Supplementary Materials

Details of DQS derivation

Provided the sample $(x_i, y_i, i = 1, 2, \cdots, n)$, parameter estimates of the elastic network regression model are obtained by optimizing the following objective function:

$$\hat{\beta}, \hat{\gamma} = \arg\min_{\beta,\, \gamma} \left\{ \left(y_i - \sum_{\mathrm{j}} \beta_j x_{ij} - \sum_{\mathrm{j}} \gamma_j z_{ij} \right)^2 + \lambda_1 \sum_{\mathrm{j}} |\beta_j| + \lambda_2 \sum_{\mathrm{j}} \beta_j^2 \right\},$$

where x_{ij} represents the content of the j-th component of the i-th individual, β_j is the food component regression coefficient, z_{ij} represents the covariates that needs to be controlled, γ_j is the regression coefficient of the covariate, y_i represents the log-transformed CPK value, and λ_1 and λ_2 are the tuning parameters of the L_1 and L_2 penalties, respectively. Define DQS as the weighted sum of the nonzero coefficients of the food components derived from the ENET model, i.e., DQS=$\sum_{\mathrm{j}} \hat{\beta}_j x_{ij}$. Then, we centered and scaled DQS for further analysis.

Table S1: Food components used to construct DQS.

Food	components	Description	units
Fruit	**Citrus, Melons, and Berries** (F_CITMLB)	Intact fruits (whole or cut) of citrus, melons, and berries	cup eq.
	Other Fruits (F_OTHER)	Intact fruits (whole or cut); excluding citrus, melons, and berries	cup eq.
	Fruit Juice (F_JUICE)	Fruit juices, citrus and non-citrus	cup eq.
Vegetables	**Dark Green Vegetables** (V_DRKGR)	Dark green vegetables	cup eq.
	Tomatoes (V_REDOR_TOMATO)	Tomatoes and tomato products	cup eq.
	Other Red and Orange Vegetables (V_REDOR_OTHER)	Other red and orange vegetables, excluding tomatoes and tomato products	cup eq.
	Potatoes (V_STARCHY_POTATO)	White potatoes	cup eq.
	Other Starchy Vegetables (V_STARCHY_OTHER)	Other starchy vegetables, excluding white potatoes	cup eq.
	Other Vegetables (V_OTHER)	Other vegetables not in the vegetable components listed above	cup eq.
	Beans, Peas, and Lentils (V_LEGUMES)	Beans, peas, and lentils (legumes) computed as vegetables	cup eq.
Grain	**Whole Grains** (G_WHOLE)	Grains defined as whole grains and contain the entire grain kernel — the bran, germ, and endosperm	oz. eq.
	Refined Grains (G_REFINED)	Refined grains that do not contain all of the components of the entire grain kernel	oz. eq.
Protein	**Meat** (PF_MEAT)	Beef, veal, pork, lamb, and game meat; excludes organ meat and cured meat	oz. eq.
	Cured Meat (PF_CUREDMEAT)	Frankfurters, sausages, corned beef, cured ham and luncheon meat that are made from beef, pork, or poultry	oz. eq.
	Organ Meat (PF_ORGAN)	Organ meat from beef, veal, pork, lamb, game, and poultry	oz. eq.
	Poultry (PF_POULT)	Chicken, turkey, Cornish hens, duck, goose, quail, and pheasant (game birds); excludes organ meat and cured meat	oz. eq.
	Seafood High in n-3 Fatty Acids (PF_SEAFD_HI)	Seafood (finfish, shellfish, and other seafood) high in n-3 fatty acids	oz. eq.
	Seafood Low in n-3 Fatty Acids (PF_SEAFD_LOW)	Seafood (finfish, shellfish, and other seafood) low in n-3 fatty acids	oz. eq.
	Eggs (PF_EGGS)	Eggs (chicken, duck, goose, quail) and egg substitutes	oz. eq.
	Soy Products (PF_SOY)	Soy products, excluding calcium fortified soy milk (soymilk) and rawsoybeans	oz. eq.
	Nuts and Seeds (PF_NUTSDS)	Peanuts, tree nuts, and seeds; excludes coconut	oz. eq.
Dairy	**Milk** (D_MILK)	Fluid milk, buttermilk, evaporated milk, dry milk, and calcium fortified soy milk	cup eq.
	Yogurt (D_YOGURT)	Yogurt	cup eq.
	Cheese (D_CHEESE)	Cheeses	cup eq.
	Oils (OILS)	Fats naturally present in nuts, seeds, and seafood; all unhydrogenated vegetable oils, except palm oil, palm kernel oil, and coconut oils; the fat present in avocado and olives above the allowable amount; 50% of the fat present in stick and tub margarines and margarine spreads	grams

