

Supplemental Table A. Exclusions (sequential) at baseline.

	HPFS	NHS	NHS II
Baseline	1986 - 1990	1986 - 1990	1991 - 1995
Baseline n	51,529	121,701	116,686
Duplicate records	0	0	256
Missing date of birth	36	0	0
Died before baseline	64	2,668	941
70+ blank responses on FFQ	297	0	21
Implausible reported energy intake	952	7,658	17,942
Cancer	3,485	10,556	2,506
Diabetes	2,193	4,509	1,701
Ulcerative colitis	610	1,181	1,454
Pulmonary embolism	278	439	2,612
Coronary artery bypass graft	2,223	422	22
Myocardial infarction	1,321	1,951	519
Angina	1,106	3,621	490
Stroke	324	511	396
Lupus	0	405	334
Irritable bowel	27	100	112
BMI ≥ 30 kg/m ²	2,661	6,438	9,562
Over age 65 years	5,067	4,768	0
Pregnant	NA	0	8,980
Missing data			
Hours of sitting/TV	7,379	0	650
Physical activity	178	29,674	76
Diet	1,936	5,722	2,080
BMI	740	1,044	420
Weight change	127	611	1,474
N for analysis	20,525	39,423	64,138

FFQ = Food Frequency Questionnaire

Supplemental Table B. Comparison of original vs. analysis cohorts, mean (SD).

	HPFS		NHS		NHS II	
	Original	Analysis	Original	Analysis	Original	Analysis
Age (years)	54.5 (9.9)	46.9 (6.0)	52.5 (7.3)	48.5 (5.8)	36.1 (4.7)	36.3 (4.5)
BMI (kg/m ²)	25.5 (3.4)	24.6 (2.3)	25.4 (4.8)	23.5 (2.8)	24.7 (5.4)	22.8 (2.8)
Physical activity (MET-hr/wk)	20.8 (29.7)	23.5 (31.4)	14.1 (21.0)	15.0 (20.5)	21.8 (29.7)	21.6 (27.5)
Alcohol (servings/d)	0.9 (1.2)	0.9 (1.1)	0.5 (0.9)	0.5 (0.8)	0.3 (0.5)	0.3 (0.5)
Total fruit without juice (servings/d)	1.6 (1.4)	1.5 (1.2)	1.6 (1.3)	1.5 (1.1)	1.2 (1.0)	1.2 (0.9)
Total vegetables (servings/d)	3.0 (2.0)	2.9 (1.7)	3.3 (1.9)	3.1 (1.7)	3.2 (2.2)	3.1 (2.0)

Supplemental Table E. Common Sources of Anthocyanins, Polymers, and Flavonols.

	mg/100g*	serving size	mg/serving
Anthocyanins			
Blueberries	163.3	1/2 cup	120.8
Blackberries	100.6	1/2 cup	70.4
Black plums	56.0	1 medium	37.0
Red grapes	48.0	1/2 cup	36.5
Raspberries	48.6	1/2 cup	30.2
Red wine	19.3	5 oz	28.3
Cherries	32.0	1/2 cup	22.4
Strawberries	27.0	1/2 cup	20.5
Radishes	63.1	2 medium	5.7
Pears	2.1	1 medium	3.7
Flavonols			
Onions (cooked)	24.7	1 medium	27.2
Tea (brewed)	4.1	8 oz	9.6
Black plums	12.5	1 medium	8.2
Apples	4.2	1 medium	7.6
Kidney beans (cooked)	7.3	1/2 cup	6.2
Spring onions/Scallions (raw)	12.0	1/2 cup	3.6
Raw spinach	10.7	1 cup	3.2
Beer	0.9	12 oz	3.0
Red wine	1.6	5 oz	2.3
Pears	1.1	1 medium	2.0
Polymers			
Tea (brewed)	91.5	8 fluid oz	216.9
Pecans	476.8	1.5 oz	202.7
Plums	209.9	1/2 cup	167.9
Blueberries	173.0	1/2 cup	138.4
Strawberries	138.0	1/2 cup	110.4
Pistachio nuts	226.4	1.5 oz	96.2
Apples	98.5	1/2 cup	78.8
Almonds	176.3	1.5 oz	74.9
Grapes	70.4	1/2 cup	56.3
Peaches	67.5	1/2 cup	54.0

*mg/100g based on USDA Database for the Flavonoid Content of Selected Foods, Release 3.1 (2014)

Supplemental Table C. 4-year Weight change (lbs, 95% CI) associated with increased daily flavonoid intake (1 SD per day), including individuals who were obese (≥ 30 kg/m²) at baseline.

