39 years	0.930	(0.88 - 0.99)	<0.05	---	
40-59 years	1.11	(1.04 - 1.18)	0.4	<0.0001	---
≥60 years	1.48	(1.37 - 1.60)	<0.0001	<0.0001	<0.0001 ---
Survey NHANES 2013/14					
12-19 years	0.92	(0.80 - 1.05)	---		
20-39 years	0.79	(0.73 - 0.86)	0.07	---	
40-59 years	1.04	(0.96 - 1.14)	0.10	<0.0001	---
≥60 years	1.32	(1.19 - 1.46)	<0.0001	<0.0001	<0.001 ---

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Table S3. Adjusted geometric mean (AGM, ng/g lipid) and 95% confidence interval (CI) by demographic groups for 2,2',4,4',5-pentabromodiphenyl ether (BDE99).

Category	AGM	95% CI	Pairwise comparison: Level of significance (p)			
Race/Ethnicity (p < 0.0001)			MA	NHB	NHW	Other
Mexican American	4.44	(4.07 - 4.83)	---			
Non-Hispanic - Black	6.57	(5.84 - 7.40)	<0.0001	---		
Non-Hispanic - White	4.89	(4.63 - 5.16)	0.05	<0.0001	---	
Other	4.76	(4.28 - 5.28)	0.3	<0.0001	0.7	---
Sex (p < 0.0001)			Sex			
Female	4.71	(4.43 - 5.00)	<0.0001			
Male	5.53	(5.19 - 5.89)				
Age and Survey (Interaction term): p < 0.0001						
Survey NHANES 2005/06			12-19 years	20-39 years	40-59 years	≥60 years
12-19 years	10.2	(8.45 - 12.2)	---			
20-39 years	6.81	(6.04 - 7.68)	<0.001	---		
40-59 years	4.74	(4.20 - 5.34)	<0.0001	<0.0001	---	
≥60 years	7.97	(6.84 - 9.28)	<0.05	0.1	<0.0001	---
Survey NHANES 2007/08						
12-19 years	8.31	(7.29 - 9.47)	---			
20-39 years	5.47	(5.02 - 5.96)	<0.0001	---		
40-59 years	4.43	(4.07 - 4.83)	<0.0001	<0.001	---	
≥60 years	6.70	(6.00 - 7.49)	<0.05	<0.01	<0.0001	---
Survey NHANES 2009/10						
12-19 years	6.80	(6.11 - 7.57)	---			
20-39 years	4.40	(4.10 - 4.72)	<0.0001	---		
40-59 years	4.15	(3.86 - 4.46)	<0.0001	0.2	---	
≥60 years	5.64	(5.15 - 6.16)	<0.01	<0.0001	<0.0001	---
Survey NHANES 2011/12						
12-19 years	5.56	(4.88 - 6.33)	---			
20-39 years	3.53	(3.25 - 3.85)	<0.0001	---		
40-59 years	3.88	(3.56 - 4.23)	<0.0001	0.10	---	
≥60 years	4.74	(4.28 - 5.25)	0.05	<0.0001	<0.01	---
Survey NHANES 2013/14						
12-19 years	4.55	(3.79 - 5.46)	---			
20-39 years	2.84	(2.52 - 3.19)	<0.0001	---		
40-59 years	3.63	(3.23 - 4.08)	<0.05	<0.001	---	
≥60 years	3.99	(3.46 - 4.59)	0.3	<0.001	0.3	---

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Table S4. Adjusted geometric mean (AGM, ng/g lipid) and 95% confidence interval (CI) by demographic groups for 2,2',4,4',6-pentabromodiphenyl ether BDE100.

