

SUPPLEMENTAL MATERIAL

An evaluation of the diet-wide contribution to serum urate levels: meta-analysis of population based cohorts

Tanya J Major¹, Ruth K Topless¹, Nicola Dalbeth², Tony R Merriman^{1*}

SUPPLEMENTAL METHODS

Diet-Wide Association Study (DWAS)

All statistical analyses were performed using R v3.2.3 (www.R-project.org). For all regression analyses individuals with partial or missing data were excluded. For each food item a multivariable linear regression adjusted for sex, age, body mass index, menopausal status, average daily calorie intake, years of education, exercise levels, and smoking status was conducted in the five cohorts separately. For each regression analysis the partial R^2 (R_B^2) attributable to the food item was calculated by comparing the regression R^2 (R_{AB}^2) to the R^2 (R_A^2) of a corresponding regression using all the adjusting variables, but not the food item using the ‘partial.R2’ function within the R ‘asbio’ package.[1] Analyses in ARIC, CARDIA, CHS, and FHS were additionally adjusted for whole-genome principal component vectors one to four to account for cryptic relatedness (especially within FHS) that may cause inflation of test statistics owing to possible shared diet or heritability of serum urate levels. Principal components were calculated using publicly available whole-genome genotyping data (no genotype data were available for NHANES III) and the EIGENSOFT 2.0 SmartPCA program.[2] Regression beta values from the five cohorts were combined using an inverse-variance weighted meta-analysis with a Q-statistic calculated to detect any inter-cohort heterogeneity using the ‘metagen’ function within the R meta package.[3] A fixed-effect model was used if there was no significant heterogeneity, with a random-effect model used in the presence of heterogeneity ($P_Q < 0.1$). The diet-wide association analysis was repeated with the inclusion of four scores estimating diet quality (each detailed below) as adjusting variables. Diet-wide significance was set at $P_\beta < 7.94 \times 10^{-4}$ after Bonferroni correction for multiple testing (0.05 divided by 63 food items). For each food item the four basic statistical assumptions of a linear regression (linear relationship, multivariable normality, multi-collinearity, and homoscedasticity) were assessed by generating plots of the food item versus serum urate, the standardised residuals versus the normal distribution (quantile-quantile plot), and the standardised residuals versus the predicted values from the linear regression. These plots (not shown) did not indicate any substantial deviation from these basic statistical assumptions.

Diet Score Construction

Four diet scores were evaluated. The first was a Healthy Eating diet score calculated based on the Harvard Healthy Eating Pyramid (2008) and Healthy Eating Plate (2011) guidelines and an adaptation of the methodologies used by Nettleton et al.[4] Food frequency questions (in serves per week) were combined into four categories representing the different levels of the Harvard Healthy Eating Pyramid

/Plate [5] – Level 1: red meat, butter, refined grains, potatoes, sugar-sweetened beverages, and desserts or sweets; Level 2: dairy products (excluding butter) and alcohol; Level 3: nuts, seeds, beans, fish, poultry, and eggs; Level 4: vegetables, fruits, and whole grains. Quartiles of these four levels were determined and labelled numerically (0, 1, 2, 3) before being multiplied by a number representing each pyramid level. Level 1 was multiplied by negative two (least favourable), level 2 was multiplied by negative one, level 3 was multiplied by one, and level 4 was multiplied by two (most favourable). These values were summed to create a Healthy Eating score with a minimum value of -9 and a maximum value of 9, with a larger number indicating ‘healthier’ dietary habits (Figure S2).

The second diet score was the ‘Dietary Approaches to Stop Hypertension (DASH)’ score calculated based on the DASH diet recommendations and a direct replication of the methodologies used previously.[6,7] Food items (in serves per week) were grouped into five food groups representing foods that are favourable in the DASH diet; fruits, vegetables, nuts or legumes, whole grains, and low-fat dairy products. Two food groups representing foods that are unfavourable in the DASH diet were also created; red or processed meats and sugar-sweetened beverages. An estimate of the total sodium intake (calculated as part of the food to macro-nutrient conversion protocols performed by each study[8-12]) was included as a final food group that is unfavourable in the DASH diet. Each food group was classified into quintiles. Quintiles for foods that are favourable in the DASH diet was labelled in ascending order (1, 2, 3, 4, 5) and for labelled in descending order for foods that are unfavourable in the DASH diet (5, 4, 3, 2, 1). These component scores were summed together for each of the 8 food groups to create the final DASH diet score with a minimum value of 8 and a maximum value of 40, with a larger number indicating ‘healthier’ dietary habits (Figure S3).

The third diet score was the Mediterranean diet score, constructed as previously described.[13] The index ascertains consumption of nine major food groups (non-refined cereals, potatoes, fruit, vegetables, legumes, fish, red meat, poultry, and full-fat dairy products), along with olive oil and alcohol intake. Olive oil was unable to be included as these data were not collected by all five of the study cohorts. Food items were grouped into the nine food groups, before each food group was split into six categories of consumption (0; >0, ≤ 1; >1, ≤ 2; >2, ≤ 3; >3, ≤ 4; and >4 serves per week). These categories were labelled from 0 to 5 in ascending order (0, 1, 2, 3, 4, 5) for the food groups favoured in the Mediterranean diet (non-refined cereals, potatoes, fruit, vegetables, legumes, and fish) and in descending order (5, 4, 3, 2, 1, 0) for the food groups not favoured in the Mediterranean diet

(red meat, poultry, and full-fat dairy). Alcohol consumption was split into similar consumption categories, however those who reported consuming no alcohol were grouped with those who reported consuming >4 serves per week of alcohol ($>0, \leq 1$; $>1, \leq 2$; $>2, \leq 3$; $>3, \leq 4$; and >4 or 0 serves per week) as the Mediterranean diet considers alcohol intake of greater than 0 and less than 4 servings per week to be favourable. This definition of alcohol consumption categories was the same between males and females. The alcohol categories were labelled from 0 to 4 in descending order (4, 3, 2, 1, 0). The labelled food groups (and alcohol) were summed together to create the Mediterranean diet score, with a minimum value of 0 and a maximum value of 49, with a larger number indicating higher adherence to the Mediterranean diet (Figure S4).

The final diet score was a data-driven measure of the true dietary patterns. To create this score the five cohorts were combined and the 37 food items with complete information in all cohorts were extracted (beer, liquor, wine, citrus juice, non-citrus juice, coffee, tea, diet soft drink, soft drink, butter, cheese, ice cream, skim milk, whole milk, yoghurt, cake or pie, chocolate, biscuits or muffins, fish, shellfish, citrus fruit, non-citrus fruit, brown bread, white bread, cold cereal, pasta, legumes, meat (beef, pork, or lamb), liver, poultry, potato, spinach, tomato, winter squash, margarine, eggs, chips or popcorn). A parallel factor analysis was conducted using these 37 food items to visualise the point of inflection and determine the number of factors to use ($n=11$) by comparing the scree plot from the actual data to simulated and resampled versions of the same data (Figure S5).[14] The 11 retained factors were rotated by an orthogonal transformation (varimax) - factors that had a sum of square loadings >1 were identified ($n=1$) and factor loadings (for each food item) >0.2 were extracted based on the methodologies of [14-17]. This resulted in the construction of a single data-driven diet score based on factor loadings for seven food items (non-citrus juice=0.22, soft drink=0.40, butter=0.34, white bread=0.47, pasta=0.21, meat (beef, pork, or lamb)=0.50, and chips or popcorn=0.30). Consumption of each food item (in serves per week) was multiplied by the corresponding factor loading and these values were summed together. The resultant data-driven diet score had a minimum value of 0 and a maximum value of 71, with a larger number indicating that an individual consumed higher amounts of the seven food items used to construct the score (Figure S6).

The correlation between diet scores was assessed using a Pearson's product-moment correlation test. The diet scores were included in separate multivariable linear regression of serum urate levels adjusted for sex, age, body mass index, menopausal status, average daily calorie intake, years of education,

exercise levels, smoking status, whole-genome principal component vectors one to four for ARIC, CARDIA, CHS, and FHS, and alcohol for the DASH diet score analysis (the DASH diet score does not include a separate component for alcohol). Regression beta values from each cohort were combined using an inverse-variance weighted meta-analysis with a fixed-effect model if there was no significant heterogeneity, and a random-effect model if there was heterogeneity present ($P_Q < 0.1$). A p-value less than 0.05 was considered statistically significant for the diet quality score analyses.

Genetic analysis

The percentage of variance in serum urate explained by common genetic variants was assessed in two ways. Firstly, the 30 genome-wide significant variants identified in the largest European genome-wide association study[18] were obtained from the whole-genome genotyping data of the ARIC, CARDIA, CHS, and FHS cohorts. All variants were in Hardy-Weinberg equilibrium ($P > 0.01$) within the combined analysis group, except for *rs653178* ($P_{HWE} < 0.001$) and *rs2079742* ($P_{HWE} = 0.005$). For these two SNPs the individual cohorts were in Hardy-Weinberg equilibrium, except *rs653178* for ARIC ($P_{HWE} = 0.002$). A weighted genetic risk score was constructed from these genotypes and assessed for its contribution to serum urate variability. Where a particular variant in the genetic risk score was not directly genotyped, it was imputed using the IMPUTE2 imputation method and the 1000 Genomes phase 3 reference panel [19]. Imputation quality was high for all SNPs analysed (quality score ≥ 0.71). To create the genetic risk score genotypes were coded (0, 1, 2) to represent the number of urate-raising alleles present, as defined by the effect directions previously reported and were multiplied by the effect size (β -value; converted to $\mu\text{mol/L}$).[18] These weighted variables were summed together, resulting in a genetic risk score with a minimum value of 0 and a maximum value of 236.15. The genetic risk score was tested for association with serum urate levels using a multivariable linear regression, adjusted for sex, age, body mass index, menopausal status, average daily calorie intake, years of education, exercise levels, smoking status, and whole-genome principal component vectors one to four. The resultant regression beta values from each cohort were combined using an inverse-variance weighted meta-analysis.

Secondly, non-imputed whole-genome genotypes for the ARIC, CARDIA, CHS, and FHS cohorts were merged, then filtered to exclude variants deviating from Hardy-Weinberg equilibrium ($P < 0.001$), with a variant call rate ($< 70\%$), or a minor allele frequency < 0.01 using PLINK v1.90,[20] before a genetic relationship matrix was created using GCTA v1.26.0.[21] The genetic heritability of serum

urate was then calculated using the restricted maximum likelihood (REML) analysis procedure within GCTA v1.26.0. This heritability estimate was adjusted for sex, age, body mass index, menopausal status, average daily calorie intake, years of education, exercise levels, smoking status, and whole-genome principal component vectors one to four.

SUPPLEMENTAL TABLES

Table S1. Demographic, anthropomorphic, and clinical summary for the five datasets.

Values are shown as the mean \pm standard deviation, or as the number of participants (percentage). For menopause status the percentage is of only the female participants.

Table S2. Food frequency questionnaire answer categories and serves per week conversion factor.

NHANES III did not specify portion size. CHS only specified relative portion size (small, medium, or large). ARIC, CARDIA, and FHS did not specify the same portion sizes. Portion size was not considered in this study. Category – possible answers as designated by the study questionnaire. Conversion – number of serves per week corresponding to the average category answer.

Table S3. Summary of 63 comparable food items and their study-specific food frequency questions.

/ – indicates items were asked about together on the questionnaire. ; – indicates questions that were combined before analysis to make food items comparable between studies. * – indicates not all data-sets had a comparable question, the number of asterisks represents the number of data-sets missing data.

Table S4. Summary of the average consumption frequency for 63 food items after conversion to serves per week.

All values are presented in serves per week. * – indicates not all data-sets were included in the analysis, the number of asterisks represents the number of data-sets missing data for this food item. n – number of participants.

Table S5. Diet-wide association study results for the original and diet quality score adjusted analyses in the full cohort.

n – number of participants analysed. β – inverse-variance weighted meta-analysis beta value, reflecting the change in serum urate level ($\mu\text{mol/L}$) per one extra serve per week of the food item. 95% CI – 95% confidence intervals of the beta value. P_β – p-value for meta-analysis beta value, p-values in italics were nominally significant ($P_\beta < 0.05$; $P_\beta \geq 7.94 \times 10^{-04}$), p-values in bold were diet-wide significant ($P_\beta < 7.94 \times 10^{-04}$). R^2 – partial R^2 value (R_B^2) converted to a percentage ($R^2 * 100$). P_Q – p-value for the heterogeneity Q-statistic generated during the meta-analysis, if $P_Q < 0.1$ a random-effect model was used in the meta-analysis. * – indicates not all data-sets were included in the analysis, the number of asterisks represents the number of data-sets missing data.

Table S6. Diet-wide association study results for the original and diet quality score adjusted analyses in the male-only cohort.

n – number of participants analysed. β – inverse-variance weighted meta-analysis beta value, reflecting the change in serum urate level ($\mu\text{mol/L}$) per one extra serve per week of the food item. 95% CI – 95% confidence intervals of the beta value. P_β – p-value for meta-analysis beta value, p-values in italics were nominally significant ($P_\beta < 0.05$; $P_\beta \geq 7.94 \times 10^{-04}$), p-values in bold were diet-wide significant ($P_\beta < 7.94 \times 10^{-04}$). R^2 – partial R^2 value (R_B^2) converted to a percentage ($R^2 * 100$). P_Q – p-value for the heterogeneity Q-statistic generated during the meta-analysis, if $P_Q < 0.1$ a random-effect model was used in the meta-analysis. * – indicates not all data-sets were included in the analysis, the number of asterisks represents the number of data-sets missing data.

Table S7. Diet-wide association study results for the original and diet quality score adjusted analyses in the female-only cohort.

n – number of participants analysed. β – inverse-variance weighted meta-analysis beta value, reflecting the change in serum urate level ($\mu\text{mol/L}$) per one extra serve per week of the food item. 95% CI – 95% confidence intervals of the beta value. P_β – p-value for meta-analysis beta value, p-values in italics were nominally significant ($P_\beta < 0.05$; $P_\beta \geq 7.94 \times 10^{-04}$), p-values in bold were diet-wide significant ($P_\beta < 7.94 \times 10^{-04}$). R^2 – partial R^2 value (R_B^2) converted to a percentage ($R^2 * 100$). P_Q – p-value for the heterogeneity Q-statistic generated during the meta-analysis, if $P_Q < 0.1$ a random-effect model was used in the meta-analysis. * – indicates not all data-sets were included in the analysis, the number of asterisks represents the number of data-sets missing data.

Table S8. Individual association results for the 30 SNPs used in the genetic risk score.

NHANES III was unable to be included in these analyses owing to no genome-wide genotype data being available. Risk / Oth – risk or other allele. Freq – risk allele frequency. n – number of participants analysed. β – inverse-variance weighted meta-analysis beta value, reflecting the change in serum urate level ($\mu\text{mol/L}$) per risk allele. 95% CI – 95% confidence intervals of the beta value. P_β – meta analysis p-value. R^2 – partial R^2 value converted to a percentage ($R^2 * 100$). R^2_{No} – R^2 for no additional diet quality score adjustment. R^2_{HES} – R^2 for additional adjustment by the healthy eating score. R^2_{DASH} – R^2 for additional adjustment by the DASH diet score. R^2_{MDT} – R^2 for additional adjustment by the Mediterranean diet score. R^2_{Factor} – R^2 for additional adjustment by the data-derived diet score. P_Q – p-value for the heterogeneity Q-statistic generated during the meta-analysis, if $P_Q < 0.1$ a random-effect model was used in the meta-analysis. P_{HWE} - Hardy-Weinberg p-value for all cohorts combined. For the two SNPs with a $P_{\text{HWE}} < 0.01$ (*rs653178* and *rs2079742*) all individual cohorts had a $P_{\text{HWE}} \geq 0.02$, except the ARIC cohort for *rs653178* ($P_{\text{HWE}} = 1.56 \times 10^{-03}$).

Table S9. Interaction between the four diet quality scores and the genetic risk score.

NHANES III was unable to be included in these analyses owing to no genome-wide genotype data being available. n – number of participants analysed. β – inverse-variance weighted meta-analysis of the interaction beta value, reflecting the change in serum urate level ($\mu\text{mol/L}$) per one unit increase in the diet score multiplied by the genetic risk score. 95% CI – 95% confidence intervals of the beta value. P_β – P-value for meta-analysis beta value, p-values in bold were considered significant ($P_\beta < 0.05$). R^2 – partial R^2 value (R_B^2) converted to a percentage ($R^2 * 100$). P_Q – P-value for the heterogeneity Q-statistic generated during the meta-analysis, if $P_Q < 0.1$ a random-effect model was used in the meta-analysis.