	HPFS n = 21,979 Model 2	NHS n = 45,162 Model 2	NHS II n = 73,478 Model 2	Pooled** n = 140,619 Model 2
Flavonols (SD = 7 mg)	-0.16 (-0.21, -0.11)*	-0.11 (-0.14, -0.07)*	-0.27 (-0.30, -0.24)*	-0.18 (-0.28, -0.07)*
Flavones (SD = 0.9 mg)	0.02 (-0.02, 0.05)	-0.01 (-0.04, 0.03)	-0.03 (-0.06, 0.00)	-0.01 (-0.03, 0.02)
Flavanones (SD = 25 mg)	0.05 (0.00, 0.10)*	0.15 (0.11, 0.19)*	0.19 (0.14, 0.23)*	0.13 (0.05, 0.21)*
Flavan-3-ols (SD = 45 mg)	-0.09 (-0.16, -0.02)*	-0.03 (-0.07, 0.02)	-0.13 (-0.18, -0.09)*	-0.09 (-0.15, -0.02)*
Anthocyanins (SD = 10 mg)	-0.20 (-0.24, -0.16)*	-0.19 (-0.22, -0.16)*	-0.33 (-0.35, -0.30)*	-0.24 (-0.34, -0.14)*
Polymers (SD = 138 mg)	-0.17 (-0.24, -0.10)*	-0.12 (-0.17, -0.07)*	-0.27 (-0.31, -0.23)*	-0.19 (-0.29, -0.09)*
Proanthocyanidins (SD = 72 mg)	-0.45 (-0.52, -0.37)*	-0.64 (-0.70, -0.57)*	-0.92 (-0.97, -0.86)*	-0.67 (-0.94, -0.39)
Total flavonoids (SD = 194 mg)	-0.19 (-0.26, -0.12)*	-0.13 (-0.18, -0.09)*	-0.30 (-0.35, -0.26)*	-0.21 (-0.32, -0.10)*

Model 1: adjusted for age.

Model 2: adjusted for age and BMI at baseline, change in: smoking status, physical activity, hours of sitting or watching TV, hours of sleep, fried potatoes, juice (non-citrus for flavones and flavanones), whole grains, refined grains, fried foods, nuts, whole-fat dairy, low-fat dairy, sugar sweetened beverages, diet beverages, sweets, processed meats, non-processed meats, trans fat, alcohol, seafood, and caffeine.

* 95% CI excludes zero (null).

** Meta-analysis with random effects.

Supplemental Table D. 4-year Weight change (lbs, 95% CI) associated with increased daily flavonoid intake (1 SD per day), complete case analysis (last observation is not carried forward).

	HPFS n = 15,136 Model 2	NHS n = 21,909 Model 2	NHS II n = 50,745 Model 2	Pooled** n = 87,790 Model 2
Flavonols (SD = 7 mg)	-0.17 (-0.23, -0.11)*	-0.04 (-0.10, 0.03)	-0.21 (-0.25, -0.17)*	-0.14 (-0.23, -0.05)*
Flavones (SD = 0.9 mg)	-0.02 (-0.06, 0.03)	-0.05 (-0.11, 0.01)	-0.10 (-0.15, -0.06)*	-0.06 (-0.11, 0.00)
Flavanones (SD = 25 mg)	0.05 (-0.01, 0.10)	0.07 (0.00, 0.14)*	0.18 (0.12, 0.22)*	0.10 (0.02, 0.18)*
Flavan-3-ols (SD = 45 mg)	-0.13 (-0.21, -0.05)*	-0.02 (-0.11, 0.07)	-0.08 (-0.14, -0.03)*	-0.08 (-0.13, -0.03)*
Anthocyanins (SD = 10 mg)	-0.20 (-0.25, -0.15)*	-0.15 (-0.21, -0.10)*	-0.32 (-0.35, -0.29)*	-0.23 (-0.33, -0.12)*
Polymers (SD = 138 mg)	-0.19 (-0.27, -0.11)*	-0.09 (-0.18, -0.01)*	-0.21 (-0.26, -0.16)*	-0.17 (-0.24, -0.10)*
Proanthocyanidins (SD = 72)	-0.46 (-0.56, -0.37)*	-0.47 (-0.58, -0.35)*	-0.87 (-0.94, -0.80)*	-0.60 (-0.89, -0.31)
Total flavonoids (SD = 194 mg)	-0.22 (-0.30, -0.14)*	-0.11 (-0.19, -0.02)*	-0.23 (-0.29, -0.18)*	-0.19 (-0.26, -0.12)*

Model 1: adjusted for age.

Model 2: adjusted for age and BMI at baseline, change in: smoking status, physical activity, hours of sitting or watching TV, hours of sleep, fried potatoes, juice (non-citrus for flavones and flavanones), whole grains, refined grains, fried foods, nuts, whole-fat dairy, low-fat dairy, sugar sweetened beverages, diet beverages, sweets, processed meats, non-processed meats, trans fat, alcohol, seafood, and caffeine.

* 95% CI excludes zero (null).

** Meta-analysis with random effects.