eTable 1. Individual toxicants by NHANES Cycle (2007-2016)

	All (2007-2016)		2007-2008		2009-2010		2011-2012		2013-2014		2015-2016	
Toxicant	**N missing**	**Statistics**	**N missing**	**Statistics**	**N missing**	**Statistics**	**N missing**	**Statistics**	**N missing**	**Statistics**	**N missing**	**Statistics**
PAHs*												
Unweighted N		7,090		1,390		1,510		1,354		1,414		1,422
Weighted N		173,544,330		33,185,220		34,708,969		35,108,975		34,911,478		35,629,688
1-hydroxynaphthalene (ng/L), median [Q1, Q3]	130	1558.7 [651.8, 5309.9]	57	2223.5 [901.3, 8247.8]	0	1830.8 [757.7, 5640.7]	0	1597.2 [636.2, 4970.6]	7	1249.1 [537.4, 3869.7]	66	1271.1 [542.1, 3893.9]
2-hydroxynaphthalene (ng/L), median [Q1, Q3]	62	4225.5 [1868.4, 10121.4]	33	3891.4 [1877.6, 9396.9]	0	3522.7 [1569.8, 8250.6]	0	4436.5 [1906.4, 10645.0]	4	4237.6 [1770.6, 10310.5]	25	5262.7 [2274.6, 11616.5]
3-hydroxyfluorene (ng/L), median [Q1, Q3]	25	79.7 [38.7, 226.8]	15	97.7 [48.5, 342.2]	2	78.5 [39.0, 217.6]	4	78.4 [40.3, 225.2]	0	68.6 [31.4, 194.6]	4	74.3 [32.0, 198.1]
2-hydroxyfluorene (ng/L), median [Q1, Q3]	11	213.8 [101.9, 524.5]	11	280.0 [143.8, 796.0]	0	221.3 [107.3, 539.5]	0	227.6 [110.4, 585.2]	0	159.6 [80.5, 416.6]	0	181.8 [84.1, 413.5]
3-hydroxyphenanthrene (ng/L), median [Q1, Q3]	2842	75.9 [38.0, 154.2]	5	103.2 [53.5, 190.3]	1	70.5 [35.5, 133.0]	0	63.0 [30.5, 134.1]	1414	- - -	1422	- - -
1-hydroxyphenanthrene (ng/L), median [Q1, Q3]	1	122.8 [64.8, 225.8]	0	145.7 [80.9, 259.7]	1	140.5 [72.8, 239.3]	0	131.3 [70.5, 252.2]	0	95.6 [52.1, 178.8]	0	102.6 [56.7, 195.1]
2-hydroxyphenanthrene (ng/L), median [Q1, Q3]	2855	67.0 [36.4, 124.0]	17	69.4 [38.0, 128.2]	1	68.1 [36.2, 120.3]	1	64.1 [34.2, 124.2]	1414	- - -	1422	- - -
1-hydroxypyrene (ng/L), median [Q1, Q3]	25	114.7 [50.0, 224.6]	22	123.3 [58.6, 234.7]	0	114.7 [53.5, 225.6]	2	109.9 [53.6, 215.7]	0	115.3 [49.5, 222.5]	1	107.8 [49.5, 208.5]
9-hydroxyfluorene (ng/L), median [Q1, Q3]	2836	294.2 [139.2, 610.9]	0	364.4 [177.8, 716.9]	0	266.6 [128.5, 552.9]	0	266.0 [119.9, 546.9]	1414	- - -	1422	- - -
PHTHTEs†												
Unweighted N		7,024		1,386		1,511		1,352		1,425		1,350
Weighted N		174,032,721		33,073,405		34,766,079		35,067,724		35,244,749		35,880,763
Mono(carboxynonyl) Phthalate (ng/mL), median [Q1, Q3]	0	2.3 [1.2, 4.6]	0	2.2 [1.2, 4.4]	0	2.8 [1.4, 5.7]	0	2.3 [1.1, 4.7]	0	2.5 [1.3, 5.4]	0	1.6 [0.78, 3.0]
Mono(carboxyoctyl) Phthalate (ng/mL), median [Q1, Q3]	0	10.4 [4.3, 31.3]	0	6.0 [2.9, 13.6]	0	11.1 [4.4, 31.9]	0	18.2 [6.8, 52.9]	0	18.0 [7.4, 53.5]	0	6.7 [3.2, 16.5]
Mono-2-ethyl-5-carboxypentyl phthalate (ng/mL), median [Q1, Q3]	0	13.7 [6.5, 28.2]	0	29.8 [14.7, 62.2]	0	18.9 [9.5, 38.6]	0	12.9 [6.3, 24.5]	0	10.1 [5.0, 18.2]	0	8.4 [4.0, 16.1]