Solid Fats (SOLID_FATS)	Fats naturally present in meat, poultry, eggs, and dairy (lard, tallow, and butter); fully or partially hydrogenated oils; shortening; palm oil; palm kernel oil; coconut oils; fats naturally present in coconut meat and cocoa butter; and 50% of the fat present in stick and tub margarines	grams
Added Sugars (ADD_SUGARS)	Foods defined as added sugars	tsp. eq.
Alcoholic Drinks (A_DRINKS)	Alcoholic beverages and alcohol (ethanol) added to foods after cooking	no. of drinks

Cup eq.: Cup equivalents; Oz. eq.: Ounce equivalents; Tsp. eq.: Teaspoon equivalents

Table S2: Odds Ratios for various diet quality scores under different regression models. All models were adjusted for age, gender, race, education, PIR, marital status, smoking status and BMI.

		Cardiovascular Endpoint											
		CVD				**STROKE**				**CAD**			
Univariate Model		OR	CI.low	CI.up	pv	OR	CI.low	CI.up	pv	OR	CI.low	CI.up	pv
HEI2015	HEI2015	0.922	0.871	0.975	0.004	0.884	0.810	0.964	0.005	0.958	0.880	1.041	0.311
MED	MED	0.966	0.914	1.022	0.227	0.916	0.840	0.998	0.044	1.000	0.920	1.088	0.992
AHEI	AHEI	0.901	0.850	0.954	0.000	0.885	0.808	0.968	0.008	0.978	0.897	1.066	0.610
DASH	DASH	0.919	0.868	0.973	0.004	0.910	0.833	0.994	0.036	0.965	0.886	1.051	0.413
DQS	DQS	0.949	0.897	0.983	0.046	0.928	0.849	1.011	0.089	0.903	0.827	0.985	0.023
Multivariate Model													
HEI2015+DQS	HEI2015	0.921	0.871	0.974	0.004	0.883	0.810	0.963	0.005	0.956	0.879	1.039	0.289
	DQS	0.947	0.895	1.002	0.059	0.925	0.846	1.009	0.082	0.902	0.825	0.984	0.022
MED+DQS	MED	0.960	0.908	1.016	0.156	0.907	0.832	0.989	0.026	0.990	0.910	1.078	0.822
	DQS	0.944	0.892	0.999	0.046	0.917	0.839	1.000	0.054	0.903	0.826	0.985	0.022
AHEI+DQS	AHEI	0.896	0.846	0.950	0.000	0.879	0.802	0.961	0.005	0.970	0.889	1.057	0.487
	DQS	0.941	0.889	0.995	**0.033**	0.918	0.840	1.001	0.056	0.901	0.825	0.983	0.020
DASH+DQS	DASH	0.918	0.867	0.972	0.003	0.909	0.832	0.993	0.034	0.963	0.885	1.049	0.389
	DQS	0.947	0.895	1.001	0.057	0.926	0.848	1.009	0.084	0.903	0.826	0.985	0.022
Full Model*													
	HEI2015	0.968	0.892	1.051	0.439	0.926	0.816	1.051	0.235	0.951	0.841	1.076	0.425
	MED	1.038	0.963	1.119	0.329	0.964	0.859	1.083	0.540	1.036	0.925	1.160	0.546
	AHEI	0.907	0.824	0.998	0.045	0.904	0.779	1.048	0.183	1.011	0.876	1.166	0.884
	DASH	0.987	0.893	1.091	0.799	1.058	0.906	1.235	0.476	0.968	0.833	1.124	0.667
	DQS	0.945	0.893	0.999	0.049	0.916	0.837	1.003	0.053	0.905	0.828	0.989	0.028