Table S1. Demographic, anthropomorphic, and clinical summary for the five datasets.

	ARIC	CARDIA	CHS	FHS	NHANES III
Total Participants	6,258	1,335	1,954	2,977	4,236
	Baseline Information				
Sex (% Female)	2,802 (44.77%)	735 (55.06%)	1,108 (56.70%)	1,593 (53.51%)	2,108 (49.76%)
Menopause Status (% Post Menopausal)	2,004 (71.52%)	2 (0.27%)	1,108 (100.00%)	209 (13.12%)	1,030 (48.86%)
Age (Years)	54 ± 6	26 ± 3	72 ± 5	40 ± 9	53 ± 20
BMI (kg/m²)	26.51 ± 4.37	23.61 ± 3.82	25.88 ± 4.15	26.50 ± 5.24	26.11 ± 5.03
Education (Years)	14.91 ± 4.13	14.77 ± 2.31	14.35 ± 4.62	15.38 ± 2.53	12.37 ± 3.08
Smoking Status (% Current Smoker)	1,796 (28.70%)	315 (23.60%)	245 (12.54%)	472 (15.85%)	1,157 (27.31%)
Smoking Status (% Ex-Smoker)	2,279 (36.42%)	241 (18.05%)	793(40.58%)	798 (26.81%)	1,426 (33.66%)
Exercise (% Moderately Active)	2,429 (38.81%)	523 (39.18%)	728 (37.26%)	1,151 (38.66%)	869 (20.51%)
Exercise (% Very Active)	794 (12.69%)	556 (41.65%)	218 (11.16%)	1,428 (47.97%)	186 (4.39%)
Serum Urate (μmol/L)	347.51 ± 81.56	314.46 ± 78.43	317.55 ± 78.24	308.08 ± 85.81	312.58 ± 79.51
SNPs Genotyped	837,177	718,694	327,014	549,726	-
Average Calorie Intake (kcal/day)	1,657.72 ± 607.55	2,363.99 ± 802.78	1,819.11 ± 643.22	2,080.89 ± 683.79	2,021.48 ± 772.55
	Self-Reported Comorbidities				
Diabetes	245 (3.92%)	7 (0.53%)	121 (6.22%)	30 (1.01%)	228 (5.39%)
High Blood Pressure	1305 (20.97%)	100 (7.55%)	346 (17.81%)	198 (6.65%)	943 (22.31%)
High Cholesterol	1315 (21.60%)	33 (2.54%)	76 (3.89%)	220 (7.39%)	930 (34.39%)
Heart Problems	776 (12.40%)	77 (5.82%)	180 (9.21%)	296 (9.94%)	336 (7.93%)

Table S2. Food frequency questionnaire answer categories and serves per week conversion factor.

No.	ARIC		CARDIA		CHS		FHS		NHANES III	
	Category	Conversion	Category	Conversion	Category	Conversion	Category	Conversion	Category	Conversion
1	Almost never	0	Serves/week	-	Never	0	Never, or < 1/month	0	Times/month	Divided by 4.33 (average weeks/month)
2	1-3 serves/month	0.47			5-10 times/year	0.14	1-3 serves/month	0.47		
3	1 serve/week	1			1-3 times/month	0.47	1 serve/week	1		
4	2-4 serves/week	3			1-4 times/week	2.5	2-4 serves/week	3		
5	5-6 serves/week	5.5			Almost every day	6	5-6 serves/week	5.5		
6	1 serve/day	7					1 serve/day	7		
7	2-3 serves/day	17.5					2-3 serves/day	17.5		
8	4-6 serves/day	35					4-5 serves/day	31.5		
9	>6 serves/day	42					≥ 6 serves/day	42		

Table S3. Summary of 63 comparable food items and their study-specific food frequency questions.

Food Item	ARIC	CARDIA	CHS	FHS	NHANES III
Beer	Beer	Beer/Ales	Beer	Beer	Beer/Lite Beer
Liquor	Hard Liquor	Distilled Liquor; Cordial and Liqueur	Liquor	Liquor/Whiskey/Gin	Hard Liquor/Tequila/Gm/Whiskey
Wine	Wine	Wine	Wine	Red Wine; White Wine	Wine/Wine Coolers/Champagne
Citrus Juice	Orange Juice/Grapefruit Juice	Citrus Juice	Orange Juice/Grapefruit Juice	Orange Juice; Grapefruit Juice	Orange Juice/Grapefruit Juice/Tangerine Juice
Non-Citrus Juice	Fruit Punch	Non-Citrus Fruit Juice; Fruit Drinks; Flavoured Water	Tang/Breakfast Drinks; Other Fruit Juice/Fruit Drink	Apple Juice/Cider; Other Fruit Juice/Fruit Drink	Apple Juice/Grape Juice/Cranberry Juice/Other Fruit Juice; Hi-C/Tang/Hawaiian Punch/Kool-Aid; Fruit Drink/Fruit Pop
Coffee	Coffee	Coffee	Coffee	Coffee	Coffee
Tea	Hot Tea/iced Tea	Tea	Hot Tea/iced Tea	Non-Herbal Tea	Tea
Diet Soft Drink	Diet Soft Drink	Diet Soft Drinks; Unsweetened Soft Drinks	Diet Soft Drinks	Diet Cola; Diet Soft Drink	Diet Cola/Diet Soda
Soft Drink	Regular Soft Drink	Sweetened Soft Drinks	Regular Soft Drinks	Cola; Soft Drink	Cola/Soda
Butter	Butter (as spread)	Butter; Reduced Fat Butter	Butter (as spread)	Butter (as spread)	Butter (as spread)
Cheese	Cheese; Cottage Cheese/Ricotta	Cheese/Processed Cheese/Cottage Cheese/Ricotta	Cheese/Cheese Spread; Cottage Cheese	Cheddar Cheese/American Cheese; Cottage Cheese/ Ricotta; Cream Cheese	American Cheese/Swiss Cheese/Cheddar Cheese/Cottage Cheese
**Cream	-	Cream/Sour Cream	Cream	Cream; Sour Cream	-
Ice Cream	Ice Cream	Ice Cream/Frozen Shakes	Ice Cream	Ice Cream	Ice Cream/Ice Milk/Milkshakes
**Flavoured Milk	-	Flavoured Milk; Flavoured Milk Powder	-	Sherbet Milk/Ice Milk	Chocolate Milk/Hot Cocoa
Skim Milk	Skim Milk/Low-fat Milk	Reduced-Fat Milk; Low-Fat Milk/fat-Free Milk	2% Milk; Skim Milk/1% Milk/Buttermilk	Skim Milk/Low-fat Milk	2% Milk/Low-fat Milk/1% Milk/Skim Milk/Non-Fat Milk/Buttermilk
Whole Milk	Whole Milk	Whole Milk	Whole Milk	Whole Milk/Regular Milk	Whole Milk/Regular Milk
Yoghurt	Yoghurt	Yoghurt	Flavoured Yoghurt	Yoghurt	Yoghurt/Frozen Yoghurt
Cake/Pie	Doughnuts; Danish/Sweet Roll/Coffee Cake/Pastries; Cake/Brownie; Cookies; Pie	Cake/Cookies/Pies/Pastries/Danish/ Doughnuts/Cobblers	Doughnuts/Cookies/Cakes/Pastry; Pumpkin Pie/Sweet Potato Pie; Other Pies	Cookies; Brownies; Doughnuts; Sweet Roll/Coffee Cake/Pastry; Cake; Pie	Cakes/Cookies/Brownies/ Pies/Doughnuts/Pastries
*Candy	Non-Chocolate Candy; Jam/Jelly	Non-Chocolate Candy; Syrup/Honey/Jam/Jelly	Non-Chocolate Candy/ Jelly/Honey/Brown Sugar	Non-Chocolate Candy; Jams/ Jellies/Syrup/Honey/Preserves	-
Chocolate	Chocolate Bar/Chocolate Pieces	Chocolate Candy	Chocolate Candy	Chocolate Bars/Chocolate Pieces; Chocolate Candy	Chocolate Candy/Fudge
Muffins/Corn Bread	Biscuits/Combread; Muffins	Quick Breads/Corn Muffins/Pancakes/Waffles/Croissant/Tortilla	Biscuits/Muffins/Burger Rolls; Corn Bread/Corn Muffins/Corn Tortillas	English Muffins/Rolls/Bagels; Muffins/Biscuits; Pancakes/Waffles	Corn Bread/Corn Muffins/Corn Tortillas
Fish	Dark Meat Fish; Other Fish; Canned Tuna Fish	Fresh Fish/Smoked Fish	Baked Fish/Broiled Fish; Tuna Fish/Tuna Salad/Tuna Casserole	Dark-Meat Fish; Other Fish; Canned Tuna Fish	Fish Fillets/Fish Sticks/ Fish Sandwiches/Tuna
Shellfish	Shrimp/Lobster/Scallops	Shellfish	Shell Fish/Shrimp/ Lobster/Crab/Oysters	Shrimp/ Lobster/Scallops	Shrimp/Clams/Oysters/ Crab/Lobsters
Citrus Fruit	Oranges	Oranges/Grapefruit/Tangerine/ Lemon	Oranges; Grapefruit; Lemon	Oranges; Grapefruit	Oranges/Grapefruit/ Tangerines

Non-Citrus Fruit	Apples/Pears; Bananas; Peaches/Apricots/Plums; Other Fruit	Non-Citrus Fruits	Apples/Applesauce/Pears; Bananas; Strawberries; Cantaloupe; Watermelon; Apricots/Peaches/Nectarines; Other Fruits	Apples/Pears; Bananas; Strawberries; Blueberries; Cantaloupe; Watermelon; Peaches/Apricots/Plums; Raisins/Grapes; Prunes	Apple/Banana/Pear/Berries/Cherries/Grapes/Plum/Other Fruits; Cantaloupe/Honeydew/Watermelon; Peach/Nectarine/Apricot
	**Apple/Pear	Apples/Pears	Apples/Applesauce/Pears	Apples/Pears	-
	**Banana	Bananas	Bananas	Bananas	-
	**Melon	-	Cantaloupe; Watermelon	Cantaloupe; Watermelon	Cantaloupe/Honeydew/Watermelon
	*Peach	Peaches/Apricots/Plums	Apricots/Nectarines/Peaches	Peaches/Apricots/Plums	Peach/Nectarine/Apricot
	Brown Bread	Dark Bread/Whole Grain Bread	Dark Bread/Whole Wheat/Rye/Pumpernickel	Dark Bread	Dark Bread/Whole Wheat/Rye/Pumpernickel
	White Bread	White Bread; Crackers	White Bread/Bagels/Crackers	White Bread; Crackers/Triskets/Wheat Thins	White Bread/Rolls/Bagels/Crackers
	Cold Cereal	Cold Breakfast Cereal	Bran Cereal/Granola Cereal; Cold Cereal; Fortified Cereal	Cold Breakfast Cereal	Bran Cereal; Fortified Cereal; Cold Cereals
	*Cooked Cereal	Cooked Cereal/Oatmeal/ Grits/Cream of Wheat	Cooked Cereal	Cooked Oatmeal; Cooked Breakfast Cereal	Cooked Cereals/Oatmeal/Cream of Wheat/Cream of Rice/Grits
	Pasta	Spaghetti/Noodles/Other Pasta	Spaghetti/Lasagne/Pasta	Spaghetti/Pasta	Spaghetti/Pasta
*Rice	Rice	Rice	Brown Rice; White Rice	Rice	
Legumes	Beans/Lentils/Pinto Beans/Baked Beans	Legumes/Dried Beans	Baked Beans/Pinto Beans/Kidney Beans	Beans/Lentils/Chickpeas	
**Nuts	Nuts	Nuts/Seeds	-	Nuts	
*Peanuts	Peanut Butter	Nut Butter/Seed Butter	Peanut Butter	-	
*Bacon	Bacon	Cured Pork; Lean Cured Pork	Bacon	Bacon	
Beef/Pork/Lamb	Beef/Pork/Lamb	Beef; Lean Beef; Lamb; Lean Lamb; Pork; Lean Pork	Beef; Pork	Beef; Pork/Ham	
**Hamburger	Hamburger	Hamburger	Hamburger/Cheesburger/Meat Loaf	-	
**Hotdog	Hotdogs	Hotdogs	Hotdogs	-	
Organ Meats	Liver	Organ Meat	Liver/Chicken Liver	Liver/Organ Meats	
*Sausage/Lunch Meat	Processed Meat/Sausage/ Salami/Bologna	Cold Cuts/Sausage; Lean Cold Cuts/Lean Sausage	Liverwurst; Ham/Lunch Meat; Sausage	Processed Meats/Sausage/ Salami/Bologna	
Poultry	Chicken/Turkey	Poultry; Lean Poultry	Chicken/Turkey	Chicken/Turkey	
*Cabbage/ Cauliflower	Cabbage/Cauliflower/Brussel Sprout	Cabbage/Cauliflower/Brussel Sprout	Cabbage/Coleslaw; Cauliflower; Brussel Sprouts	Brussel Sprouts/Cauliflower; Cabbage/Coleslaw/Sauerkraut	
*Broccoli	Broccoli	Broccoli	Broccoli	Broccoli	
*Carrot	Carrots	Carrots	Carrots	Carrots	
**Corn	Corn	Corn	Corn	-	
**Lettuce	-	Green Salad	Iceberg Lettuce/Lettuce Head; Romaine Lettuce/Leaf Lettuce	Tossed Salad	
**Peas	Peas/Lima Beans	Peas	Peas	Peas/Lima Beans	

Potato	Mashed Potato; French Fried Potato	Boiled Potato/Boiled Potato; French Fries/Fried Potatoes	Baked Potato/Boiled Potato/Mashed Potato; French Fried Potato	Baked Potato/Mashed Potato/French-Fried Potato
Spinach	Spinach/Collards/Greens	Spinach; Mustard Greens/Turnip Greens/Collards	Spinach; Kale/Mustard/Chard Greens	Spinach/Greens/Collards/Kale
**String Beans	String Beans/Green Beans Tomatoes/Tomato Juice	String Beans/Green Beans Tomatoes/Tomato Juice	String Beans Tomatoes; Tomato Juice	- Tomatoes/Tomato Juice/Salsa
Winter Squash	Dark Yellow Winter Squash; Sweet Potato	Pumpkin/Sweet Potato/Winter Squash	Winter Squash/Baked Squash; Sweet Potato/Yam	Sweet Potatoes/Yams/Orange Squash/Pumpkin
Other Food Items				
**Creamer	-	Non-Dairy Cream	Non-Dairy Coffee Whitener	-
Margarine	Margarine/Butter Blend (as spread)	Margarine; Reduced-Fat Margarine	Margarine (as spread)	Margarine (as spread)
*Mayonnaise/ Dressing	-	Salad Dressing/Mayonnaise	Salad Dressing/Mayonnaise	Mayonnaise/Salad Dressing
Eggs	Eggs	Eggs	Eggs	Eggs
Chips/Popcorn	Potato Chips/Corn Chips; Popcorn	Snack Chips; Popcorn; Flavoured Popcorn; Potato Chips/Onion Rings/Savoury Snacks	Salty Snacks/Chips/Popcorn Potato Chips/Corn Chips; Popcorn	Potato Chips/Corn Chips/ Pretzels/Popcorn
*Condiments	Catsup/Hot Sauce/Soy Sauce/Steak Sauce	Catsup/Barbeque Sauce/Mustard	Red Chili Sauce/Taco Sauce/Salsa Picante	-
*Table Sugar	Sugar Added to Food/Beverages	Sugar	Sugar Added to Cereal/Beverages	-

Table S4. Summary of the average consumption frequency for 63 food items after conversion to serves per week.