Mono-n-butyl phthalate (ng/mL), median [Q1, Q3]	0	12.0 [5.5, 23.5]	0	18.8 [9.4, 34.5]	0	14.9 [7.0, 28.6]	0	8.5 [3.4, 19.2]	0	9.4 [4.2, 18.0]	0	10.0 [5.3, 18.4]
Mono-(3-carboxypropyl) phthalate (ng/mL), median [Q1, Q3]	0	2.1 [0.89, 4.9]	0	2.4 [1.2, 5.0]	0	2.9 [1.3, 6.0]	0	2.6 [1.2, 6.5]	0	1.8 [0.75, 4.8]	0	0.91 [0.32, 2.0]
Mono-ethyl phthalate (ng/mL), median [Q1, Q3]	0	44.5 [16.5, 137.9]	0	87.2 [34.1, 268.4]	0	62.5 [23.0, 189.5]	0	33.3 [13.3, 107.6]	0	31.4 [12.6, 86.8]	0	28.4 [11.7, 89.5]
Mono-(2-ethyl-5-oxohexyl) phthalate (ng/mL), median [Q1, Q3]	0	5.5 [2.6, 11.4]	0	10.7 [5.2, 25.4]	0	7.7 [3.6, 15.3]	0	5.0 [2.5, 9.7]	0	4.3 [1.9, 7.6]	0	3.4 [1.6, 6.7]
Mono-benzyl phthalate (ng/mL), median [Q1, Q3]	0	4.8 [2.0, 11.5]	0	7.2 [3.1, 16.0]	0	6.1 [2.6, 13.2]	0	3.9 [1.8, 9.8]	0	4.1 [1.7, 9.2]	0	3.9 [1.6, 8.9]
VOCs‡												
Unweighted N		7,090		1,390		1,510		1,354		1,414		1,422
Weighted N		173,544,330		33,185,220		34,708,969		35,108,975		34,911,478		35,629,688
Toluene (ng/mL), median [Q1, Q3]	2851	0.07 [0.05, 0.17]	181	0.09 [0.05, 0.22]	772	0.07 [0.04, 0.18]	1818	- - -	71	0.07 [0.05, 0.14]	9	0.07 [0.05, 0.15]

- - -: Not available
*PAH subset (n = 7,090) and corresponding subsample weights used
† PHT subset (n = 7,024) and corresponding subsample weights used
‡VOC subset (n = 7,129) and corresponding subsample weights used
SAS Survey Procedures used for all analyses.