Category	AGM	95% CI	Pairwise comparison: Level of significance (p)			
Race/Ethnicity (p < 0.01)			MA	NHB	NHW	Other
Mexican American	4.72	(4.37 - 5.09)	---			
Non-Hispanic - Black	6.00	(5.40 - 6.67)	<0.001	---		
Non-Hispanic - White	4.96	(4.73 - 5.20)	0.3	<0.01	---	
Other	4.69	(4.27 - 5.14)	0.9	<0.001	0.3	---
Sex (p < 0.0001)			Sex			
Female	4.72	(4.47 - 4.98)	<0.0001			
Male	5.43	(5.14 - 5.74)				
Age and Survey (Interaction term): p < 0.001						
Survey NHANES 2005/06			12-19 years	20-39 years	40-59 years	≥60 years
12-19 years	8.30	(7.05 - 9.77)	---			
20-39 years	6.60	(5.93 - 7.34)	<0.05	---		
40-59 years	4.55	(4.09 - 5.05)	<0.0001	<0.0001	---	
≥60 years	7.09	(6.19 - 8.12)	0.1	0.4	<0.0001	---
Survey NHANES 2007/08						
12-19 years	7.12	(6.34 - 7.99)	---			
20-39 years	5.59	(5.18 - 6.04)	<0.001	---		
40-59 years	4.34	(4.02 - 4.69)	<0.0001	<0.0001	---	
≥60 years	6.30	(5.71 - 6.95)	0.1	<0.05	<0.0001	---
Survey NHANES 2009/10						
12-19 years	6.10	(5.55 - 6.71)	---			
20-39 years	4.74	(4.45 - 5.05)	<0.0001	---		
40-59 years	4.15	(3.89 - 4.42)	<0.0001	<0.01	---	
≥60 years	5.60	(5.17 - 6.06)	0.2	<0.001	<0.0001	---
Survey NHANES 2011/12						
12-19 years	5.23	(4.66 - 5.87)	---			
20-39 years	4.02	(3.73 - 4.33)	<0.001	---		
40-59 years	3.96	(3.67 - 4.27)	<0.001	0.8	---	
≥60 years	4.97	(4.54 - 5.45)	0.5	<0.001	<0.0001	---
Survey NHANES 2013/14						
12-19 years	4.49	(3.81 - 5.27)	---			
20-39 years	3.41	(3.07 - 3.78)	<0.01	---		
40-59 years	3.78	(3.41 - 4.20)	0.08	0.1	---	
≥60 years	4.42	(3.90 - 5.01)	0.9	<0.01	0.05	---

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Table S5. Adjusted geometric mean (AGM, ng/g lipid) and 95% confidence interval (CI) by demographic groups for 2,2',4,4',5,5'-hexabromodiphenyl ether (BDE153).

Category	AGM	95% CI	Pairwise comparison: Level of significance (p)			
Race/Ethnicity (p < 0.0001)			MA	NHB	NHW	Other
Mexican American	9.62	(8.90 - 10.4)	---			
Non-Hispanic - Black	9.37	(8.43 - 10.4)	0.7	---		
Non-Hispanic - White	10.86	(10.4 - 11.4)	<0.05	<0.05	---	
Other	7.69	(7.00 - 8.45)	<0.001	<0.05	<0.0001	---
Sex (p < 0.0001)			Sex			
Female	7.94	(7.52 - 8.38)	<0.0001			
Male	10.93	(10.3 - 11.6)				
Age and Survey (Interaction term): p < 0.0001						
Survey NHANES 2005/06			12-19 years	20-39 years	40-59 years	≥60 years
12-19 years	11.28	(9.57 - 13.3)	---			
20-39 years	9.88	(8.88 - 11.0)	0.2	---		
40-59 years	7.10	(6.38 - 7.91)	<0.0001	<0.0001	---	
≥60 years	7.48	(6.52 - 8.57)	<0.001	<0.01	0.5	---
Survey NHANES 2007/08						
12-19 years	10.76	(9.57 - 12.1)	---			
20-39 years	9.63	(8.91 - 10.4)	0.1	---		
40-59 years	7.93	(7.34 - 8.57)	<0.0001	<0.001	---	
≥60 years	8.10	(7.34 - 8.95)	<0.001	<0.01	0.7	---
Survey NHANES 2009/10						
12-19 years	10.27	(9.33 - 11.3)	---			
20-39 years	9.38	(8.80 - 9.99)	0.1	---		
40-59 years	8.86	(8.31 - 9.45)	<0.01	0.2	---	
≥60 years	8.78	(8.11 - 9.52)	<0.05	0.2	0.9	---
Survey NHANES 2011/12						
12-19 years	9.80	(8.72 - 11.0)	---			
20-39 years	9.14	(8.47 - 9.86)	0.3	---		
40-59 years	9.89	(9.16 - 10.7)	0.9	0.1	---	
≥60 years	9.52	(8.68 - 10.4)	0.7	0.5	0.5	---
Survey NHANES 2013/14						
12-19 years	9.35	(7.94 - 11.0)	---			
20-39 years	8.90	(8.01 - 9.89)	0.6	---		
40-59 years	11.04	(9.94 - 12.3)	0.09	<0.01	---	
≥60 years	10.32	(9.10 - 11.7)	0.3	0.07	0.4	---