Food Item	CARDIA study				CHS				FHS				NHANES III			
	Mean ± S.D.	Median (Min, Max)	Female (n = 795)	Male (n = 600)	Mean ± S.D.	Median (Min, Max)	Female (n = 1108)	Male (n = 1384)	Mean ± S.D.	Median (Min, Max)	Female (n = 1593)	Male (n = 2178)	Mean ± S.D.	Median (Min, Max)	Female (n = 2108)	
Alcoholic Beverages																
Beer	6.94 ± 6.80	0.00(0.00-32.00)	0.46 ± 2.11	0.00(0.00-42.00)	0.46 ± 2.11	0.00(0.00-42.00)	0.46 ± 2.11	0.00(0.00-42.00)	0.46 ± 2.11	0.00(0.00-42.00)	0.46 ± 2.11	0.00(0.00-42.00)	0.46 ± 2.11	0.00(0.00-42.00)	0.46 ± 2.11	
Liquor	1.69 ± 2.49	0.00(0.00-56.00)	0.80 ± 2.40	0.00(0.00-80.00)	0.80 ± 2.40	0.00(0.00-80.00)	0.80 ± 2.40	0.00(0.00-80.00)	0.80 ± 2.40	0.00(0.00-80.00)	0.80 ± 2.40	0.00(0.00-80.00)	0.80 ± 2.40	0.00(0.00-80.00)	0.80 ± 2.40	
Wine	0.59 ± 1.78	0.00(0.00-21.00)	0.67 ± 2.01	0.00(0.00-30.00)	0.67 ± 2.01	0.00(0.00-30.00)	0.67 ± 2.01	0.00(0.00-30.00)	0.67 ± 2.01	0.00(0.00-30.00)	0.67 ± 2.01	0.00(0.00-30.00)	0.67 ± 2.01	0.00(0.00-30.00)	0.67 ± 2.01	
Non-Alcoholic Beverages																
Citrus Juice	3.72 ± 4.60	0.00(0.00-42.00)	3.74 ± 4.15	0.00(0.00-42.00)	3.74 ± 4.15	0.00(0.00-42.00)	3.74 ± 4.15	0.00(0.00-42.00)	3.74 ± 4.15	0.00(0.00-42.00)	3.74 ± 4.15	0.00(0.00-42.00)	3.74 ± 4.15	0.00(0.00-42.00)	3.74 ± 4.15	
Non-Citrus Juice	1.05 ± 2.79	0.00(0.00-42.00)	0.77 ± 2.66	0.00(0.00-42.00)	0.77 ± 2.66	0.00(0.00-42.00)	0.77 ± 2.66	0.00(0.00-42.00)	0.77 ± 2.66	0.00(0.00-42.00)	0.77 ± 2.66	0.00(0.00-42.00)	0.77 ± 2.66	0.00(0.00-42.00)	0.77 ± 2.66	
Coffee	15.69 ± 14.47	0.00(0.00-42.00)	13.47 ± 13.95	0.00(0.00-42.00)	13.47 ± 13.95	0.00(0.00-42.00)	13.47 ± 13.95	0.00(0.00-42.00)	13.47 ± 13.95	0.00(0.00-42.00)	13.47 ± 13.95	0.00(0.00-42.00)	13.47 ± 13.95	0.00(0.00-42.00)	13.47 ± 13.95	
Tea	4.03 ± 7.33	0.00(0.00-42.00)	4.78 ± 7.82	0.00(0.00-42.00)	4.78 ± 7.82	0.00(0.00-42.00)	4.78 ± 7.82	0.00(0.00-42.00)	4.78 ± 7.82	0.00(0.00-42.00)	4.78 ± 7.82	0.00(0.00-42.00)	4.78 ± 7.82	0.00(0.00-42.00)	4.78 ± 7.82	
Diet Soft Drink	3.49 ± 6.35	0.00(0.00-42.00)	2.92 ± 8.13	0.00(0.00-80.95)	2.92 ± 8.13	0.00(0.00-80.95)	2.92 ± 8.13	0.00(0.00-80.95)	2.92 ± 8.13	0.00(0.00-80.95)	2.92 ± 8.13	0.00(0.00-80.95)	2.92 ± 8.13	0.00(0.00-80.95)	2.92 ± 8.13	
Soft Drink	2.93 ± 5.23	0.00(0.00-42.00)	1.76 ± 4.50	0.00(0.00-42.00)	1.76 ± 4.50	0.00(0.00-42.00)	1.76 ± 4.50	0.00(0.00-42.00)	1.76 ± 4.50	0.00(0.00-42.00)	1.76 ± 4.50	0.00(0.00-42.00)	1.76 ± 4.50	0.00(0.00-42.00)	1.76 ± 4.50	
Butter	2.59 ± 5.43	0.00(0.00-42.00)	2.48 ± 5.39	0.00(0.00-42.00)	2.48 ± 5.39	0.00(0.00-42.00)	2.48 ± 5.39	0.00(0.00-42.00)	2.48 ± 5.39	0.00(0.00-42.00)	2.48 ± 5.39	0.00(0.00-42.00)	2.48 ± 5.39	0.00(0.00-42.00)	2.48 ± 5.39	
Cheese	3.54 ± 3.83	0.00(0.00-70.00)	3.93 ± 3.89	0.00(0.00-38.00)	3.93 ± 3.89	0.00(0.00-38.00)	3.93 ± 3.89	0.00(0.00-38.00)	3.93 ± 3.89	0.00(0.00-38.00)	3.93 ± 3.89	0.00(0.00-38.00)	3.93 ± 3.89	0.00(0.00-38.00)	3.93 ± 3.89	
Ice-Cream	1.77 ± 2.50	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	
***Ice-Cream	2.56 ± 7.06	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	0.00(0.00-42.00)	1.42 ± 2.54	
Skin Milk	1.11 ± 2.39	0.00(0.00-35.00)	0.29 ± 2.39	0.00(0.00-25.86)	0.29 ± 2.39	0.00(0.00-25.86)	0.29 ± 2.39	0.00(0.00-25.86)	0.29 ± 2.39	0.00(0.00-25.86)	0.29 ± 2.39	0.00(0.00-25.86)	0.29 ± 2.39	0.00(0.00-25.86)	0.29 ± 2.39	
Whole Milk	1.79 ± 4.40	0.00(0.00-42.00)	0.93 ± 3.15	0.00(0.00-42.00)	0.93 ± 3.15	0.00(0.00-42.00)	0.93 ± 3.15	0.00(0.00-42.00)	0.93 ± 3.15	0.00(0.00-42.00)	0.93 ± 3.15	0.00(0.00-42.00)	0.93 ± 3.15	0.00(0.00-42.00)	0.93 ± 3.15	
Yoghurt	0.36 ± 1.27	0.00(0.00-17.50)	0.85 ± 1.93	0.00(0.00-35.00)	0.85 ± 1.93	0.00(0.00-35.00)	0.85 ± 1.93	0.00(0.00-35.00)	0.85 ± 1.93	0.00(0.00-35.00)	0.85 ± 1.93	0.00(0.00-35.00)	0.85 ± 1.93	0.00(0.00-35.00)	0.85 ± 1.93	
Cake/Pie	6.36 ± 6.64	0.00(0.00-42.00)	5.04 ± 5.69	0.00(0.00-35.00)	5.04 ± 5.69	0.00(0.00-35.00)	5.04 ± 5.69	0.00(0.00-35.00)	5.04 ± 5.69	0.00(0.00-35.00)	5.04 ± 5.69	0.00(0.00-35.00)	5.04 ± 5.69	0.00(0.00-35.00)	5.04 ± 5.69	
*Candy	0.99 ± 2.44	0.00(0.00-42.00)	0.94 ± 2.04	0.00(0.00-35.00)	0.94 ± 2.04	0.00(0.00-35.00)	0.94 ± 2.04	0.00(0.00-35.00)	0.94 ± 2.04	0.00(0.00-35.00)	0.94 ± 2.04	0.00(0.00-35.00)	0.94 ± 2.04	0.00(0.00-35.00)	0.94 ± 2.04	
Chocolate	1.77 ± 2.73	0.00(0.00-42.00)	1.89 ± 3.18	0.00(0.00-42.00)	1.89 ± 3.18	0.00(0.00-42.00)	1.89 ± 3.18	0.00(0.00-42.00)	1.89 ± 3.18	0.00(0.00-42.00)	1.89 ± 3.18	0.00(0.00-42.00)	1.89 ± 3.18	0.00(0.00-42.00)	1.89 ± 3.18	
Muffins/Com Bread	1.16 ± 2.28	0.00(0.00-35.00)	0.93 ± 1.76	0.00(0.00-17.97)	0.93 ± 1.76	0.00(0.00-17.97)	0.93 ± 1.76	0.00(0.00-17.97)	0.93 ± 1.76	0.00(0.00-17.97)	0.93 ± 1.76	0.00(0.00-17.97)	0.93 ± 1.76	0.00(0.00-17.97)	0.93 ± 1.76	
Fish	1.62 ± 1.78	0.00(0.00-18.44)	1.92 ± 1.93	1.41(0.00-17.50)	1.92 ± 1.93	1.41(0.00-17.50)	1.92 ± 1.93	1.41(0.00-17.50)	1.92 ± 1.93	1.41(0.00-17.50)	1.92 ± 1.93	1.41(0.00-17.50)	1.92 ± 1.93	1.41(0.00-17.50)	1.92 ± 1.93	
Shellfish	0.25 ± 0.43	0.00(0.00-7.00)	0.22 ± 0.40	0.00(0.00-7.00)	0.22 ± 0.40	0.00(0.00-7.00)	0.22 ± 0.40	0.00(0.00-7.00)	0.22 ± 0.40	0.00(0.00-7.00)	0.22 ± 0.40	0.00(0.00-7.00)	0.22 ± 0.40	0.00(0.00-7.00)	0.22 ± 0.40	
Citrus Fruit	1.47 ± 2.30	0.00(0.00-35.00)	1.77 ± 2.64	0.00(0.00-42.00)	1.77 ± 2.64	0.00(0.00-42.00)	1.77 ± 2.64	0.00(0.00-42.00)	1.77 ± 2.64	0.00(0.00-42.00)	1.77 ± 2.64	0.00(0.00-42.00)	1.77 ± 2.64	0.00(0.00-42.00)	1.77 ± 2.64	
Non-Citrus Fruit	7.65 ± 8.09	0.00(0.00-35.00)	6.78 ± 8.32	0.00(0.00-42.00)	6.78 ± 8.32	0.00(0.00-42.00)	6.78 ± 8.32	0.00(0.00-42.00)	6.78 ± 8.32	0.00(0.00-42.00)	6.78 ± 8.32	0.00(0.00-42.00)	6.78 ± 8.32	0.00(0.00-42.00)	6.78 ± 8.32	
**Ice-Cream	2.91 ± 2.69	0.00(0.00-35.00)	3.48 ± 3.97	0.00(0.00-42.00)	3.48 ± 3.97	0.00(0.00-42.00)	3.48 ± 3.97	0.00(0.00-42.00)	3.48 ± 3.97	0.00(0.00-42.00)	3.48 ± 3.97	0.00(0.00-42.00)	3.48 ± 3.97	0.00(0.00-42.00)	3.48 ± 3.97	
***Biscuits	2.27 ± 2.69	0.00(0.00-35.00)	2.89 ± 2.71	0.00(0.00-35.00)	2.89 ± 2.71	0.00(0.00-35.00)	2.89 ± 2.71	0.00(0.00-35.00)	2.89 ± 2.71	0.00(0.00-35.00)	2.89 ± 2.71	0.00(0.00-35.00)	2.89 ± 2.71	0.00(0.00-35.00)	2.89 ± 2.71	
**Milk	0.87 ± 1.66	0.00(0.00-17.50)	1.05 ± 1.86	0.00(0.00-17.50)	1.05 ± 1.86	0.00(0.00-17.50)	1.05 ± 1.86	0.00(0.00-17.50)	1.05 ± 1.86	0.00(0.00-17.50)	1.05 ± 1.86	0.00(0.00-17.50)	1.05 ± 1.86	0.00(0.00-17.50)	1.05 ± 1.86	
*Peach	6.14 ± 7.40	0.00(0.00-42.00)	6.11 ± 6.37	0.00(0.00-35.00)	6.11 ± 6.37	0.00(0.00-35.00)	6.11 ± 6.37	0.00(0.00-35.00)	6.11 ± 6.37	0.00(0.00-35.00)	6.11 ± 6.37	0.00(0.00-35.00)	6.11 ± 6.37	0.00(0.00-35.00)	6.11 ± 6.37	
Brown Bread	6.06 ± 7.95	0.00(0.00-42.00)	4.13 ± 6.26	0.00(0.00-42.00)	4.13 ± 6.26	0.00(0.00-42.00)	4.13 ± 6.26	0.00(0.00-42.00)	4.13 ± 6.26	0.00(0.00-42.00)	4.13 ± 6.26	0.00(0.00-42.00)	4.13 ± 6.26	0.00(0.00-42.00)	4.13 ± 6.26	
White Bread	3.51 ± 4.56	0.00(0.00-42.00)	3.15 ± 3.68	0.00(0.00-42.00)	3.15 ± 3.68	0.00(0.00-42.00)	3.15 ± 3.68	0.00(0.00-42.00)	3.15 ± 3.68	0.00(0.00-42.00)	3.15 ± 3.68	0.00(0.00-42.00)	3.15 ± 3.68	0.00(0.00-42.00)	3.15 ± 3.68	
Cold Cereal	0.96 ± 2.09	0.00(0.00-35.00)	1.11 ± 1.91	0.00(0.00-17.50)	1.11 ± 1.91	0.00(0.00-17.50)	1.11 ± 1.91	0.00(0.00-17.50)	1.11 ± 1.91	0.00(0.00-17.50)	1.11 ± 1.91	0.00(0.00-17.50)	1.11 ± 1.91	0.00(0.00-17.50)	1.11 ± 1.91	
*Cooked Pasta	1.00 ± 1.26	0.00(0.00-35.00)	1.05 ± 1.18	0.00(0.00-17.50)	1.05 ± 1.18	0.00(0.00-17.50)	1.05 ± 1.18	0.00(0.00-17.50)	1.05 ± 1.18	0.00(0.00-17.50)	1.05 ± 1.18	0.00(0.00-17.50)	1.05 ± 1.18	0.00(0.00-17.50)	1.05 ± 1.18	
Pasta	1.01 ± 1.53	0.00(0.00-35.00)	1.21 ± 1.53	0.00(0.00-17.50)	1.21 ± 1.53	0.00(0.00-17.50)	1.21 ± 1.53	0.00(0.00-17.50)	1.21 ± 1.53	0.00(0.00-17.50)	1.21 ± 1.53	0.00(0.00-17.50)	1.21 ± 1.53	0.00(0.00-17.50)	1.21 ± 1.53	
*Rice	0.90 ± 1.34	0.00(0.00-17.50)	0.66 ± 1.01	0.00(0.00-17.50)	0.66 ± 1.01	0.00(0.00-17.50)	0.66 ± 1.01	0.00(0.00-17.50)	0.66 ± 1.01	0.00(0.00-17.50)	0.66 ± 1.01	0.00(0.00-17.50)	0.66 ± 1.01	0.00(0.00-17.50)	0.66 ± 1.01	
Legumes	1.07 ± 2.03	0.00(0.00-35.00)	0.85 ± 1.91	0.00(0.00-42.00)	0.85 ± 1.91	0.00(0.00-42.00)	0.85 ± 1.91	0.00(0.00-42.00)	0.85 ± 1.91	0.00(0.00-42.00)	0.85 ± 1.91	0.00(0.00-42.00)	0.85 ± 1.91	0.00(0.00-42.00)	0.85 ± 1.91	
**Nuts	2.12 ± 3.72	0.00(0.00-42.00)	1.84 ± 2.86	0.00(0.00-35.00)	1.84 ± 2.86	0.00(0.00-35.00)	1.84 ± 2.86	0.00(0.00-35.00)	1.84 ± 2.86	0.00(0.00-35.00)	1.84 ± 2.86	0.00(0.00-35.00)	1.84 ± 2.86	0.00(0.00-35.00)	1.84 ± 2.86	
**Peanuts	1.15 ± 2.02	0.00(0.00-35.00)	0.99 ± 1.27	0.00(0.00-17.50)	0.99 ± 1.27	0.00(0.00-17.50)	0.99 ± 1.27	0.00(0.00-17.50)	0.99 ± 1.27	0.00(0.00-17.50)	0.99 ± 1.27	0.00(0.00-17.50)	0.99 ± 1.27	0.00(0.00-17.50)	0.99 ± 1.27	
*Bacon	3.02 ± 3.11	0.00(0.00-35.00)	2.99 ± 2.77	0.00(0.00-35.00)	2.99 ± 2.77	0.00(0.00-35.00)	2.99 ± 2.77	0.00(0.00-35.00)	2.99 ± 2.77	0.00(0.00-35.00)	2.99 ± 2.77	0.00(0.00-35.00)	2.99 ± 2.77	0.00(0.00-35.00)	2.99 ± 2.77	
Beef/Pork/Lamb	1.71 ± 1.62	0.00(0.00-17.50)	1.11 ± 1.11	0.00(0.00-17.50)	1.11 ± 1.11	0.00(0.00-17.50)	1.11 ± 1.11	0.00(0.00-17.50)	1.11 ± 1.11	0.00(0.00-17.50)	1.11 ± 1.11	0.00(0.00-17.50)	1.11 ± 1.11	0.00(0.00-17.50)	1.11 ± 1.11	
**Ham/Burger	0.78 ± 1.23	0.00(0.00-35.00)	0.44 ± 0.75	0.00(0.00-17.50)	0.44 ± 0.75	0.00(0.00-17.50)	0.44 ± 0.75	0.00(0.00-17.50)	0.44 ± 0.75	0.00(0.00-17.50)	0.44 ± 0.75	0.00(0.00-17.50)	0.44 ± 0.75	0.00(0.00-17.50)	0.44 ± 0.75	
**Hotdog	0.19 ± 0.19	0.00(0.00-17.50)	0.17 ± 0.18	0.00(0.00-17.50)	0.17 ± 0.18	0.00(0.00-17.50)	0.17 ± 0.18	0.00(0.00-17.50)	0.17 ± 0.18	0.00(0.00-17.50)	0.17 ± 0.18	0.00(0.00-17.50)	0.17 ± 0.18	0.00(0.00-17.50)	0.17 ± 0.18	
Organ Meats	1.79 ± 2.58	0.00(0.00-42.00)														

Table S5: Diet-wide association study results for the original and diet quality score adjusted analyses in the full cohort.