eTable 2. Individual toxicants by group, NHANES 2007-2016

	No Rheumatoid Arthritis		Rheumatoid Arthritis		
Toxicant	**N Missing**	**Statistics**	**N Missing**	**Statistics**	**p-value**
PAHs*					
Unweighted N		6,654		436	- - -
Weighted N		165,527,760		8,016,570	- - -
1-hydroxynaphthalene (ng/L), median [Q1, Q3]	113	1526.8 [644.1, 5152.0]	17	2364.6 [784.5, 8555.8]	**<0.001**[b]
2-hydroxynaphthalene (ng/L), median [Q1, Q3]	50	4222.2 [1852.4, 10052.7]	12	4300.3 [2126.1, 10533.7]	0.10[b]
3-hydroxyfluorene (ng/L), median [Q1, Q3]	23	79.8 [38.0, 225.3]	2	75.2 [39.8, 268.5]	0.38[b]
2-hydroxyfluorene (ng/L), median [Q1, Q3]	9	213.5 [101.7, 523.6]	2	226.0 [118.7, 608.6]	0.17[b]
3-hydroxyphenanthrene (ng/L), median [Q1, Q3]	2695	76.0 [38.0, 154.3]	147	71.0 [37.9, 152.8]	0.75[b]
1-hydroxyphenanthrene (ng/L), median [Q1, Q3]	1	122.6 [64.0, 225.9]	0	122.9 [73.7, 222.3]	0.63[b]
2-hydroxyphenanthrene (ng/L), median [Q1, Q3]	2705	67.7 [36.4, 124.0]	150	61.9 [36.7, 111.9]	0.79[b]
1-hydroxypyrene (ng/L), median [Q1, Q3]	20	115.9 [51.0, 225.7]	5	105.1 [49.4, 209.0]	0.22[b]
9-hydroxyfluorene (ng/L), median [Q1, Q3]	2690	291.2 [138.6, 604.5]	146	336.9 [160.6, 659.2]	0.095[b]
PHTHTEs†					
Unweighted N		6,556		468	- - -
Weighted N		165,218,598		8,814,123	- - -
Mono(carboxynonyl) Phthalate (ng/mL), median [Q1, Q3]	0	2.3 [1.2, 4.6]	0	2.2 [1.00, 4.3]	0.2[b]
Mono(carboxyoctyl) Phthalate (ng/mL), median [Q1, Q3]	0	10.5 [4.3, 31.3]	0	9.4 [4.2, 28.1]	0.52[b]
Mono-2-ethyl-5-carboxypentyl phthalate (ng/mL), median [Q1, Q3]	0	13.7 [6.5, 28.2]	0	14.1 [6.5, 27.7]	0.75[b]
Mono-n-butyl phthalate (ng/mL), median [Q1, Q3]	0	12.0 [5.5, 23.4]	0	12.3 [6.5, 24.3]	0.17[b]
Mono-(3-carboxypropyl) phthalate (ng/mL), median [Q1, Q3]	0	2.1 [0.89, 4.8]	0	1.9 [0.76, 5.2]	0.76[b]
Mono-ethyl phthalate (ng/mL), median [Q1, Q3]	0	44.2 [16.5, 137.6]	0	48.3 [17.5, 143.9]	0.28[b]
Mono-(2-ethyl-5-oxohexyl) phthalate (ng/mL), median [Q1, Q3]	0	8.9 [4.0, 18.7]	0	9.2 [4.0, 16.8]	0.52[b]
Mono-benzyl phthalate (ng/mL), median [Q1, Q3]	0	7.5 [3.5, 14.4]	0	6.8 [3.5, 12.9]	0.43[b]
VOCs‡					
Unweighted N		9,348		632	- - -
Weighted N		159,508,473		8,249,605	- - -
Toluene (ng/mL), median [Q1, Q3]	2682	0.07 [0.05, 0.17]	169	0.08 [0.05, 0.24]	0.092[b]

Bold = Significant with p<0.05
- - -: Not available
Abbreviations: Polycyclic Aromatic Hydrocarbons: PAHs; PHTHTEs: Phthalates and Plasticizers Metabolites; VOCs: Volatile Organic Compounds
*PAH subset (n = 7,090) and corresponding subsample weights used
† PHT subset (n = 7,024) and corresponding subsample weights used
‡VOC subset (n = 7,129) and corresponding subsample weights used
P-values: b=linear regression with log transformation; c=Rao-Scott chi-square test.
SAS Survey Procedures used for all analyses.

eTable 3. Rank-based correlations between single PAH (a) and PHTHTE (b) toxicants

a.

PAH concentration (ng/L)	1-hydroxynaphthalene	2-hydroxynaphthalene	3-hydroxyfluorene	2-hydroxyfluorene	1-hydroxyphenanthrene	1-hydroxypyrene
1-hydroxynaphthalene	1.0000	0.5865	0.7300	0.7200	0.5910	0.5770
2-hydroxynaphthalene	0.5865	1.0000	0.6628	0.6860	0.5679	0.6235
3-hydroxyfluorene	0.7300	0.6628	1.0000	0.9565	0.7375	0.7754
2-hydroxyfluorene	0.7200	0.6860	0.9565	1.0000	0.7920	0.7871
1-hydroxyphenanthrene	0.5910	0.5679	0.7375	0.7920	1.0000	0.7958
1-hydroxypyrene	0.5770	0.6235	0.7754	0.7871	0.7958	1.0000

Abbreviations: Polycyclic Aromatic Hydrocarbons: PAHs
PAH subsample weights used

b.