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Table S6. Adjusted geometric mean (AGM, ng/g lipid) and 95% confidence interval (CI) by demographic groups for 2,2',4,4',5,6'-hexabromodiphenyl ether (BDE154). NHANES 2011/12 and 2013/14 included only due to change in limit of detection.

Category	AGM	95% CI	Pairwise comparison: Level of significance (p)			
Race/Ethnicity (p < 0.0001)			MA	NHB	NHW	Other
Mexican American	0.46	(0.39 - 0.55)	---			
Non-Hispanic - Black	0.48	(0.41 - 0.56)	0.7	---		
Non-Hispanic - White	0.36	(0.34 - 0.39)	<0.05	<0.001	---	
Other	0.33	(0.28 - 0.38)	<0.01	<0.001	0.1	---
Sex (p < 0.01)			Sex			
Female	0.37	(0.34 - 0.41)	<0.01			
Male	0.43	(0.40 - 0.48)				
Survey (p=0.3)			Survey			
2011/12	0.41	(0.38 - 0.45)	0.3			
2013/14	0.39	(0.36 - 0.43)				
Age (p < 0.0001)			12-19 years	20-39 years	40-59 years	≥60 years
12-19 years	0.49	(0.42 - 0.57)	---			
20-39 years	0.33	(0.30 - 0.37)	<0.0001	---		
40-59 years	0.38	(0.34 - 0.42)	<0.01	<0.05	---	
≥60 years	0.43	(0.38 - 0.49)	0.1	<0.001	0.1	---

Table S7. Adjusted geometric mean (AGM, ng/g lipid) and 95% confidence interval (CI) by demographic groups for decabromodiphenyl ether (BDE209). NHANES 2011/12 and 2013/14 included only due to change in limit of detection.

Category	AGM	95% CI	Pairwise comparison: Level of significance (p)			
Race/Ethnicity (p = 0.08)			MA	NHB	NHW	Other
Mexican American	2.72	(2.37 - 3.12)	---			
Non-Hispanic - Black	2.79	(2.48 - 3.15)	0.8	---		
Non-Hispanic - White	2.42	(2.29 - 2.55)	0.1	<0.05	---	
Other	2.60	(2.33 - 2.90)	0.6	0.4	0.2	---
Survey (P<0.0001)			Survey			
2011/12	2.92	(2.72 - 3.13)	<0.0001			
2013/14	2.36	(2.20 - 2.53)				
Age and Sex (Interaction term): p < 0.01						
Female			12-19 years	20-39 years	40-59 years	≥60 years
12-19 years	2.59	(2.20 - 3.06)	---			
20-39 years	2.24	(2.01 - 2.49)	0.1	---		
40-59 years	2.23	(2.00 - 2.48)	0.1	0.9	---	
≥60 years	2.52	(2.23 - 2.86)	0.8	0.1	0.1	---
Male						
12-19 years	2.36	(2.01 - 2.77)	---			
20-39 years	3.06	(2.75 - 3.41)	<0.01	---		
40-59 years	3.24	(2.91 - 3.62)	<0.001	0.4	---	
≥60 years	2.97	(2.59 - 3.40)	<0.05	0.7	0.3	---

Table S8. Adjusted geometric mean (AGM, ng/g lipid) and 95% confidence interval (CI) by demographic groups for 2,2',4,4',5,5'-Hexabromobiphenyl (BB153).