Food Item	No Diet Score Adjustment				DASH Diet Score Adjustment				Mediterranean Diet Score Adjustment				Data-Derived Diet Score Adjustment			
	n	β [95% CI]	P_{β}	R^2	n	β [95% CI]	P_{β}	R^2	n	β [95% CI]	P_{β}	R^2	n	β [95% CI]	P_{β}	R^2
Beer	16,724	1.38 [1.02; 1.74]	0.005	0.05	16,724	1.34 [0.98; 1.70]	0.005	0.05	16,712	1.35 [1.00; 1.70]	0.005	0.07	16,618	1.37 [1.03; 1.71]	0.005	0.08
Liquor	16,743	1.38 [1.02; 1.81]	0.005	0.03	16,724	1.32 [0.94; 1.70]	0.005	0.03	16,712	1.32 [0.94; 1.70]	0.005	0.03	16,637	1.37 [1.03; 1.71]	0.005	0.03
Wine	16,743	1.07 [0.34; 1.80]	0.005	0.05	16,742	1.04 [0.27; 1.80]	0.01	0.17%	16,741	0.99 [0.21; 1.77]	0.01	0.16%	16,636	1.11 [0.39; 1.84]	0.005	0.06
Citrus Juice	16,743	0.12 [-0.09; 0.34]	0.27	0.02%	16,743	0.10 [-0.12; 0.31]	0.37	0.01%	16,743	0.08 [-0.14; 0.29]	0.47	0.01%	16,640	0.16 [-0.05; 0.38]	0.14	0.02%
Non-Citrus Juice	16,752	0.00 [-0.40; 0.40]	1.00	0.00%	16,752	-0.04 [-0.45; 0.37]	0.85	<0.01%	16,753	-0.01 [-0.34; 0.34]	0.66	<0.01%	16,652	0.07 [-0.44; 0.29]	0.70	<0.01%
Coffee	16,726	0.11 [-0.11; 0.33]	0.32	<0.01%	16,726	0.10 [-0.11; 0.30]	0.37	<0.01%	16,727	0.10 [-0.11; 0.31]	0.35	<0.01%	16,621	0.13 [-0.10; 0.35]	0.28	<0.01%
Tea	16,750	0.02 [0.01; 0.04]	0.04	0.07%	16,750	0.02 [0.01; 0.04]	0.04	0.07%	16,750	0.02 [0.01; 0.04]	0.04	0.07%	16,598	0.02 [0.01; 0.04]	0.04	0.07%
Diet Soda Drink	16,750	-0.07 [-0.21; 0.07]	0.33	0.01%	16,750	-0.05 [-0.20; 0.09]	0.45	<0.01%	16,750	-0.07 [-0.21; 0.07]	0.33	<0.01%	16,645	-0.05 [-0.19; 0.09]	0.52	<0.01%
Soft Drink	16,745	0.68 [0.34; 1.02]	0.005	0.22%	16,745	0.61 [0.31; 0.91]	0.005	0.22%	16,745	0.53 [0.18; 0.87]	0.005	0.22%	16,652	0.58 [0.26; 0.91]	0.005	0.22%
Butter	16,731	-0.02 [-0.19; 0.15]	0.81	<0.01%	16,731	-0.08 [-0.26; 0.10]	0.36	0.01%	16,731	-0.05 [-0.23; 0.12]	0.54	<0.01%	16,652	-0.26 [-0.45; -0.06]	0.01	0.05%
Cheese	16,755	-0.02 [-0.09; -0.35]	0.099%	0.29	16,755	-0.06 [-0.16; 0.04]	0.36	0.01%	16,754	-0.06 [-0.16; 0.04]	0.36	0.01%	16,648	-0.61 [-0.88; -0.34]	0.005	0.87
**Cream	6,238	0.16 [-0.11; 0.43]	0.24	0.02%	6,238	0.12 [-0.16; 0.39]	0.42	<0.01%	6,233	0.11 [-0.17; 0.38]	0.45	0.01%	6,153	0.17 [-0.10; 0.44]	0.22	0.02%
Ice Cream	16,696	0.32 [-0.04; 1.01]	0.42	<0.01%	16,696	0.31 [-0.58; 0.81]	0.70	<0.01%	16,697	0.22 [-0.50; 0.93]	0.55	<0.01%	16,593	0.29 [-0.46; 1.05]	0.44	<0.01%
**Flavored Milk	8,463	-0.20 [-1.06; 0.67]	0.66	<0.01%	8,463	-0.12 [-1.02; 0.61]	0.56	<0.01%	8,461	-0.18 [-1.04; 0.68]	0.68	<0.01%	8,408	-0.14 [-1.01; 0.72]	0.75	<0.01%
Skim Milk	16,714	-0.63 [-0.78; -0.48]	0.005	0.40%	16,713	-0.65 [-0.80; -0.50]	0.005	0.43%	16,714	-0.61 [-0.76; -0.46]	0.005	0.43%	16,609	-0.59 [-0.74; -0.44]	0.005	0.43%
Whole Milk	16,661	-0.20 [-0.45; 0.06]	0.14	0.01%	16,660	-0.30 [-0.56; -0.04]	0.02	0.03%	16,661	-0.34 [-0.60; -0.07]	0.02	0.03%	16,556	-0.24 [-0.50; 0.02]	0.08	0.02%
Yogurt	16,685	-0.29 [-0.86; 0.28]	0.32	<0.01%	16,685	-0.14 [-0.72; 0.43]	0.63	<0.01%	16,686	0.33 [-0.26; 0.93]	0.27	0.01%	16,579	-0.12 [-0.98; 0.75]	0.79	<0.01%
Cake/Pie	16,758	-0.26 [-0.48; -0.03]	0.02	0.01%	16,758	-0.38 [-0.61; -0.15]	0.12	0.04%	16,759	-0.33 [-0.56; -0.10]	0.26	0.04%	16,652	-0.23 [-0.46; 0.00]	0.05	0.01%
*Candy	12,512	-0.28 [-0.73; 0.17]	0.22	0.01%	12,512	-0.37 [-0.83; 0.08]	0.11	0.02%	12,496	-0.27 [-0.72; 0.19]	0.25	0.01%	12,482	-0.26 [-0.71; 0.20]	0.27	0.01%
Chocolate	16,754	0.46 [-0.33; 1.24]	0.26	<0.01%	16,753	0.27 [-0.48; 1.03]	0.48	<0.01%	16,754	0.38 [-0.37; 1.14]	0.32	<0.01%	16,646	0.31 [-0.38; 0.99]	0.38	<0.01%
Muffins/Corn Bread	16,755	-0.57 [-1.45; 0.31]	0.20	0.01%	16,755	-0.64 [-1.58; 0.31]	0.19	0.01%	16,756	-0.56 [-1.46; 0.34]	0.22	0.01%	16,649	-0.50 [-1.36; 0.37]	0.26	0.01%
Fish	16,756	0.52 [0.01; 1.03]	0.04	0.03%	16,756	0.40 [0.14; 1.54]	0.27	0.06%	16,757	0.39 [0.12; 1.43]	0.27	0.06%	16,650	0.69 [0.17; 1.21]	0.01	0.04%
Shellfish	16,731	3.66 [1.24; 6.08]	0.005	0.10%	16,731	3.61 [1.41; 6.61]	0.01	0.10%	16,732	3.80 [1.29; 6.33]	0.01	0.10%	16,627	3.75 [1.21; 6.29]	0.01	0.04%
Citrus Fruit	16,756	-0.20 [-0.55; 0.16]	0.27	<0.01%	16,755	0.03 [-0.33; 0.40]	0.86	<0.01%	16,756	0.18 [-0.19; 0.55]	0.35	0.01%	16,648	-0.13 [-0.48; 0.23]	0.49	<0.01%
Non-Citrus Fruit	11,470	-0.28 [-0.43; -0.13]	0.005	0.37	11,470	-0.14 [-0.31; 0.02]	0.21	0.01%	11,471	-0.22 [-0.37; 0.54]	0.95	<0.01%	11,472	-0.23 [-0.39; -0.08]	2.70E-03	0.04%
**Apple/Pear	11,447	-0.39 [-0.76; -0.01]	0.04	0.06%	11,447	-0.31 [-0.61; 0.29]	0.59	<0.01%	11,448	-0.29 [-0.61; 0.09]	0.13	0.02%	11,063	-0.60 [-1.45; 0.24]	0.16	0.02%
**Berry	11,556	-0.73 [-1.22; -0.24]	0.005	0.89	11,556	-0.48 [-0.99; 0.03]	0.06	0.02%	11,557	-0.60 [-1.10; -0.10]	0.02	0.04%	11,071	-0.64 [-1.44; -0.14]	0.01	0.05%
**Melon	1,159	-0.17 [-0.83; 0.49]	0.61	<0.01%	9,138	0.26 [-0.43; 0.94]	0.47	<0.01%	9,139	-0.21 [-0.68; 0.66]	0.97	<0.01%	9,054	-0.17 [-0.84; 0.50]	0.62	<0.01%
*Peach	15,398	-0.31 [-0.88; 0.26]	0.28	<0.01%	15,397	0.01 [-0.57; 0.60]	0.96	<0.01%	15,398	0.15 [-0.44; 0.73]	0.63	<0.01%	15,293	-0.23 [-0.81; 0.34]	0.43	<0.01%
Brown Bread	16,710	-0.60 [-0.77; -0.42]	0.005	0.86	16,710	-0.52 [-0.71; -0.33]	0.005	0.86	16,711	-0.56 [-0.75; -0.38]	0.005	0.86	16,607	-0.50 [-0.68; -0.31]	1.10E-07	0.16%
White Bread	16,749	0.09 [-0.06; 0.24]	0.28	0.01%	16,749	-0.01 [-0.17; 0.15]	0.88	<0.01%	16,750	0.06 [-0.10; 0.21]	0.49	<0.01%	16,652	-0.40 [-0.63; -0.18]	2.80E-04	0.07%
Cold Cereal	16,754	-0.72 [-0.97; -0.47]	1.99E-08	0.62	16,753	-0.70 [-1.00; -0.50]	0.005	0.62	16,754	-0.69 [-1.04; -0.43]	0.005	0.62	16,644	-0.67 [-0.93; -0.42]	2.21E-07	0.13%
*Cooked Cereal	15,408	-0.80 [-2.15; 0.56]	0.25	0.02%	15,408	-0.52 [-1.90; 0.87]	0.46	<0.01%	15,389	-0.29 [-1.63; 1.05]	0.67	<0.01%	15,311	-0.78 [-2.21; 0.66]	0.29	0.01%
Pasta	16,726	-0.21 [-0.87; 0.46]	0.54	<0.01%	16,726	-0.20 [-0.96; 0.47]	0.57	<0.01%	16,707	-0.10 [-0.78; 0.56]	0.75	<0.01%	16,652	-0.22 [-0.88; 0.45]	0.52	<0.01%
*Rice	15,411	0.12 [-0.88; 0.83]	0.73	0.01%	15,411	0.39 [-0.38; 1.10]	0.29	0.02%	15,412	0.57 [-0.15; 1.28]	0.12	0.03%	15,371	0.29 [-0.42; 1.01]	0.51	0.01%
Legumes	16,724	1.39 [0.29; 2.50]	0.01	0.09%	16,724	1.37 [0.97; 2.46]	0.005	0.38	16,725	1.45 [1.02; 2.20]	0.005	0.38	16,621	1.07 [-0.18; 2.32]	0.01	0.06%
*Nuts	10,558	-0.53 [-0.89; -0.16]	4.37E-03	0.08%	10,558	-0.47 [-0.84; -0.10]	1.99E-02	0.06%	10,559	-0.46 [-0.83; -0.08]	0.02	0.04%	10,518	-0.47 [-0.83; -0.10]	0.01	0.07%
*Seanuts	12,504	-0.88 [-1.25; -0.51]	4.00E-06	0.18%	12,504	-0.77 [-1.15; -0.39]	7.28E-05	0.13%	12,492	-0.65 [-1.03; -0.26]	1.03E-03	0.09%	12,478	-0.78 [-1.16; -0.40]	6.87E-05	0.13%
*Bacon	12,500	-0.07 [-0.80; 0.66]	0.85	<0.01%	12,500	-0.23 [-1.42; 0.96]	0.71	0.05%	12,483	-0.69 [-2.04; 0.66]	0.31	0.03%	12,479	-0.22 [-0.96; 0.51]	0.56	0.01%
Beef/Pork/Lamb	16,757	0.63 [0.32; 0.95]	7.68E-06	0.08%	16,757	0.56 [0.24; 0.88]	5.40E-04	0.05%	16,738	0.27 [-0.32; 0.86]	0.38	0.02%	16,717	0.48 [-0.04; 1.00]	0.07	0.06%
**Hamburger	11,065	0.97 [-0.06; 2.00]	0.06	0.02%	11,065	0.66 [-0.38; 1.69]	0.21	0.01%	11,049	0.13 [-0.93; 1.19]	0.81	<0.01%	11,035	0.70 [-0.34; 1.74]	0.18	0.01%
**Hotdog	11,165	0.18 [-1.21; 1.58]	0.80	<0.01%	11,165	-0.06 [-1.46; 1.34]	0.93	<0.01%	11,149	-0.36 [-1.44; 0.68]	0.48	0.01%	11,132	-0.65 [-1.71; 0.41]	0.23	0.02%
Organ Meats	16,729	-2.21 [-5.61; 1.19]	0.20	0.01%	16,729	-2.09 [-5.48; 1.30]	0.23	0.01%	16,711	-2.40 [-5.80; 0.99]	0.17	0.01%	16,691	-2.37 [-5.77; 1.03]	0.17	0.01%
*Sausage/Lunch Meat	12,513	0.27 [-0.23; 0.76]	0.29	0.01%	12,513	0.16 [-0.33; 0.65]	0.52	<0.01%	12,496	-0.10 [-0.61; 0.40]	0.69	<0.01%	12,482	0.14 [-0.36; 0.64]	0.58	<0.01%
Poultry	16,740	0.70 [0.29; 1.10]	6.78E-04	0.08%	16,740	1.00 [0.59; 1.42]	2.45E-06	0.15%	16,722	0.91 [0.51; 1.32]	9.81E-06	0.13%	16,719	0.62 [0.21; 1.02]	2.83E-03	0.07%
*Cabbage/Cauliflower	15,419	-0.01 [-0.69; 0.67]	0.98	<0.01%	15,419	-0.01 [-0.69; 1.34]	0.99	0.03%	15,402	0.00 [-0.02; 0.23]	0.66	0.04%	15,381	0.19 [-0.50; 0.83]	0.59	0.01%
*Broccoli	15,390	-0.21 [-0.86; 0.44]	0.53	<0.01%	15,390	0.34 [-0.34; 1.03]	0.32	0.01%	15,373	0.49 [-0.18; 1.17]	0.15	0.02%	15,352	-0.05 [-0.71; 0.60]	0.88	<0.01%
*Carrot	15,416	-0.64 [-1.52; 0.25]	0.16	0.02%	15,416	-0.77 [-1.55; 0.41]	0.78	<0.01%	15,399	-0.48 [-1.43; 0.47]	0.92	<0.01%	15,380	-0.48 [-1.36; 0.41]	0.23	0.01%
**Corn	11,162	-0.71 [-1.77; 0.34]	0.19	0.02%	11,162	-0.36 [-1.42; 0.71]	0.51	0.01%	11,146	-0.38 [-1.44; 0.68]	0.48	0.01%	11,132	-0.65 [-1.71; 0.41]	0.28	0.02%
**Lettuce	9,155	0.01 [-0.39; 0.41]	0.97	<0.01%	9,154	0.26 [-1.16; 0.68]	0.41	0.02%	9,149	0.32 [-0.10; 0.73]	0.13	0.02%	9,120	0.08 [-0.33; 0.42]	0.95	<0.01%
**Peas	11,160	-0.50 [-1.49; 0.49]	0.32	0.01%	11,160	-0.27 [-1.08; 0.94]	0.89	<0.01%	11,145	-0.08 [-0.93; 0.83]	0.88	<0.01%	11,131	-0.38 [-1.37; 0.62]	0.46	

Table S6. Diet-wide association study results for the original and diet quality score adjusted analyses in the male-only cohort.