PHTHTE concentration (ng/mL)	Mono(carboxynonyl) phthalate	Mono(carboxyoctyl) phthalate	Mono-2-ethyl-5-carboxypentyl phthalate	Mono-n-butyl phthalate	Mono-(3-carboxypropyl) phthalate	Mono-ethyl phthalate	Mono-(2-ethyl-5-hydroxyhexyl) phthalate	Mono-isobutyl phthalate	Mono-(2-ethyl-5-oxohexyl) phthalate	Mono-benzyl phthalate
Mono(carboxynonyl) phthalate	1.0000	0.6694	0.5236	0.4093	0.6655	0.2755	0.4667	0.4057	0.4850	0.3850
Mono(carboxyoctyl) phthalate	0.6694	1.0000	0.4186	0.3035	0.7215	0.1702	0.3650	0.3619	0.3922	0.2986
Mono-2-ethyl-5-carboxypentyl phthalate	0.5236	0.4186	1.0000	0.6302	0.6183	0.3959	0.9343	0.5337	0.9416	0.5224
Mono-n-butyl phthalate	0.4093	0.3035	0.6302	1.0000	0.5338	0.4632	0.6533	0.7551	0.6673	0.6875
Mono-(3-carboxypropyl) phthalate	0.6655	0.7215	0.6183	0.5338	1.0000	0.3092	0.5891	0.4467	0.6081	0.4682
Mono-ethyl phthalate	0.2755	0.1702	0.3959	0.4632	0.3092	1.0000	0.3988	0.4076	0.4030	0.3733
Mono-(2-ethyl-5-hydroxyhexyl) phthalate	0.4667	0.3650	0.9343	0.6533	0.5891	0.3988	1.0000	0.5595	0.9763	0.5527
Mono-isobutyl phthalate	0.4057	0.3619	0.5337	0.7551	0.4467	0.4076	0.5595	1.0000	0.5778	0.5916
Mono-(2-ethyl-5-oxohexyl) phthalate	0.4850	0.3922	0.9416	0.6673	0.6081	0.4030	0.9763	0.5778	1.0000	0.5693
Mono-benzyl phthalate	0.3850	0.2986	0.5224	0.6875	0.4682	0.3733	0.5527	0.5916	0.5693	1.0000

Abbreviations: PHTHTEs: Phthalates and Plasticizers Metabolites
PHTHTE subsample weights used

eTable 4. Comparison of demographics of included versus excluded participants for the (a) PAH and PHTHTE subsets and (b) VOC subset

a.