Category	AGM	95% CI	Pairwise comparison: Level of significance (p)			
Race/Ethnicity (p < 0.0001)			MA	NHB	NHW	Other
Mexican American	2.11	(1.92 - 2.30)	---			
Non-Hispanic - Black	2.34	(2.06 - 2.65)	0.2	---		
Non-Hispanic - White	2.41	(2.28 - 2.55)	<0.05	0.7	---	
Other	1.53	(1.37 - 1.71)	<0.0001	<0.0001	<0.0001	---
Sex (p < 0.0001)			Sex			
Female	1.74	(1.63 - 1.85)	<0.0001			
Male	2.45	(2.29 - 2.62)				
Age and Survey (Interaction term): p < 0.001						
Survey NHANES 2005/06			12-19 years	20-39 years	40-59 years	≥60 years
12-19 years	0.74	(0.61 - 0.90)	---			
20-39 years	1.92	(1.70 - 2.18)	<0.0001	---		
40-59 years	4.68	(4.13 - 5.30)	<0.0001	<0.0001	---	
≥60 years	5.48	(4.67 - 6.43)	<0.0001	<0.0001	0.1	---
Survey NHANES 2007/08						
12-19 years	0.73	(0.64 - 0.84)	---			
20-39 years	1.59	(1.45 - 1.74)	<0.0001	---		
40-59 years	4.28	(3.91 - 4.68)	<0.0001	<0.0001	---	
≥60 years	5.24	(4.66 - 5.88)	<0.0001	<0.0001	<0.01	---
Survey NHANES 2009/10						
12-19 years	0.72	(0.64 - 0.80)	---			
20-39 years	1.31	(1.22 - 1.42)	<0.0001	---		
40-59 years	3.91	(3.63 - 4.22)	<0.0001	<0.0001	---	
≥60 years	5.00	(4.56 - 5.49)	<0.0001	<0.0001	<0.0001	---
Survey NHANES 2011/12						
12-19 years	0.70	(0.61 - 0.81)	---			
20-39 years	1.09	(0.99 - 1.19)	<0.0001	---		
40-59 years	3.58	(3.27 - 3.91)	<0.0001	<0.0001	---	
≥60 years	4.78	(4.29 - 5.32)	<0.0001	<0.0001	<0.0001	---
Survey NHANES 2013/14						
12-19 years	0.69	(0.57 - 0.84)	---			
20-39 years	0.90	(0.79 - 1.02)	<0.05	---		
40-59 years	3.27	(2.89 - 3.69)	<0.0001	<0.0001	---	
≥60 years	4.57	(3.94 - 5.29)	<0.0001	<0.0001	<0.001	---

37 **Table S9.** Percentiles of total percent body fat percentage by sex and age group for NHANES 2005/06. ¹
 38 Imputed values in original data set removed prior to calculating percentiles of total percent body fat.

Sex	Age category (Years)	Number of measurements	Percentile of total body fat (%)				
			P10	P25	P50	P75	P90
Females	<12	1685	22.6	26.2	32.1	37.3	42.0
	12-19	4220	26.0	28.7	33.6	39.3	43.9
	20-39	2415	28.4	32.9	37.7	42.1	45.3
	40-59	2425	30.9	35.5	39.9	43.6	46.6
	≥60	1025	34.4	38.1	42.5	45.4	47.9
Males	<12	1615	19.5	22.3	26.9	36.0	40.8
	12-19	4460	15.4	17.5	22.0	28.7	35.1
	20-39	2890	17.5	21.8	25.5	29.0	32.6
	40-59	2540	20.1	23.9	27.7	31.1	33.9
	≥60	1115	22.5	25.8	29.6	33.1	36.0

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48