Food Item	No Diet Score Adjustment			Health-Eating Diet Score Adjustment			DASH Diet Score Adjustment			Mediterranean Diet Score Adjustment			Data-Derived Diet Score Adjustment			
	n	P _β	R ²	n	P _β	R ²	n	P _β	R ²	n	P _β	R ²	n	P _β	R ²	
Alcohol																
Bever	8,392	1.33 [0.93, 1.74]	1.24E-10	8,387	1.24 [0.99, 1.47]	2.44E-23	8,379	1.24 [0.99, 1.47]	2.44E-23	8,379	1.24 [0.99, 1.47]	2.44E-23	8,333	1.33 [0.93, 1.74]	1.18E-10	1.31%
Liquor	8,403	1.16 [0.46, 1.86]	1.56E-03	8,401	1.09 [0.41, 1.77]	1.56E-03	8,399	1.10 [0.44, 1.74]	6.29E-04	8,396	1.09 [0.44, 1.74]	7.00E-03	8,345	1.15 [0.48, 1.83]	7.57E-04	0.41%
Wine	8,402	1.30 [0.64, 1.96]	1.13E-04	8,401	1.34 [0.68, 2.01]	6.58E-05	8,397	1.46 [0.80, 2.12]	1.42E-05	8,387	1.30 [0.64, 1.96]	1.20E-04	8,343	1.36 [0.69, 2.03]	7.25E-05	0.18%
Alcohol																
Citrus Juice	8,407	0.10 [-0.19, 0.40]	0.50	8,407	0.08 [-0.21, 0.38]	0.58	8,403	0.09 [-0.21, 0.38]	0.57	8,406	0.16 [-0.14, 0.46]	0.30	8,349	0.15 [-0.15, 0.44]	0.34	0.01%
Non-Citrus Juice	8,411	0.16 [-0.17, 0.50]	0.33	8,411	0.13 [-0.20, 0.46]	0.44	8,407	0.12 [-0.21, 0.45]	0.47	8,406	0.19 [-0.14, 0.32]	0.26	8,354	0.05 [-0.29, 0.38]	0.79	<0.01%
Coffee	8,398	0.07 [-0.14, 0.27]	0.52	8,398	0.05 [-0.14, 0.23]	0.65	8,404	0.06 [-0.14, 0.25]	0.58	8,378	0.05 [-0.15, 0.25]	0.60	8,341	0.09 [-0.14, 0.33]	0.44	<0.01%
Tea	8,385	0.22 [-0.02, 0.42]	0.04	8,385	0.22 [-0.02, 0.42]	0.04	8,386	0.22 [-0.02, 0.42]	0.04	8,386	0.22 [-0.02, 0.42]	0.04	8,328	0.21 [0.01, 0.41]	0.04	0.06%
Diet Soft Drink	8,406	-0.29 [-0.53, -0.06]	0.01	8,406	-0.27 [-0.50, -0.03]	0.03	8,402	-0.27 [-0.50, -0.03]	0.03	8,385	-0.29 [-0.52, -0.06]	0.02	8,348	-0.27 [-0.50, -0.03]	0.03	0.05%
Soft Drink	8,404	-0.79 [-0.53, -1.04]	1.38E-09	8,404	-0.69 [-0.48, -0.96]	2.36E-07	8,400	-0.58 [-0.33, -1.03]	0.01	8,383	-0.69 [-0.27, -1.11]	0.70E-03	8,354	-0.69 [-0.26, -1.18]	0.01	0.29%
Dairy Products																
Butter	8,397	-0.03 [-0.29, 0.22]	0.80	8,397	-0.11 [-0.37, 0.16]	0.43	8,394	-0.07 [-0.33, 0.19]	0.59	8,378	-0.05 [-0.30, 0.21]	0.70E-03	8,354	-0.24 [-0.52, 0.04]	0.09	0.06%
Cheese	8,410	-0.64 [-1.05, -0.23]	2.39E-03	8,410	-0.68 [-1.09, -0.27]	1.22E-03	8,406	-0.65 [-1.04, -0.22]	2.59E-03	8,389	-0.74 [-1.16, -0.32]	4.80E-04	8,351	-0.65 [-1.07, -0.24]	2.07E-03	0.10%
*Cream	2,816	0.35 [-0.13, 0.80]	0.16	2,816	0.29 [-0.29, 0.65]	0.47	2,814	0.22 [-0.21, 0.72]	0.28	2,803	0.25 [-0.22, 0.71]	0.26	2,770	0.36 [-0.11, 0.83]	0.13	0.06%
Ice Cream	8,379	-0.05 [-0.55, 0.45]	0.84	8,379	-0.15 [-0.65, 0.36]	0.57	8,375	-0.09 [-0.59, 0.41]	0.73	8,338	-0.10 [-0.61, 0.40]	0.69	8,321	-0.06 [-0.56, 0.44]	0.81	<0.01%
*Skimmed Milk	4,069	0.19 [-1.34, 1.71]	0.81	4,069	0.11 [-1.49, 1.56]	0.91	4,068	0.23 [-1.29, 1.75]	0.27	4,055	0.16 [-1.36, 1.69]	0.84	4,038	0.22 [-1.31, 1.75]	0.78	<0.01%
*Whole Milk	8,390	-0.78 [-1.00, -0.56]	3.54E-12	8,389	-0.80 [-1.02, -0.58]	7.10E-13	8,385	-0.66 [-0.89, -0.43]	2.16E-08	8,369	-0.75 [-0.97, -0.53]	2.90E-11	8,331	-0.75 [-0.97, -0.52]	8.13E-11	0.51%
Whole Milk	8,369	-0.27 [-0.62, 0.08]	0.12	8,368	-0.38 [-0.74, -0.03]	0.03	8,368	-0.38 [-0.74, -0.03]	0.03	8,347	-0.35 [-0.70, 0.00]	0.05	8,311	-0.32 [-0.67, 0.04]	0.08	0.04%
Yogurt	8,375	-0.77 [-1.21, -0.28]	0.16	8,375	-0.43 [-1.43, 0.57]	0.40	8,374	-0.14 [-0.89, 1.71]	0.80	8,354	-0.42 [-1.43, 0.58]	0.41	8,311	-0.52 [-1.53, 0.49]	0.31	0.01%
Desserts/Sweets																
Cake/Pie	8,413	-0.17 [-0.48, 0.14]	0.29	8,413	-0.29 [-0.61, 0.02]	0.07	8,409	-0.23 [-0.54, 0.08]	0.15	8,392	-0.18 [-0.49, 0.13]	0.24	8,354	-0.16 [-0.48, 0.16]	0.33	<0.01%
*Candy	6,281	-0.30 [-0.96, 0.35]	0.36	6,281	-0.37 [-1.02, 0.29]	0.27	6,282	-0.23 [-0.89, 0.43]	0.49	6,264	-0.24 [-0.90, 0.42]	0.48	6,233	-0.31 [-0.97, 0.35]	0.36	0.02%
Chocolate	8,412	0.63 [0.01, 1.25]	0.05	8,411	0.46 [-0.16, 1.09]	0.15	8,407	0.54 [-0.16, 1.16]	0.09	8,390	0.59 [0.04, 1.21]	0.06	8,352	0.55 [-0.07, 1.18]	0.08	0.04%
Muffins/Corn Bread	8,410	-0.04 [-0.75, 0.67]	0.91	8,410	-0.11 [-0.82, 0.60]	0.76	8,407	-0.10 [-0.81, 0.61]	0.79	8,407	-0.10 [-0.81, 0.61]	0.79	8,352	0.05 [-0.66, 0.77]	0.88	<0.01%
Fish																
Fish	8,412	0.60 [-0.18, 1.38]	0.13	8,412	1.17 [0.36, 1.98]	4.71E-03	8,409	1.06 [0.27, 1.85]	0.01	8,392	1.25 [0.42, 2.08]	3.21E-03	8,354	0.75 [-0.04, 1.54]	0.06	0.04%
Shellfish	8,401	0.47 [1.05, 7.10]	0.01	8,401	0.63 [1.33, 7.96]	0.01	8,401	0.63 [1.33, 7.96]	0.01	8,381	0.41 [1.21, 2.68]	0.01	8,344	0.47 [0.99, 7.15]	0.01	0.12%
Fruit																
Citrus Fruit	8,412	-0.09 [-0.64, 0.46]	0.75	8,411	0.19 [-0.37, 0.76]	0.50	8,407	0.22 [-0.22, 0.92]	0.23	8,390	0.09 [-0.47, 0.65]	0.75	8,352	-0.04 [-0.59, 0.52]	0.90	<0.01%
Non-Citrus Fruit	8,414	-0.44 [-0.66, -0.19]	3.44E-04	8,413	-0.26 [-0.59, 0.07]	0.05	8,409	-0.13 [-0.39, 0.14]	0.36	8,392	-0.32 [-0.57, -0.07]	0.01	8,354	-0.45 [-0.85, -0.05]	0.03	0.11%
*Apple/Pear	5,663	-0.58 [-1.13, -0.03]	0.04	5,663	-0.29 [-0.89, 0.30]	0.33	5,661	-0.13 [-0.72, 0.47]	0.68	5,648	-0.42 [-0.98, 0.14]	0.15	5,619	-0.97 [-2.19, 0.25]	0.12	0.06%
*Banana	6,271	-0.93 [-1.66, -0.20]	0.01	6,271	-0.59 [-1.35, 0.18]	0.13	6,269	-0.34 [-1.11, 0.43]	0.39	6,266	-0.66 [-1.41, 0.69]	0.08	6,262	-0.87 [-1.62, -0.13]	0.02	0.09%
*Melon	4,352	0.04 [-1.24, 1.31]	0.95	4,351	0.17 [-0.61, 2.01]	0.29	4,349	0.76 [0.56, 2.08]	0.08	4,332	0.35 [0.95, 1.61]	0.60	4,295	-0.02 [-1.31, 1.26]	0.97	<0.01%
*Peach	7,796	-0.43 [-2.07, 1.20]	0.60	7,795	0.08 [-1.74, 1.87]	0.95	7,791	0.35 [-1.62, 2.32]	0.73	7,787	-0.08 [-1.91, 1.24]	0.93	7,739	-0.39 [-1.91, 1.13]	0.61	0.01%
Brown Bread																
White Bread	8,382	-0.68 [-0.93, -0.44]	6.47E-08	8,382	-0.61 [-0.88, -0.34]	8.26E-06	8,379	-0.52 [-0.89, -0.36]	3.09E-06	8,362	-0.62 [-0.89, -0.36]	3.09E-06	8,327	-0.60 [-0.85, -0.34]	5.83E-06	0.25%
Cold Cereal	8,408	0.02 [-0.19, 0.23]	0.85	8,408	-0.10 [-0.32, 0.12]	0.03	8,405	-0.11 [-0.33, 0.11]	0.31	8,388	-0.03 [-0.25, 0.18]	0.75	8,354	-0.36 [-0.86, -0.26]	1.02E-04	0.14%
*Cooked Cereal	8,409	-0.73 [-1.07, -0.38]	3.41E-05	8,409	-0.73 [-1.08, -0.39]	2.78E-05	8,405	-0.58 [-0.93, -0.23]	1.72E-03	8,388	-0.67 [-1.02, -0.33]	1.50E-04	8,350	-0.69 [-1.04, -0.34]	2.02E-04	0.17%
Pasta	7,807	-0.17 [-2.52, 0.17]	0.79	7,807	-0.70 [-1.54, 0.14]	0.01	7,803	-0.56 [-1.40, 0.29]	0.20	7,787	-0.78 [-1.62, 0.07]	0.07	7,753	-1.22 [-2.63, 0.19]	0.09	0.06%
*Rice	8,397	-0.17 [-1.15, 0.80]	0.39	8,397	-0.15 [-1.13, 0.83]	0.77	8,395	-0.11 [-0.97, 0.99]	0.98	8,376	-0.08 [-1.06, 0.91]	0.88	8,354	-0.16 [-1.14, 0.82]	0.75	<0.01%
Legumes/Beans																
*Beans	7,808	-0.08 [-1.81, 1.65]	0.93	7,808	-0.38 [-0.69, 1.45]	0.49	7,804	0.55 [-0.52, 1.62]	0.31	7,787	0.30 [-0.77, 1.38]	0.58	7,751	0.00 [-1.88, 1.87]	1.00	<0.01%
Legumes/Beans																
*Cabbage Cauliflower	7,810	-0.49 [-1.55, 0.57]	0.37	7,810	-0.27 [-1.24, 3.50]	3.09E-05	7,807	0.30 [-0.80, 1.40]	0.60	7,790	0.22 [-1.29, 0.83]	0.71	7,752	-0.32 [-1.39, 0.75]	0.56	<0.01%
*Broccoli	7,796	-0.54 [-1.68, 0.59]	0.35	7,796	0.31 [-0.89, 1.51]	0.61	7,793	0.47 [-0.72, 1.66]	0.44	7,776	-0.22 [-1.37, 0.93]	0.71	7,740	-0.32 [-1.47, 0.83]	0.59	<0.01%
*Carrot	7,809	-0.85 [-2.13, 0.44]	0.20	7,809	-0.63 [-2.54, 1.05]	0.14	7,806	-0.12 [-1.48, 1.24]	0.86	7,790	-0.62 [-2.01, 0.77]	0.38	7,753	-0.92 [-2.40, 0.57]	0.23	0.02%
*Corn	5,677	0.70 [-0.62, 2.02]	0.30	5,677	0.18 [-0.94, 1.73]	0.57	5,675	-0.56 [-2.18, 0.98]	0.43	5,661	-0.93 [-2.45, 0.60]	0.23	5,631	-1.02 [-2.55, 0.51]	0.19	0.04%
*Lettuce	4,353	0.18 [-0.56, 0.93]	0.63	4,352	0.07 [0.88, 1.65]	0.17	4,350	0.20 [1.01, 1.74]	0.04	4,334	0.35 [0.40, 0.30]	0.37	4,297	0.16 [-0.60, 0.92]	0.69	0.01%
*Peas	5,668	-0.83 [-2.29, 0.63]	0.26	5,668	-0.25 [-1.55, 1.24]	0.74	5,666	-0.24 [-1.51, 1.24]	0.75	5,652	-0.62 [-2.08, 0.84]	0.41	5,622	-0.67 [-2.14, 0.79]	0.37	0.02%
Potato	8,411	0.90 [0.25, 1.56]	0.01	8,411	0.78 [0.13, 1.44]	0.42	8,407	0.74 [0.08, 1.39]	0.63	8,392	1.08 [0.42, 1.75]	1.42E-03	8,352	0.80 [0.14, 1.45]	0.02	0.07%
Spinach	8,409	-0.11 [-0.95, 0.73]	0.79	8,409	-0.03 [-0.87, 1.19]	0.47	8,406	0.50 [0.37, 1.37]	0.26	8,390	0.22 [0.64, 1.09]	0.61	8,351	-0.20 [-1.63, 1.21]	0.78	<0.01%
*String Beans	5,671	0.15 [-0.91, 1.21]	0.79	5,671	0.57 [-1.52, 1.66]	0.31	5,669	0.60 [-0.48, 1.68]	0.28	5,655	0.29 [0.78, 1.35]	0.60	5,626	-0.56 [-3.34, 1.62]	0.50	<0.01%
Tomato	8,405	0.43 [-0.20, 1.05]	0.19	8,405	0.70 [0.15, 1.43]	0.02	8,403	0.85 [0.21, 1.49]	0.01	8,388	0.55 [0.08, 1.10]	0.08	8,348	0.32 [0.64, 1.29]	0.51	0.03%
Winter Squash	8,410	-0.75 [-2.87, 1.36]	0.48	8,410	-0.14 [-1.99, 1.72]	0.89	8,407	0.25 [-2.13, 1.81]	0.63	8,391	-0.34 [-2.13, 1.48]	0.72	8,353	-0.71 [-2.81, 1.39]	0.31	0.01%
*Creamer																
Margarine	2,780	0.41 [-0.20, 1.03]	0.18	2,780	0.36 [-0.25, 0.98]	0.24	2,778	0.39 [-0.22, 1.00]	0.22	2,764	0.					