	Excluded from PAH Subset		Included in PAH Subset			Excluded from PHTHTE Subset		Included in PHTHTE Subset		
	N=14,897		N=7,090			N=14,963		N=7,024		
Variable	**N Missing**	**Statistics**	**N Missing**	**Statistics**	**p-value**	**N Missing**	**Statistics**	**N Missing**	**Statistics**	**p-value**
Female, % [95% CI]	0	49.9 (48.9, 50.9)	0	48.6 (47.2, 50.1)	0.19[c]	0	49.4 (48.6, 50.3)	0	49.7 (48.3, 51.1)	0.78[c]
Age at screening (y), mean [95% CI]	0	44.1 (43.5, 44.6)	0	43.4 (42.8, 44.0)	0.019[a]	0	43.9 (43.4, 44.5)	0	43.7 (43.0, 44.3)	0.39[a]
Race, % [95% CI]	0		0		0.81[c]	0		0		0.31[c]
Non-Hispanic white		63.3 (59.7, 66.7)		63.8 (60.2, 67.4)			63.4 (59.9, 66.8)		63.5 (59.9, 67.1)	
Non-Hispanic black		12.1 (10.5, 14.0)		11.7 (10.0, 13.6)			11.9 (10.2, 13.6)		12.3 (10.5, 14.3)	
Mexican-American		9.8 (8.1, 11.9)		9.6 (7.7, 11.9)			10.0 (8.2, 12.1)		9.3 (7.5, 11.2)	
Other		14.8 (13.1, 16.5)		14.8 (13.1, 16.5)			14.7 (13.1, 16.4)		14.9 (13.2, 16.7)	
Education level, % [95% CI]*	16		7		0.17[c]	14		9		0.43[c]
Less than High School		17.1 (15.6, 18.6)		15.8 (14.2, 17.6)			17.0 (15.5, 18.5)		16.0 (14.3, 17.7)	
High School/GED/Some College/AA		53.1 (51.6, 54.7)		53.2 (51.0, 55.3)			53.0 (51.5, 54.5)		53.4 (51.1, 55.7)	
College graduate+		29.8 (27.7, 32.0)		31.0 (28.4, 33.7)			30.0 (28.0, 32.1)		30.6 (27.8, 33.5)	
Health insurance, % [95% CI]*	13		9		0.005[c]	15		7		0.21[c]
None		21.0 (19.7, 22.5)		20.4 (18.8, 22.1)			21.0 (19.6, 22.5)		20.4 (18.8, 22.1)	
Private		61.2 (59.4, 63.1)		63.9 (61.5, 66.1)			61.6 (59.6, 63.6)		63.1 (61.0, 65.1)	
Other		17.7 (16.6, 18.9)		15.7 (14.4, 17.1)			17.4 (16.2, 18.6)		16.5 (15.3, 17.7)	
Marital status, % [95% CI]	8		3		0.20[c]	8		3		0.28[c]
Married/Widowed		58.0 (56.4, 59.5)		57.8 (55.7, 59.9)			57.4 (55.9, 58.9)		58.9 (56.7, 61.2)	
Separated/Divorced		12.1 (11.4, 12.9)		11.2 (10.2, 12.3)			12.0 (11.2, 12.8)		11.6 (10.6, 12.7)	
Never married/Living with partner		29.9 (28.2, 31.6)		31.0 (28.9, 33.1)			30.6 (29.0, 32.2)		29.5 (27.2, 31.8)	
Family PIR, mean [95% CI]*	1350	2.9 (2.9, 3.0)	648	3.0 (2.9, 3.1)	0.36[a]	1356	2.9 (2.9, 3.0)	642	3.0 (2.9, 3.1)	0.46[a]
Annual household income, % [95% CI]*	1364		656		0.16[c]	1370		650		0.15[c]
Under $55,000		48.8 (46.4, 51.3)		48.3 (45.7, 50.9)			48.8 (46.4, 51.3)		48.3 (45.7, 50.9)	
$55,000 - $99,999		25.8 (24.3, 27.3)		24.8 (23.1, 26.6)			25.8 (24.4, 27.3)		24.7 (22.8, 26.7)	
$100,000 and up		25.4 (23.0, 27.8)		26.9 (24.2, 29.7)			25.3 (23.0, 27.8)		27.0 (24.3, 29.8)	
Body Mass Index (kg/m^2), mean [95% CI]	201	28.4 (28.2, 28.6)	59	28.5 (28.3, 28.7)	0.39[a]	198	28.4 (28.2, 28.6)	62	28.5 (28.3, 28.8)	0.28[a]
Smoking status, % [95% CI]*	13		4		0.90[c]	12		5		0.93[c]
Never		58.0 (56.3, 59.6)		58.2 (56.4, 60.0)			58.1 (56.5, 59.6)		58.0 (56.0, 59.9)	
Past		21.4 (20.1, 22.7)		21.5 (20.2, 22.8)			21.5 (20.2, 22.8)		21.3 (19.9, 22.6)	
Current		20.7 (19.5, 21.9)		20.3 (18.9, 21.8)			20.5 (19.4, 21.6)		20.8 (19.1, 22.5)	
Dietary fiber (gm), mean [95% CI]*	1181	17.3 (17.0, 17.6)	522	17.4 (17.0, 17.7)	0.80[a]	1211	17.3 (17.0, 17.6)	492	17.4 (17.0, 17.7)	0.63[a]

HEI-2015 Score, mean [95% CI]	3082	53.9 (53.5, 54.4)	1409	54.2 (53.7, 54.7)	0.32[a]	3144	54.0 (53.5, 54.4)	1347	54.1 (53.5, 54.7)	0.69[a]
PHQ-9 Depression Severity, % [95% CI]*	1716		737		0.098[c]	1721		732		0.28[c]
None to Mild 0-9		93.0 (92.4, 93.6)		93.8 (92.9, 94.6)			93.1 (92.5, 93.7)		93.6 (92.8, 94.4)	
Moderate to Severe 10+		7.0 (6.4, 7.6)		6.2 (5.4, 7.1)			6.9 (6.3, 7.5)		6.4 (5.6, 7.2)	
Any vigorous or moderate activities, % [95% CI]*	6	73.5 (72.4, 74.7)	3	74.2 (72.5, 75.9)	0.42[c]	6	73.5 (72.3, 74.7)	3	74.3 (72.6, 76.0)	0.39[c]
Creatinine, urine (mg/dL), mean [95% CI]*	469	125.2 (122.6, 127.7)	3	119.4 (117.0, 121.9)	<0.001[a]	470	122.6 (120.1, 125.1)	2	124.8 (122.0, 127.6)	0.12[a]