*Full model: DQS adjusts for all other four diet scores

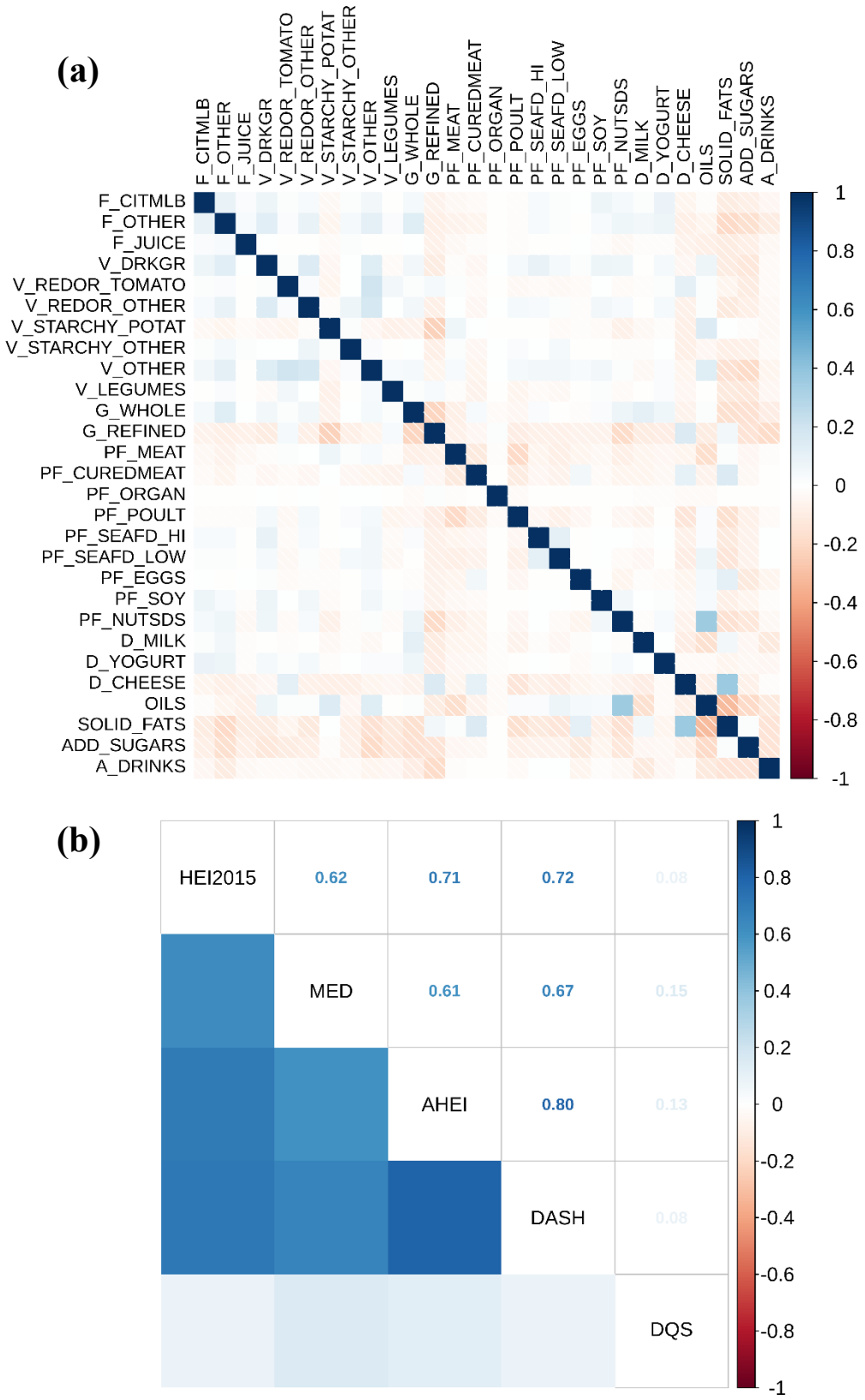

Figure S1: Pair-wised correlations between food components (a) and diet scores (b).