Table S7. Diet-wide association study results for the original and diet quality score adjusted analyses in the female-only cohort.

Food Item	No Diet Score Adjustment				DASH Diet Score Adjustment				Mediterranean Diet Score Adjustment				Data-Derived Diet Score Adjustment							
	n	P _q	R ²	P _p	n	β [95% CI]	P _q	R ²	P _p	n	β [95% CI]	P _q	R ²	P _p	n	β [95% CI]	P _q	R ²	P _p	
Bever	8,332	1.78 [1.22; 2.34]	0.49%	0.69	8,332	1.76 [1.20; 2.31]	0.47%	0.72	8,316	1.76 [1.20; 2.32]	0.48%	0.64	8,285	1.67 [1.10; 2.24]	0.43%	0.70	8,292	1.79 [1.16; 2.43]	0.41%	0.58
Beer	8,340	1.84 [1.21; 2.48]	0.44%	0.61	8,340	1.77 [1.13; 2.40]	0.42%	0.65	8,323	1.80 [1.16; 2.43]	0.44%	0.58	8,292	1.79 [1.16; 2.43]	0.41%	0.58	8,292	1.79 [1.16; 2.43]	0.41%	0.58
Wine	8,341	0.89 [0.17; 1.94]	0.10	0.20%	0.02	8,341	0.86 [-0.19; 1.92]	0.11	0.20%	0.02	8,324	0.84 [-0.25; 1.93]	0.13	0.19%	0.02	8,293	0.93 [-0.12; 1.98]	0.08	0.21%	0.02
Citrus Juice	8,336	0.16 [0.15; 0.48]	0.01	0.02%	0.97	8,336	0.15 [-0.17; 0.46]	0.36	0.02%	0.95	8,331	0.10 [-0.22; 0.42]	0.54	0.02%	0.84	8,291	0.21 [-0.11; 0.51]	0.20	0.03%	0.99
Non-Citrus Juice	8,341	-0.02 [-0.35; 0.31]	0.91	<0.01%	0.16	8,341	-0.02 [-0.36; 0.32]	0.91	<0.01%	0.15	8,326	-0.01 [-0.35; 0.32]	0.94	<0.01%	0.16	8,298	-0.17 [-0.68; 0.34]	0.52	<0.01%	0.09
Coffee	8,328	0.06 [-0.18; 0.31]	0.61	0.01%	4.08E-03	8,328	0.05 [-0.19; 0.30]	0.66	0.01%	5.1E-03	8,309	0.00 [-0.35; 0.32]	0.93	<0.01%	0.03	8,280	0.06 [-0.19; 0.32]	0.62	0.01%	3.7E-03
Tea	8,337	0.27 [-0.05; 0.59]	0.09	0.09%	0.03	8,337	0.27 [-0.04; 0.58]	0.09	0.09%	0.03	8,329	0.26 [-0.05; 0.58]	0.10	0.08%	0.03	8,270	0.26 [-0.04; 0.56]	0.09	0.08%	0.04
Diet Soft Drink	8,344	0.07 [-0.10; 0.24]	0.41	<0.01%	0.89	8,344	0.07 [-0.10; 0.24]	0.42	<0.01%	0.91	8,325	0.00 [-0.35; 0.32]	0.94	<0.01%	0.03	8,297	0.09 [-0.08; 0.26]	0.31	0.01%	0.94
Soft Drink	8,341	0.55 [-0.09; 1.01]	0.02	0.16%	0.04	8,341	0.53 [-0.27; 0.80]	0.09	0.13%	0.20	8,322	0.54 [-0.10; 0.97]	0.07	0.15%	0.07	8,298	0.43 [-0.12; 0.24]	0.07	0.06%	0.45
Butter	8,334	0.01 [-0.23; 0.24]	0.96	<0.01%	0.49	8,334	-0.01 [-0.27; 0.22]	0.86	<0.01%	0.87	8,320	-0.01 [-0.25; 0.21]	0.91	<0.01%	0.72	8,298	-0.26 [-0.57; 0.00]	0.05	0.04%	0.99
Cheese	8,345	-0.64 [-0.99; -0.29]	3.10E-04	0.09%	0.84	8,345	-0.66 [-1.01; -0.31]	2.13E-04	0.09%	0.86	8,330	-0.62 [-0.97; -0.27]	4.96E-04	0.08%	0.88	8,297	-0.46 [-0.93; 0.00]	0.05	0.08%	0.94
*Ice Cream	3,422	0.03 [-0.29; 0.35]	0.84	<0.01%	0.91	3,422	0.01 [-0.25; 0.43]	0.56	<0.01%	0.93	3,419	0.03 [-0.29; 0.35]	0.85	<0.01%	0.93	3,383	0.05 [-0.28; 0.37]	0.78	<0.01%	0.93
Ice Cream	8,317	0.45 [-0.20; 1.09]	0.17	0.05%	0.10	8,317	0.33 [-0.32; 0.98]	0.32	0.04%	0.30	8,302	0.40 [-0.26; 1.06]	0.23	0.05%	0.24	8,272	0.43 [-0.21; 1.08]	0.19	0.05%	0.11
**Flavored Milk	4,394	-0.41 [-1.41; 0.60]	0.43	0.01%	0.37	4,394	-0.41 [-1.41; 0.58]	0.40	0.01%	0.35	4,393	-0.43 [-1.46; 0.56]	0.41	0.01%	0.36	4,383	-0.45 [-1.46; 0.56]	0.40	0.01%	0.29
Skim Milk	8,324	-0.48 [-0.68; -0.28]	2.40E-06	0.24%	0.12	8,324	-0.48 [-0.68; -0.28]	2.52E-06	0.26%	0.14	8,309	-0.40 [-0.60; -0.19]	1.86E-04	0.15%	0.25	8,305	-0.47 [-0.67; -0.27]	4.86E-06	0.23%	0.22
Whole Milk	8,329	0.06 [-0.34; 0.45]	0.78	<0.01%	0.26	8,329	0.04 [-0.44; 0.36]	0.84	<0.01%	0.62	8,277	0.00 [-0.47; 0.32]	0.70	<0.01%	0.52	8,245	0.03 [-0.37; 0.42]	0.89	<0.01%	0.28
Yoghurt	8,310	-0.02 [-1.24; 1.21]	0.98	<0.01%	0.02	8,310	0.04 [-1.12; 1.19]	0.99	<0.01%	0.04	8,295	0.50 [-0.64; 1.64]	0.39	0.02%	0.06	8,263	0.21 [-1.02; 1.44]	0.74	<0.01%	0.02
Cake/Pie	8,345	-0.50 [-1.12; 0.13]	0.12	0.03%	0.04	8,345	-0.50 [-0.84; -0.16]	4.18E-03	0.06%	0.21	8,330	-0.48 [-0.82; -0.14]	0.07	0.05%	0.11	8,326	-0.52 [-1.11; 0.06]	0.08	0.03%	0.06
*Candy	6,231	-0.24 [-0.86; 0.38]	0.45	0.01%	0.68	6,231	-0.31 [-0.94; 0.31]	0.32	0.01%	0.72	6,218	-0.25 [-0.88; 0.37]	0.43	0.01%	0.66	6,192	-0.15 [-0.78; 0.47]	0.63	<0.01%	0.67
Chocolate	8,342	0.02 [-0.90; 0.94]	0.97	0.02%	0.02	8,342	-0.10 [-1.03; 0.84]	0.84	0.04%	0.02	8,323	-0.06 [-0.92; 0.80]	0.89	0.02%	0.04	8,294	-0.04 [-0.92; 0.85]	0.94	0.03%	0.03
Muffins/Corn Bread	8,345	-0.94 [-2.23; 0.35]	0.15	0.05%	0.02	8,345	-0.97 [-2.34; 0.41]	0.17	0.05%	0.01	8,330	-0.88 [-2.17; 0.42]	0.18	0.04%	0.02	8,297	-0.86 [-2.16; 0.44]	0.19	0.05%	0.02
Fish	8,344	0.48 [-0.54; 1.49]	0.36	0.02%	0.08	8,344	0.87 [-0.16; 1.57]	0.07	0.06%	0.33	8,329	0.82 [-0.14; 1.49]	0.02	0.06%	0.21	8,296	0.70 [-0.00; 1.38]	0.04	0.04%	0.26
Shellfish	8,330	2.31 [-0.64; 3.98]	0.01	0.09%	0.39	8,330	2.32 [-0.64; 3.99]	0.01	0.09%	0.38	8,315	2.31 [-0.63; 3.98]	0.01	0.10%	0.37	8,284	2.37 [-0.70; 4.04]	0.04	0.09%	0.31
Citrus Fruit	8,344	-0.28 [-0.74; 0.18]	0.23	0.01%	0.27	8,344	-0.12 [-0.60; 0.35]	0.61	<0.01%	0.26	8,329	0.01 [-0.46; 0.49]	0.96	<0.01%	0.19	8,296	-0.18 [-0.64; 0.28]	0.44	0.01%	0.46
Non-Citrus Fruit	8,346	-0.14 [-0.33; 0.04]	0.43	0.01%	0.30	8,346	-0.05 [-0.26; 0.15]	0.61	<0.01%	0.69	8,331	0.07 [-0.14; 0.29]	0.91	<0.01%	0.33	8,298	-0.07 [-0.37; 0.21]	0.78	<0.01%	0.45
**Apple/Pear	5,484	-0.20 [-0.71; 0.30]	0.43	<0.01%	0.70	5,484	-0.10 [-0.52; 0.55]	0.96	<0.01%	0.63	5,470	-0.15 [-0.53; 0.23]	0.49	0.02%	0.48	5,444	-0.04 [-0.56; 0.48]	0.88	<0.01%	0.49
**Berry	5,485	-0.46 [-1.11; 0.19]	0.17	0.03%	0.35	5,485	-0.32 [-0.98; 0.35]	0.35	0.01%	0.76	5,471	-0.06 [-0.64; 0.51]	0.86	<0.01%	0.81	5,446	-0.32 [-0.98; 0.34]	0.34	0.02%	0.59
**Melon	4,807	-0.24 [-0.97; 0.49]	0.57	0.01%	0.25	4,807	-0.40 [-1.08; 0.72]	0.92	<0.01%	0.42	4,803	-0.16 [-0.72; 0.39]	0.83	<0.01%	0.30	4,759	-0.20 [-0.94; 0.53]	0.59	<0.01%	0.32
*Peach	7,602	-0.12 [-0.82; 0.58]	0.75	<0.01%	0.91	7,602	0.15 [-0.57; 0.86]	0.69	<0.01%	0.95	7,587	0.36 [-0.04; 0.98]	0.47	0.01%	0.90	7,554	-0.03 [-0.73; 0.68]	0.94	<0.01%	0.92
Brown Bread	8,328	0.45 [-0.71; -0.20]	5.18E-04	0.11%	0.12	8,328	-0.40 [-0.67; -0.13]	3.72E-03	0.07%	0.31	8,313	-0.35 [-0.60; -0.05]	0.02	0.05%	0.15	8,309	-0.34 [-0.61; -0.08]	0.01	0.07%	0.13
White Bread	8,341	0.07 [-0.05; 0.41]	0.12	0.04%	0.52	8,341	0.14 [-0.04; 0.38]	0.25	0.02%	0.92	8,326	0.07 [-0.16; 0.31]	0.55	0.01%	0.87	8,298	-0.15 [-0.46; 0.16]	0.54	0.01%	0.40
Cold Cereal	8,342	0.07 [-0.10; -0.30]	0.43	0.04%	0.13	8,342	-0.08 [-1.25; 1.03]	0.42	0.08%	0.08	8,327	-0.32 [-0.92; -0.19]	3.32E-03	0.06%	0.20	8,294	-0.38 [-0.96; -0.20]	2.72E-03	0.07%	0.19
*Cooked Cereal	7,601	-0.32 [-1.02; 0.38]	0.68	<0.01%	0.98E-03	7,601	-0.16 [-1.07; 1.55]	0.86	0.01%	2.44E-03	7,586	0.09 [-0.61; 0.79]	0.92	0.00%	3.44E-03	7,582	-0.17 [-1.77; 1.43]	0.83	<0.01%	6.88E-03
Pasta	8,329	-0.11 [-1.02; 0.79]	0.81	<0.01%	0.91	8,329	-0.02 [-0.93; 0.89]	0.96	<0.01%	0.92	8,314	-0.08 [-0.99; 0.83]	0.86	<0.01%	0.90	8,298	-0.15 [-1.06; 0.76]	0.79	<0.01%	0.90
*Rice	7,603	0.28 [-0.65; 1.21]	0.56	0.01%	0.97	7,603	0.43 [-0.50; 1.57]	0.37	0.03%	0.96	7,588	0.59 [-0.35; 1.54]	0.22	0.04%	0.97	7,555	0.42 [-0.52; 1.36]	0.38	0.02%	0.98
Legumes	8,329	0.52 [-0.88; 1.91]	0.47	0.02%	0.08	8,329	0.28 [-0.78; 2.14]	0.36	0.04%	0.07	8,315	0.95 [-0.50; 2.40]	0.20	0.06%	0.07	8,311	0.73 [-0.25; 1.68]	0.15	0.03%	0.12
*Nuts	5,123	-0.26 [-0.75; 0.23]	0.30	0.04%	0.41	5,123	-0.29 [-0.79; 0.21]	0.25	0.03%	0.70	5,112	-0.15 [-0.66; 0.35]	0.56	0.02%	0.58	5,106	-0.19 [-0.69; 0.30]	0.45	0.03%	0.61
*Peanuts	6,227	-0.65 [-1.23; -0.07]	0.03	0.07%	0.44	6,227	-0.55 [-1.13; 0.04]	0.07	0.05%	0.53	6,216	-0.61 [-1.21; -0.02]	0.04	0.06%	0.81	6,187	-0.55 [-1.13; 0.03]	0.06	0.06%	0.45
*Bacon	6,224	0.84 [-0.40; 2.08]	0.18	0.02%	0.41	6,224	0.65 [-0.60; 1.89]	0.31	0.01%	0.24	6,210	0.22 [-1.06; 1.50]	0.74	<0.01%	0.17	6,215	0.75 [-0.51; 2.01]	0.24	0.02%	0.25
Beef/Pork/Lamb	8,345	0.47 [-0.02; 0.92]	0.04	0.04%	0.80	8,345	0.43 [-0.05; 0.89]	0.07	0.02%	0.85	8,330	0.23 [-0.25; 0.72]	0.35	0.01%	0.83	8,326	0.44 [-0.03; 0.92]	0.07	0.03%	0.90
**Hamburger	5,438	1.45 [-0.22; 3.13]	0.09	0.02%	0.34	5,438	1.17 [-0.52; 2.85]	0.17	0.01%	0.29	5,424	1.32 [-0.38; 3.02]	0.13	0.01%	0.38	5,400	1.28 [-0.40; 2.96]	0.14	0.02%	0.28
**Hotdog	5,493	0.80 [-1.72; 3.32]	0.54	0.01%	0.30	5,493	0.61 [-1.92; 3.13]	0.64	<0.01%	0.50	5,479	0.17 [-1.65; 1.24]	0.78	<0.01%	0.22	5,446	-0.35 [-1.79; 1.10]	0.64	<0.01%	0.26
Organ Meats	8,337	0.23 [-1.49; 4.81]	0.92	<0.01%	0.23	8,337	0.12 [-1.49; 4.73]	0.96	<0.01%	0.23	8,322	-0.24 [-1.76; 2.39]	0.89	<0.01%	0.35	5,455	0.75 [-1.79; 3.28]	0.56	0.01%	0.48
*Sausage/Lunch Meat	6,233	0.26 [-0.53; 1.05]	0.52	0.01%	0.65	6,233	0.15 [-0.64; 0.94]	0.72	<0.01%	0.83	6,219	-0.13 [-0.84; 0.69]	0.76	<0.01%	0.16	8,293	0.05 [-0.57; 4.68]	0.98	<0.01%	0.21
Poultry	8,																			

Table S9. Interaction between the four diet quality scores and the genetic risk score.