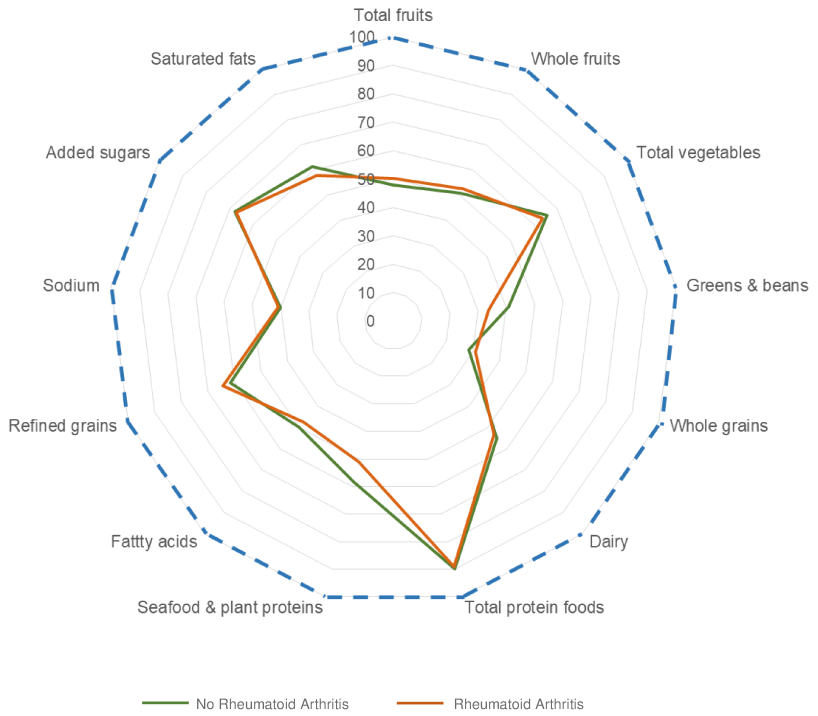
Frequencies presented are unweighted counts.
P-values: a=linear regression; c=Rao-Scott chi-square test.
SAS Survey Procedures with MEC weights used for all analyses.

b.

	Excluded from VOC Subset		Included in VOC Subset		
	N=14,858		N=7,129		
Variable	**N Missing**	**Statistics**	**N Missing**	**Statistics**	**p-value**
Female, % [95% CI]	0	50.1 (49.2, 51.1)	0	48.2 (46.9, 49.5)	0.029[c]
Age at screening (y), mean [95% CI]	0	43.9 (43.2, 44.5)	0	43.8 (43.2, 44.4)	0.93[a]
Race, % [95% CI]	0		0		0.25[c]
Non-Hispanic white		63.5 (59.8, 67.0)		63.4 (59.2, 67.5)	
Non-Hispanic black		12.4 (10.6, 14.4)		11.2 (9.3, 13.4)	
Mexican-American		9.3 (7.6, 11.2)		10.8 (8.4, 13.7)	
Other		14.9 (13.2, 16.7)		14.5 (12.7, 16.6)	
Education level, % [95% CI]*	18		5		0.80[c]
Less than High School		16.7 (15.2, 18.3)		16.6 (14.8, 18.6)	
High School/GED/Some College/AA		52.9 (51.2, 54.6)		53.7 (51.5, 55.9)	
College graduate+		30.4 (28.2, 32.7)		29.7 (26.9, 32.6)	
Health insurance, % [95% CI]*	13		9		0.74[c]
None		21.0 (19.6, 22.5)		20.4 (18.6, 22.4)	
Private		62.0 (60.1, 64.0)		62.2 (59.5, 64.8)	
Other		16.9 (15.7, 18.2)		17.4 (16.1, 18.8)	
Marital status, % [95% CI]	8		3		0.88[c]
Married/Widowed		58.0 (56.1, 59.8)		57.8 (55.9, 59.7)	
Separated/Divorced		11.7 (11.0, 12.5)		12.1 (11.0, 13.3)	
Never married/Living with partner		30.3 (28.3, 32.3)		30.1 (28.1, 32.1)	
Family PIR, mean [95% CI]*	1408	3.0 (2.9, 3.0)	590	2.9 (2.8, 3.0)	0.83[a]
Annual household income, % [95% CI]*	1433		587		0.98[c]
Under $55,000		48.6 (46.0, 51.2)		48.8 (45.7, 51.9)	
$55,000 - $99,999		25.6 (23.9, 27.3)		25.3 (23.7, 27.0)	