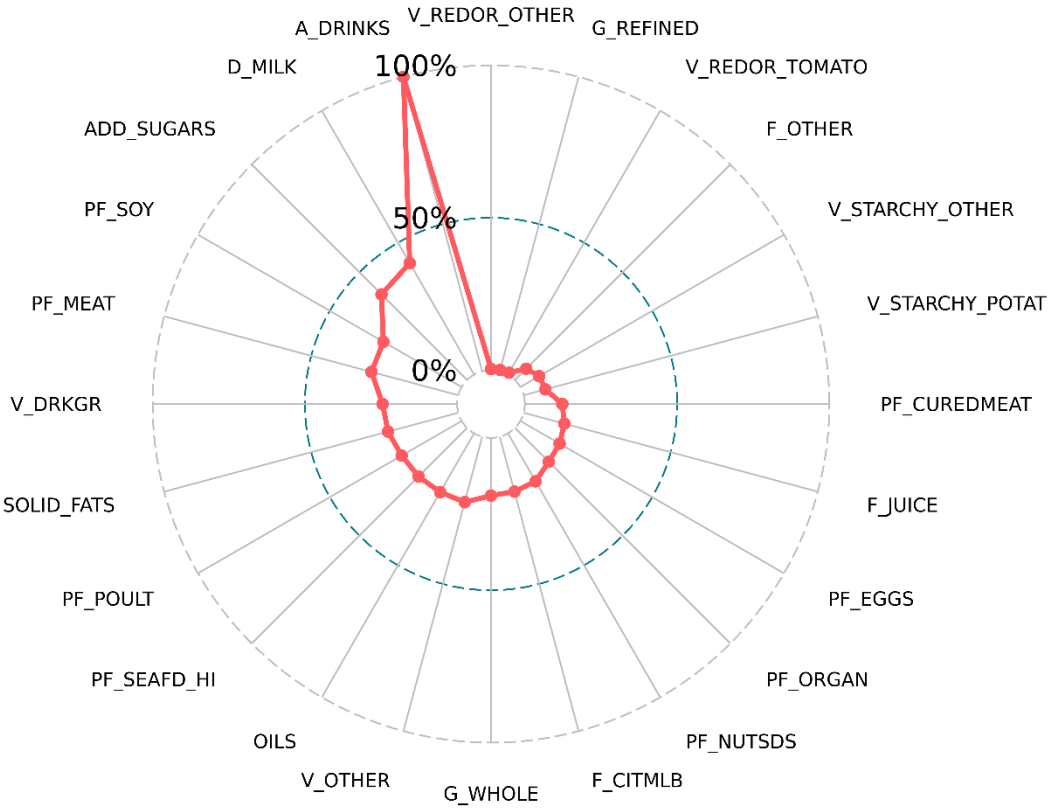

Figure S2: Radar-chart for selected food components for DQS.

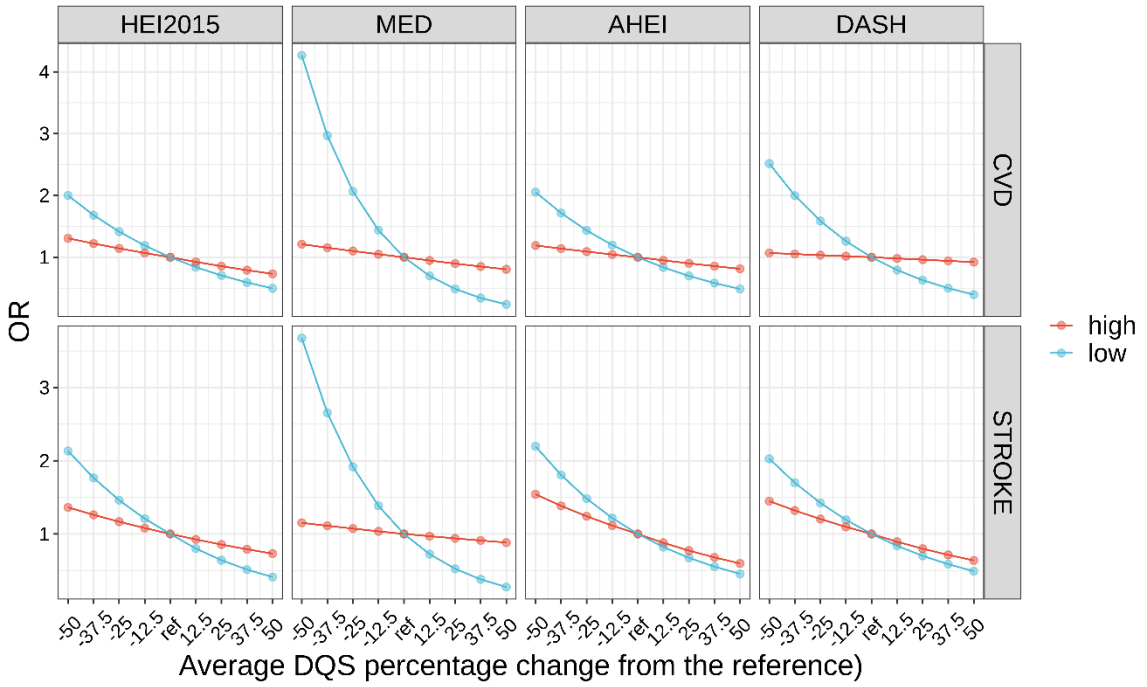

Figure S3: Odds ratio trends for the population with a 50%, 37.5%, 25%, 12.5% reduction and a 12.5%, 25%, 37.5% and 50% increase in median diet score DQS relative to the reference population in stratified high and low common diet scores groups. Reference diet scores were defined as the median value of DQS without incident CVDs. The endpoints were CVD and STROKE.