Diet Score	Full Cohort					Male-Only					Female-Only				
	n	β [95% CI]	P_β	R ²	P_ϕ	n	β [95% CI]	P_β	R ²	P_ϕ	n	β [95% CI]	P_β	R ²	P_ϕ
"Healthy-Eating"	12,162	0.00 [-0.01; 0.02]	0.75	0.12%	0.51	6,109	0.01 [-0.01; 0.04]	0.37	0.17%	0.47	6,053	-0.01 [-0.03; 0.01]	0.21	0.07%	0.34
DASH	12,147	-0.01 [-0.02; 0.01]	0.32	0.39%	0.46	6,106	0.00 [-0.02; 0.02]	0.90	0.45%	0.42	6,041	-0.02 [-0.03; 0.00]	0.04	0.31%	0.34
Mediterranean	12,131	0.00 [-0.01; 0.01]	0.99	0.12%	0.13	6,092	0.01 [-0.01; 0.03]	0.38	0.23%	0.63	6,039	-0.01 [-0.02; 0.01]	0.28	0.02%	0.10
Data-Derived	12,078	0.00 [-0.01; 0.01]	0.46	0.09%	0.32	6,063	-0.01 [-0.02; 0.01]	0.31	0.08%	0.16	6,015	0.00 [-0.02; 0.01]	0.86	0.12%	0.67

SUPPLEMENTAL FIGURES

Figure S1. Exclusion criteria for each data-set.

Demographic and medical exclusion criteria are in normal font, dietary data exclusion criteria are in italics. The cohort sizes before and after exclusion are shown in bold font. Study-specific criteria were exclusion of related family members in the ARIC and NHANES III cohorts and exclusion of CHS individuals who were also part of the ARIC, Systolic Hypertension in the Elderly (SHEP), or NHANES III studies. CHS interviewers did not assess the reliability of participant's food frequency questionnaire answers nor acquire data on gout status.

Figure S2. Distribution of the Healthy Eating diet score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

Solid blue line – smoothed density curve of the Healthy Eating diet score distribution. Dashed red line – smoothed density curve for a random approximation of the normal distribution for data of the same length, mean, and standard deviation.

Figure S3. Distribution of the DASH diet score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

Solid blue line – smoothed density curve of the DASH diet score distribution. Dashed red line – smoothed density curve for a random approximation of the normal distribution for data of the same length, mean, and standard deviation.

Figure S4. Distribution of the Mediterranean diet score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

Solid blue line – smoothed density curve of the Mediterranean diet score distribution. Dashed red line – smoothed density curve for a random approximation of the normal distribution for data of the same length, mean, and standard deviation.

Figure S5. Parallel factor analysis scree plot of eigenvalues.

Solid blue line / triangles – eigenvalues from the actual dietary data. Dotted red line – eigenvalues from simulated data had the same mean and variance as the original data, but with no correlations among the observed variables. Dashed red line – eigenvalues from resampled data generated from the original sample. The point where the eigenvalues for the simulated or resampled data crosses the eigenvalues from the actual data is the point of inflection, indicating the number of factor analysis vectors to retain for further analysis.

Figure S6. Distribution of the data-driven diet score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

Solid blue line – smoothed density curve of the data-driven diet score distribution. Dashed red line – smoothed density curve for a random approximation of the normal distribution for data of the same length, mean, and standard deviation.

Figure S7. Correlogram of consumption of 63 food items (serves per week).

Correlations were calculated using a Pearson's product-moment correlation test in the full cohort. Blue indicates a positive correlation, orange a negative correlation. X – non-significant correlation p-value ($P_{\text{Cor}} \geq 2.6 \times 10^{-5}$; Bonferroni multiple-testing correction of 0.05 divided by 1,953 correlations), no mark indicates a significant correlation ($P_{\text{Cor}} < 2.6 \times 10^{-5}$).

Figure S8. Distribution of the genetic risk score in the ARIC (A), CARDIA (B), CHS (C) and FHS (D) cohorts.

Solid blue line – smoothed density curve of the data-driven diet score distribution. Dashed red line – smoothed density curve for a random approximation of the normal distribution for data of the same length, mean, and standard deviation.

Figure S1. Exclusion criteria for each data set.

	ARIC	CARDIA	CHS	FHS	NHANES III
	15,485	3,622	5,582	4,148	33,994
<18 Years Old	N/A	6	N/A	0	13,559
No Serum Urate Measurement	162	40	131	131	3,939
Non-European Ancestry	3,995	1,647	878	23	9,620
Not Whole-Genome Genotyped	1,707	262	1,308	205	N/A
Participant Has Gout	427	22	N/A	31	293
Participant Has Kidney Disease	137	63	141	162	174
Currently Taking Urate Lowering Therapies	11	0	68	0	18
Currently Taking Diuretics	1,229	9	625	109	669
Missing Any Covariate Data	970	78	147	63	330
Other Exclusion Criteria (Study Specific)	350	N/A	7	N/A	608
<i>Answered <10% of Diet Questionnaire</i>	5	1	14	325	2
<i>Average Calorie Intake ≤ 600 or ≥ 4,200 kcal/day</i>	135	134	309	82	546
<i>Answers Deemed Unreliable by Study</i>	99	25	N/A	40	0
	6,258	1,335	1,954	2,977	4,236

Figure S2. Distribution of the Healthy Eating score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

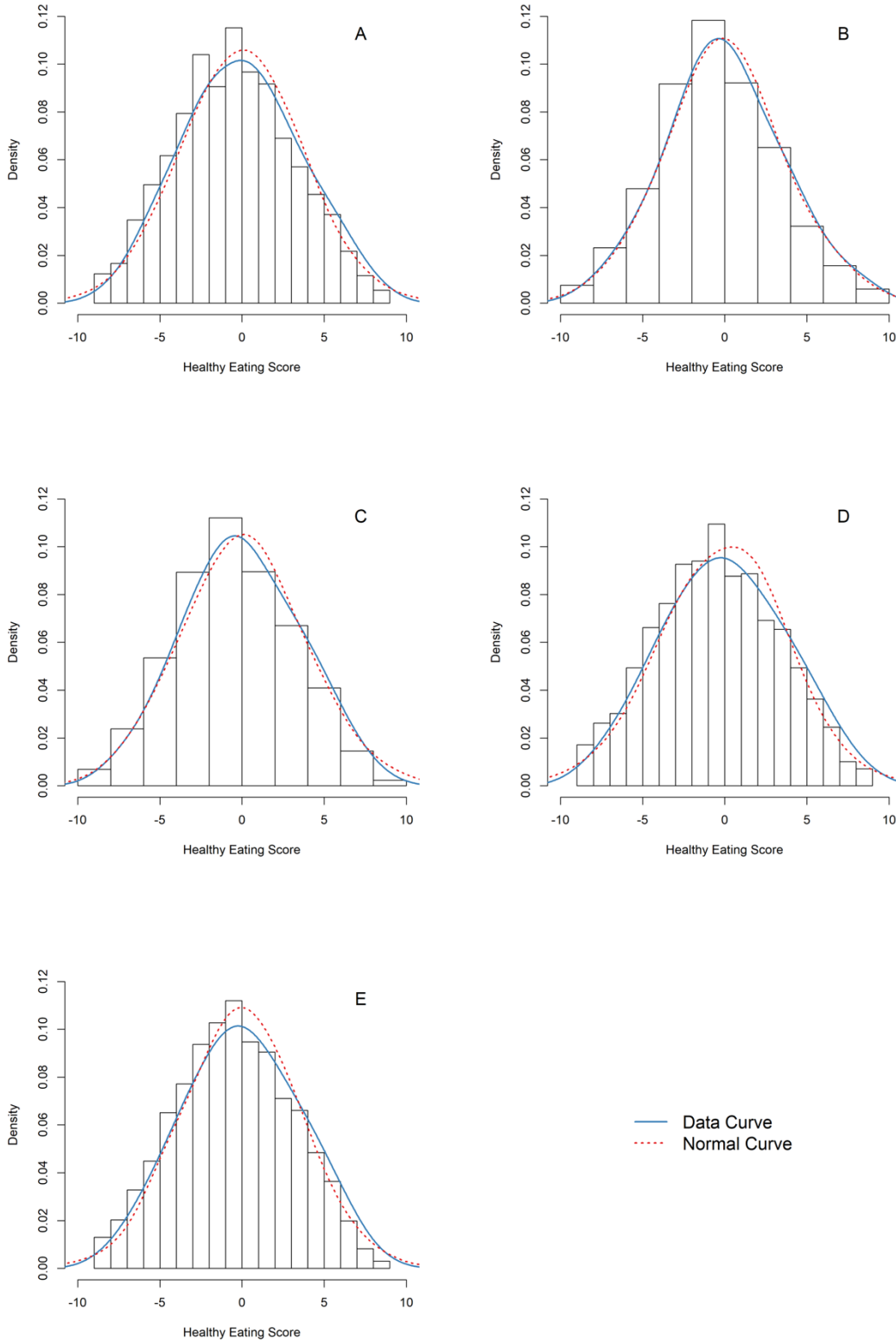


Figure S3. Distribution of the DASH diet score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

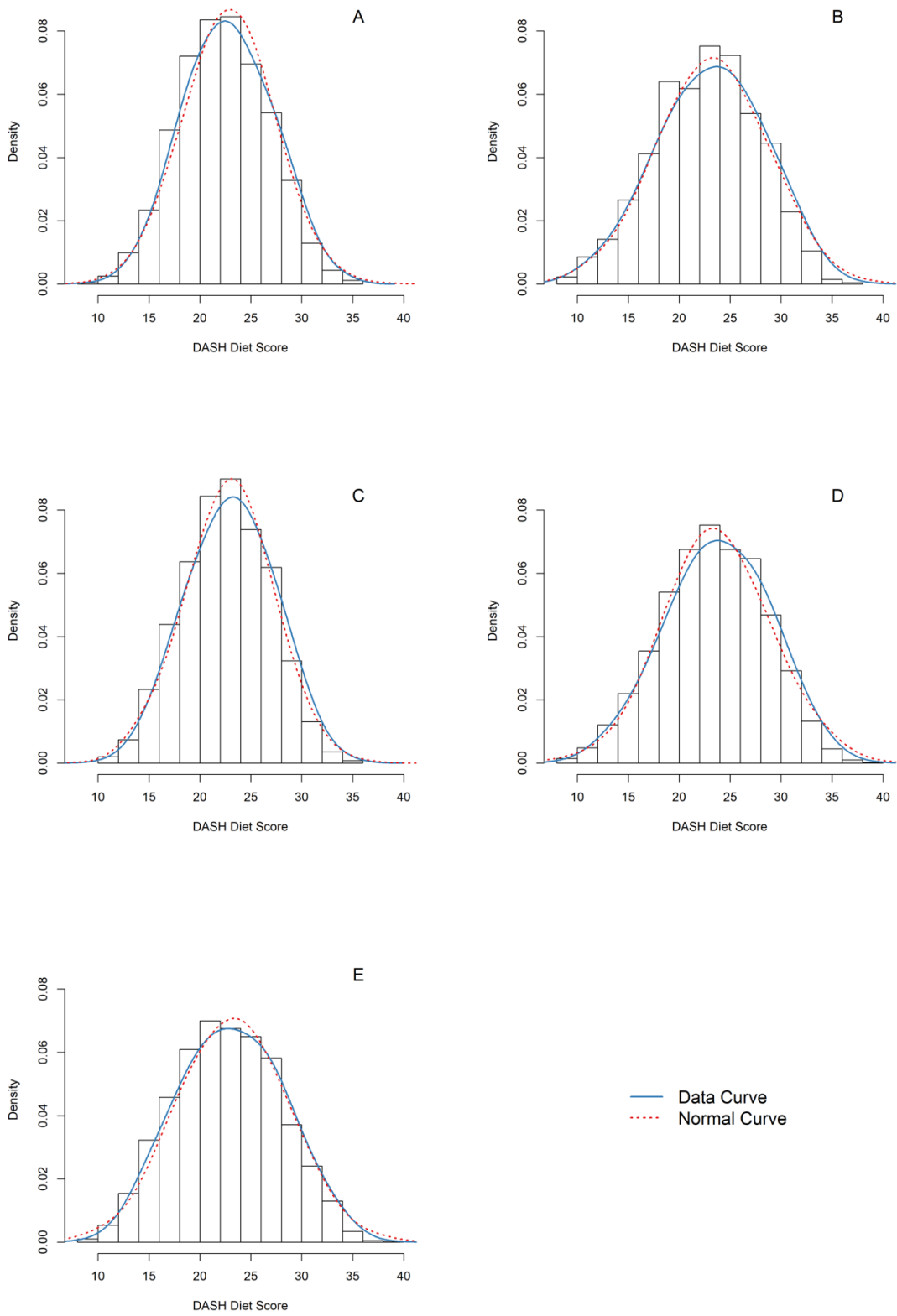


Figure S4. Distribution of the Mediterranean diet score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

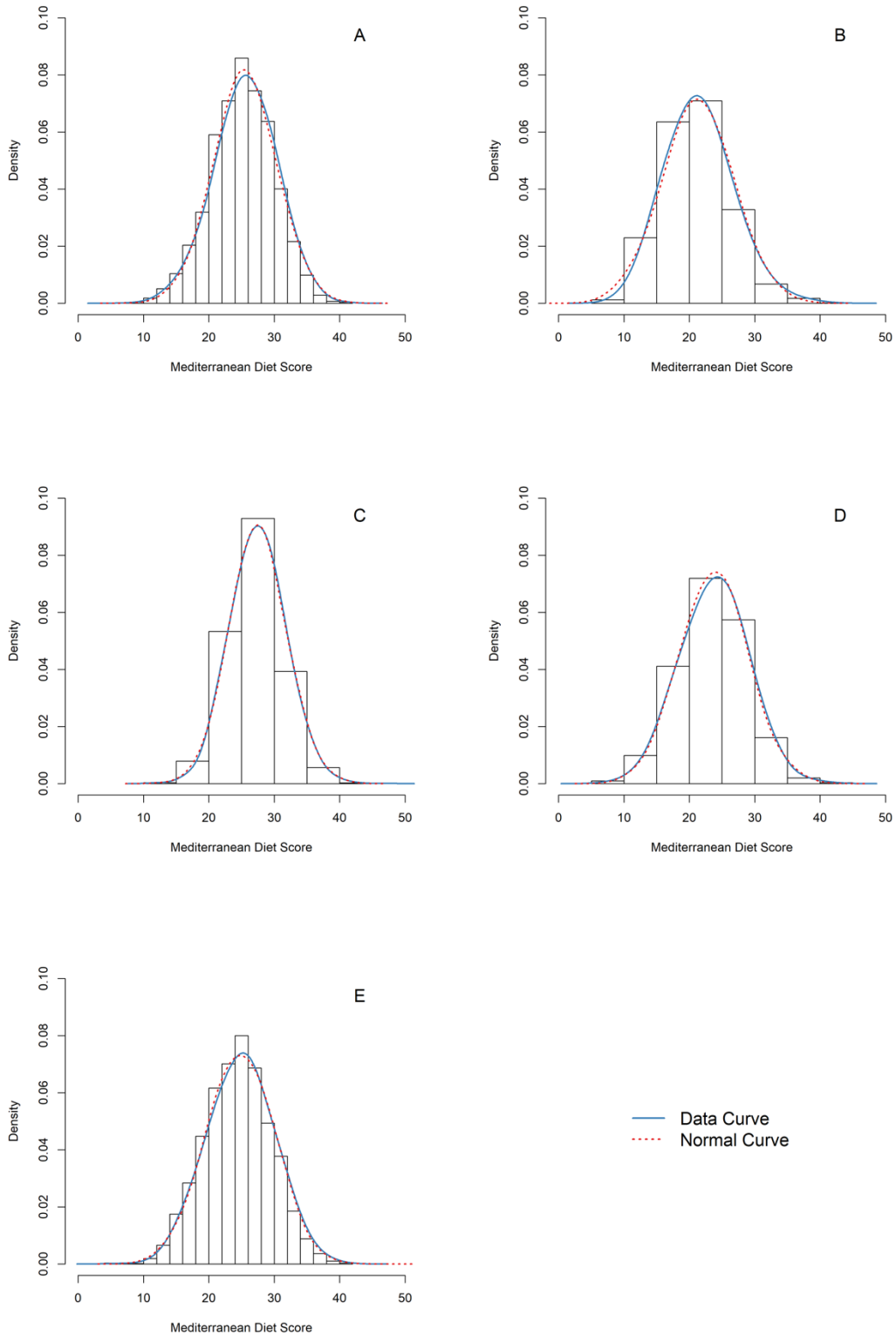


Figure S5. Parallel factor analysis scree plot of eigenvalues.