$100,000 and up		25.9 (23.2, 28.7)		25.9 (23.0, 28.9)	
Body Mass Index (kg/m^2), mean [95% CI]	186	28.4 (28.2, 28.6)	74	28.5 (28.3, 28.8)	0.33[a]
Smoking status, % [95% CI]*	14		3		0.38[c]
Never		58.1 (56.4, 59.7)		58.0 (55.9, 60.0)	
Past		21.1 (19.7, 22.4)		22.1 (20.7, 23.6)	
Current		20.9 (19.7, 22.1)		19.9 (18.4, 21.4)	
Dietary fiber (gm), mean [95% CI]*	1231	17.4 (17.2, 17.7)	472	17.1 (16.6, 17.5)	0.096[a]
HEI-2015 Score, mean [95% CI]	3066	54.1 (53.6, 54.5)	1425	53.9 (53.3, 54.5)	0.60[a]
PHQ-9 Depression Severity, % [95% CI]*	1802		651		0.44[c]
None to Mild 0-9		93.2 (92.5, 93.8)		93.5 (92.7, 94.3)	
Moderate to Severe 10+		6.8 (6.2, 7.5)		6.5 (5.7, 7.3)	
Any vigorous or moderate activities, % [95% CI]*	4	73.5 (72.3, 74.6)	5	74.4 (72.8, 76.0)	0.24[c]
Creatinine, urine (mg/dL), mean [95% CI]*	384	124.3 (121.5, 127.0)	88	121.2 (118.7, 123.8)	0.062[a]

eFigure 1. Diet quality by group as measured by HEI-2015 (per participant)



The radar plot is representative of participants who participated in both days of the interview and is similar to an average across the two interview days.

The dotted blue line (- - - -) depicts a perfect 100 point score.

Points closer to the outer edge represent a food pattern that is closer to meeting dietary recommendations.

Points closer to the center of the graph represent a food pattern that has room for improvement.

eTable 5. Stepwise adjustment analysis for each of the variables.

Factor	Adjustment 1		Adjustment 2		Adjustment 3		Adjustment 4		Adjustment 5	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Age (1 year increment)	1.07 (1.06, 1.08)	**<0.001**	1.07 (1.06, 1.08)	**<0.001**	1.07 (1.06, 1.08)	**<0.001**	1.07 (1.06, 1.08)	**<0.001**	1.07 (1.06, 1.08)	**<0.001**
Female vs. Male	1.8 (1.2, 2.5)	**0.002**	1.7 (1.2, 2.4)	**0.005**	1.6 (1.2, 2.4)	**0.007**	1.7 (1.2, 2.5)	**0.006**	1.5 (1.05, 2.3)	**0.029**
Creatinine, urine (1 mg/dL increment)	- - -	- - -	1.00 (1.00, 1.00)	0.75	1.00 (1.00, 1.00)	0.32	1.00 (1.00, 1.00)	0.48	1.00 (1.00, 1.00)	0.30
BMI (1 kg/m2 increment)	- - -	- - -	- - -	- - -	1.05 (1.03, 1.08)	**<0.001**	1.05 (1.03, 1.08)	**<0.001**	1.05 (1.02, 1.08)	**<0.001**
Smoking										
Current vs. Never	- - -	- - -	- - -	- - -	- - -	- - -	1.4 (0.89, 2.3)	0.13	1.3 (0.77, 2.1)	0.35
Past vs. Never	- - -	- - -	- - -	- - -	- - -	- - -	1.03 (0.60, 1.8)	0.92	1.04 (0.60, 1.8)	0.88
Race										
Mexican-American vs. Non-Hispanic White	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	1.4 (0.77, 2.6)	0.27
Non-Hispanic Black vs. Non-Hispanic White	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	1.5 (1.01, 2.1)	**0.045**
Other vs. Non-Hispanic White	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0.84 (0.48, 1.5)	0.54
High school or less vs. More than high school education	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	1.06 (0.71, 1.6)	0.78
Family poverty income ratio (1 unit increment)	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0.90 (0.78, 1.04)	0.14
Any moderate and/or vigorous activity	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0.96 (0.64, 1.4)	0.84
Dietary fiber (1 gm increment)	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	0.98 (0.95, 1.02)	0.34
PAH Body Burden										
Quartile 2 vs. 1	1.5 (0.91, 2.4)	0.11	1.5 (0.89, 2.5)	0.13	1.5 (0.89, 2.6)	0.13	1.5 (0.87, 2.5)	0.15	1.5 (0.87, 2.5)	0.15
Quartile 3 vs. 1	1.9 (1.2, 3.1)	**0.012**	1.9 (1.2, 3.2)	**0.013**	1.9 (1.1, 3.3)	**0.016**	1.8 (1.03, 3.0)	**0.039**	1.7 (0.97, 3.0)	0.066
Quartile 4 vs. 1	2.6 (1.5, 4.4)	**<0.001**	2.7 (1.4, 4.9)	**0.002**	2.8 (1.5, 5.0)	**0.001**	2.2 (1.2, 4.4)	**0.018**	2.2 (1.09, 4.2)	**0.028**