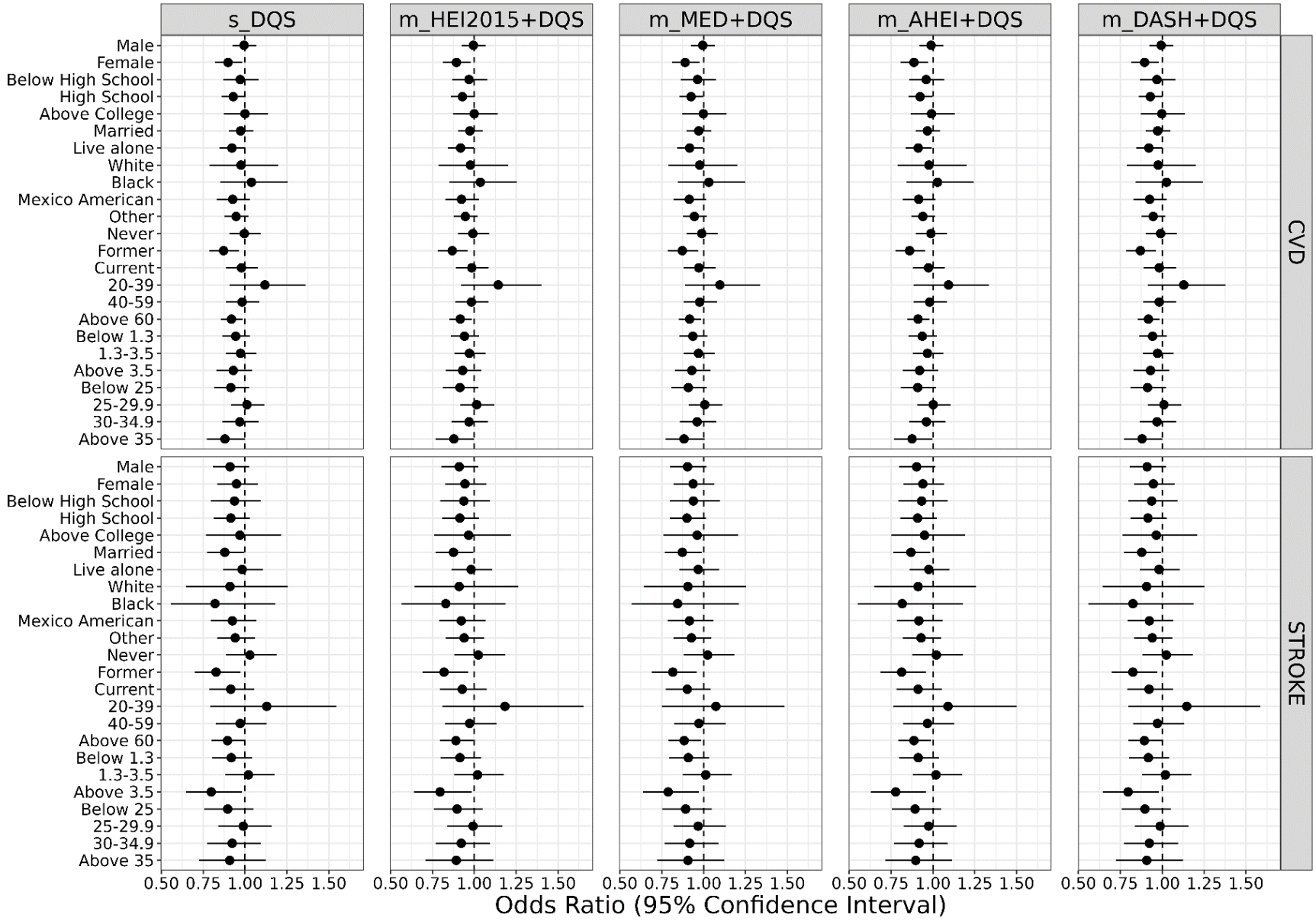
s_DQS
m_HEI2015+DQS
m_MED+DQS
m_AHEI+DQS
m_DASH+DQS
CVD
STROKE
Male
Female
Below High School
High School
Above College
Married
Live alone
White
Black
Mexico American
Other
Never
Former
Current
20-39
40-59
Above 60
Below 1.3
1.3-3.5
Above 3.5
Below 25
25-29.9
30-34.9
Above 35
0.50 0.75 1.00 1.25 1.50
Odds Ratio (95% Confidence Interval)

Figure S4: Stratified analysis for potential risk modifiers including gender, education, marital status, race, smoking status, PIR and BMI. OR and 95% confidence intervals for single diet score model and multiple diet score model for CHF, MI and ANGINA are reported. The columns with "s_" and "m_" referred the single and multiple score regression models. "m_HEI2015+DQS" columns referred to the results for DQS in the combined HEI2015 and DQS model. Similar explanation for the other columns.