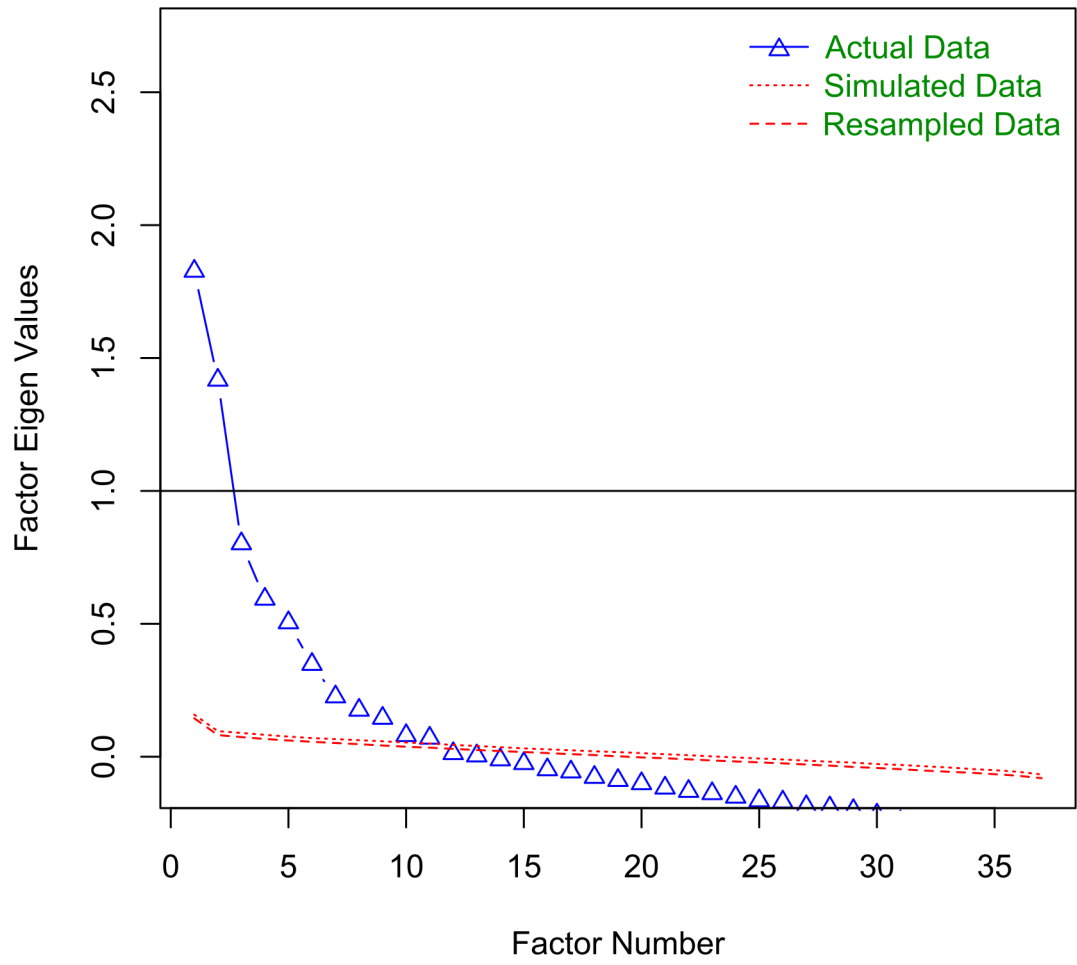


Figure S6. Distribution of the data-driven diet score in the ARIC (A), CARDIA (B), CHS (C), FHS (D), and NHANES III (E) cohorts.

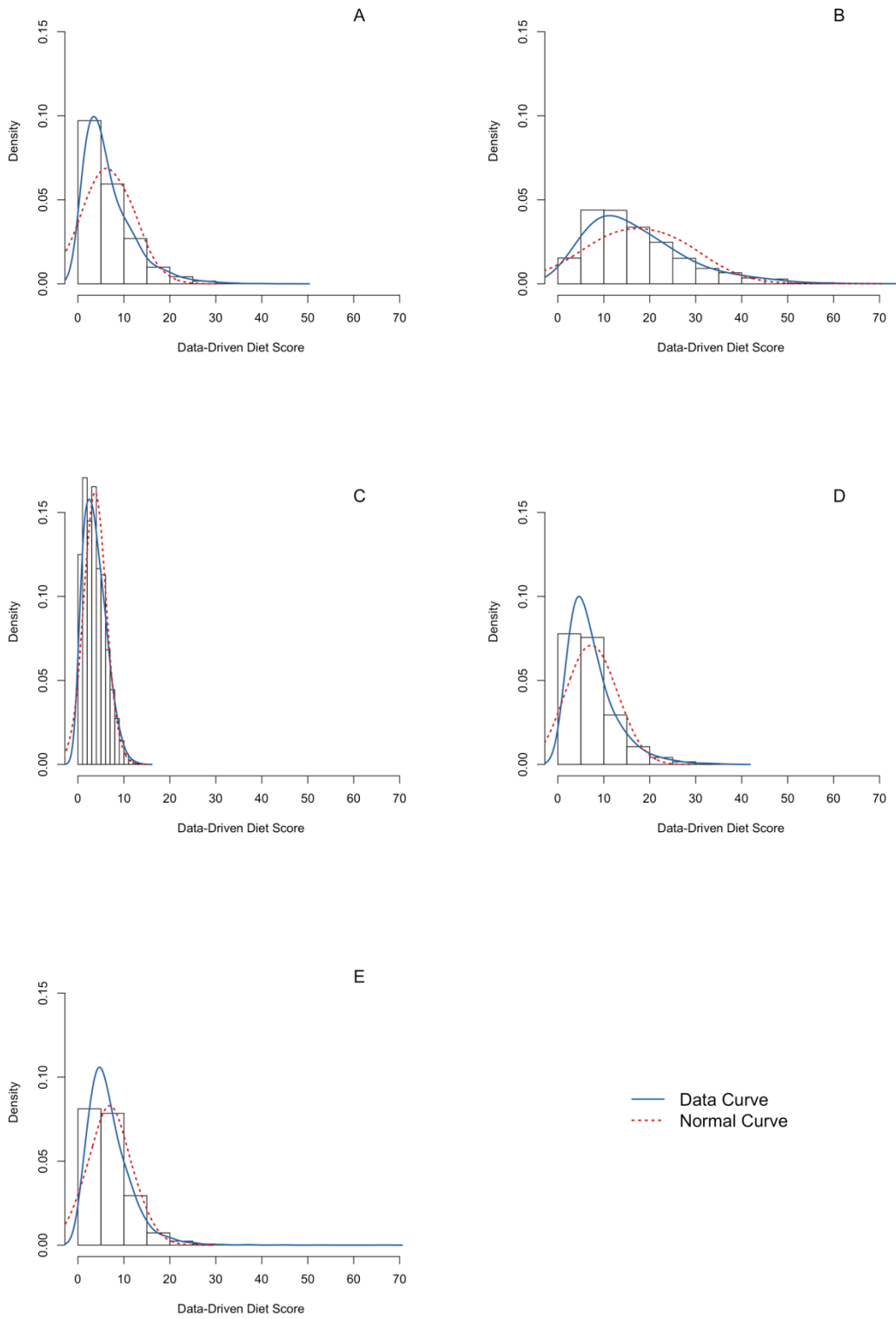


Figure S7. Correlogram of consumption of 63 food items (serves/week).

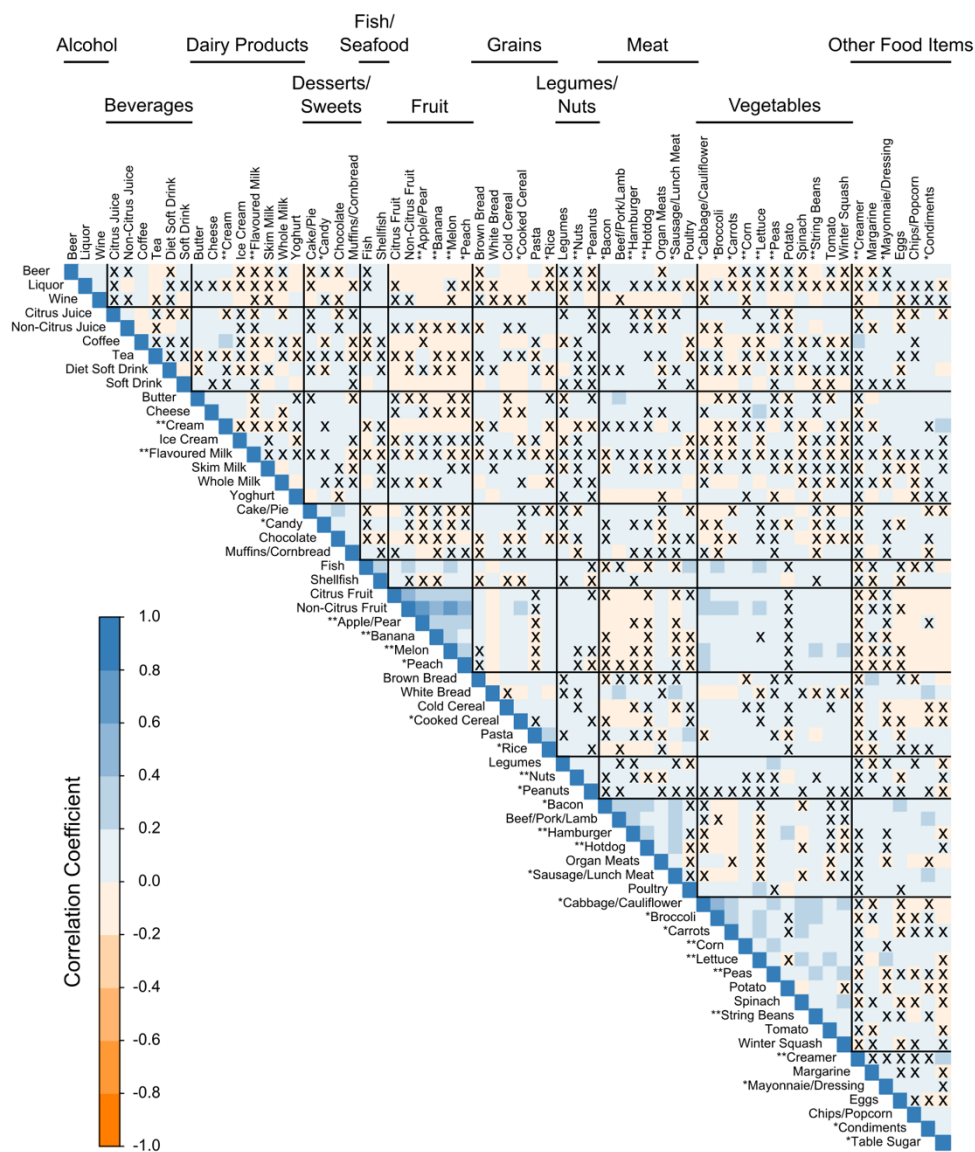
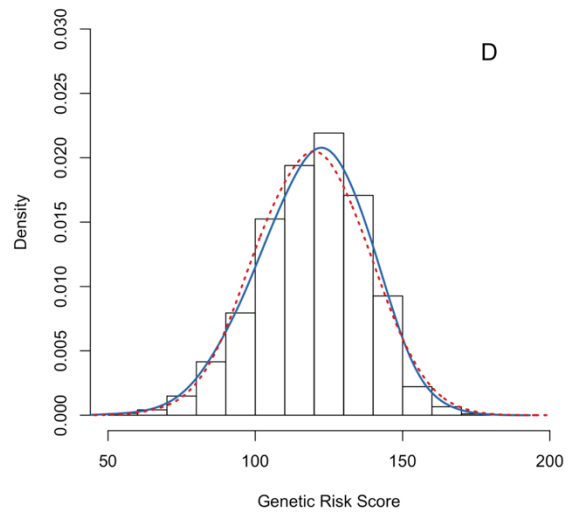
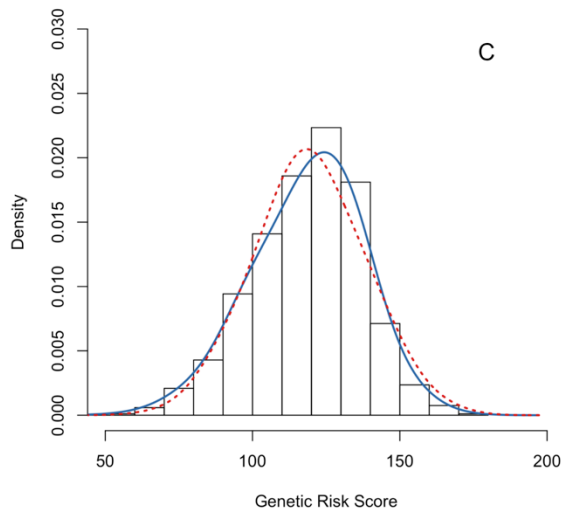
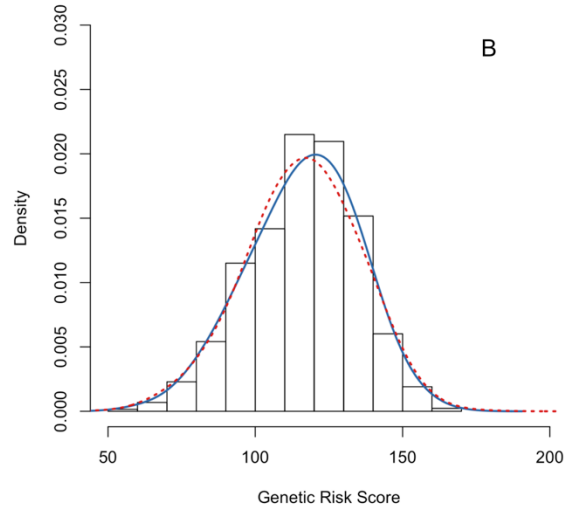
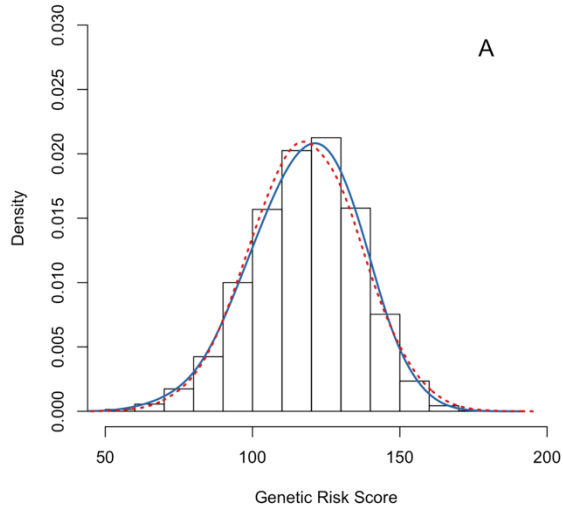


Figure S8. Distribution of the genetic risk score in the ARIC (A), CARDIA (B), CHS (C) and FHS (D) cohorts.



— Data Curve
- - - Normal Curve

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