- - -: Not available; Factor not included in the adjustment
PAH subset (n = 7,090) with PAH subsample weights used for analysis
PAH Burden Score includes: 1-hydroxynaphthalene, 2-hydroxynaphthalene, 3-hydroxyfluorene, 2-hydroxyfluorene, 1-hydroxyphenanthrene, and 1-hydroxypyrene
All models were fitted on each of the 5 imputed datasets and parameter estimates were combined using SAS Mianalyze.

eTable 6. Mediation criteria for PAH body burden

Mediation Criteria	OR (95% CI)	p-value	Met Mediation Criteria
Smoking is associated with RA*	1.7 (1.3, 2.3)	**<0.001**	Yes
Smoking is associated with PAH body burden†	87.2 (43.9,172.8)	**<0.001**	Yes
PAH body burden is associated with RA after adjusting for smoking†	2.2 (1.09, 4.2)	**0.028**	Yes

Abbreviations: OR: Odds Ratio; RA: Rheumatoid Arthritis; PAH: Polycyclic Aromatic Hydrocarbons
Bold = Significant with p<0.05
*Current vs. Never/Past
†Q4 vs. Q1
Model included age, sex (Male vs. Female), race (non-Hispanic White vs. non-Hispanic Black vs. Mexican-American vs. Other), education (high school or less vs. more than high school), family PIR, BMI, urine creatinine, any vigorous or moderate activity (yes vs. no), and dietary fiber.

eTable 7. Sensitivity analysis examining the associations between PAH body burden quartile and rheumatoid arthritis among never smoker participant subset

	Adjustment 1		Adjustment 2	
Variable	**OR [95% CI]**	**p-value**	**OR [95% CI]**	**p-value**
PAH body burden quartile				
Quartile 2 vs 1	1.6 [0.81, 3.0]	0.18	1.5 [0.71, 3.3]	0.27
Quartile 3 vs 1	2.5 [1.3, 5.1]	**0.008**	2.2 [0.90, 5.4]	0.082
Quartile 4 vs 1	3.0 [1.3, 7.1]	**0.013**	2.5 [0.86, 7.1]	0.092

Bold = Significant with p<0.05
Abbreviations: PIR: Poverty Income Ratio; PAH: Polycyclic Aromatic Hydrocarbons; OR: odds ratio
PAH never smokers subset (n = 4,102) with PAH subsample weights used for analysis
PAH Burden Score includes: 1-hydroxynaphthalene, 2-hydroxynaphthalene, 3-hydroxyfluorene, 2-hydroxyfluorene, 1-hydroxyphenanthrene, and 1-hydroxypyrene.

Adjustment 1: Adjusted for age and sex (male vs. female).
Adjustment 2: Adjusted for age, sex (male vs. female), BMI, urine creatinine, race (non-Hispanic white vs. non-Hispanic black vs. Mexican-American vs. other), education (high school or less vs. more than high school), family PIR, any vigorous or moderate activity (yes vs. no), and dietary fiber.
All models were fitted on each of the 5 imputed datasets and parameter estimates were combined using SAS Mianalyze.