

Table S1. Health values of foods.

Food group	equivalents per week¹	%	Health value
Total Fruit ²	14	10.8	
Citrus, melons, berries	7	50.0	$0.108 \times 0.5 = 0.054$
Other fruits	4	28.6	$0.108 \times 0.286 = 0.031$
Juices ³	3	21.4	$0.108 \times 0.214 = 0.023$
Total vegetables	17.5	13.5	
Dark green	1.5	8.6	$0.135 \times 0.086 = 0.012$
Total red and orange	5.5	31.4	$0.135 \times 0.314 = 0.042$
Total starchy	5	28.6	$0.135 \times 0.286 = 0.039$
Other vegetables	4	22.9	$0.135 \times 0.229 = 0.031$
Legumes	1.5	8.6	$0.135 \times 0.086 = 0.012$
Total grains	42	32.4	
Whole grains	21	50	$0.324 \times 0.50 = 0.162$
Refined grains	21	50	$0.324 \times 0.50 = 0.162$
Total Protein foods	39	27.0	
Meat, poultry, eggs ⁴	26	66.7	$0.270 \times 0.667 = 0.180$
Seafood high & low in n-3 fatty acids	8	20.5	$0.270 \times 0.205 = 0.055$
Soy products, nuts, and seeds	5	12.8	$0.270 \times 0.128 = 0.035$
Total Dairy ⁵	21	16.2	
Milk	1	33.3	$0.162 \times 0.333 = 0.054$
Yogurt	1	33.3	$0.162 \times 0.333 = 0.054$
Cheese	1	33.3	$0.162 \times 0.333 = 0.054$
Oils	0.125 C	0.1	0.1
Equivalents/ week	129.625	100	

¹Based on 2000 kcal diet from 2015–2020 Dietary Guidelines for Americans [1]. ²Values based on 2015–2020 Dietary Guidelines for Americans which states at least half of the recommended amount of fruits should come from whole fruits [2]. Since citrus was one of the Basic Seven food groups in 1940s, this group was weighted more heavily. The value of 7 suggests one equivalent serving of citrus per day. ³Reflects consumption of adults from scientific report 2015–2020 Dietary Guidelines for Americans [2]. ⁴Excluded cured and organ meats. ⁵There is no recommendation for dairy subgroups in the Dietary Guidelines for Americans, 2015–2020. Equivalents were distributed equally across the subgroups based on the following rationale. The Scientific Advisory Report of dietary guidelines for 2015–2020 noted that the U.S. population consumes the recommended 3 cup equivalents per day as 53 percent fluid milk, 45 percent cheese, and 2 percent as yogurt [3]. These data support approximately equal consumption of milk and cheese. Yogurt consumption is low but research that documents the benefits of yogurt with respect to heart health [3].

Table S2. Definitions of food attributes.

Attribute	Categories	Criterion to Assess
Animal protein source	Yes—Coded as 1 ¹ No—Coded as 0	USDA Food Patterns Equivalent Database food subgroups ² Protein Foods, Meat Protein Foods, Poultry Protein Foods, Seafood High in EPA/DHA Protein Foods, Seafood Low in EPA/DHA Protein Foods, Eggs Dairy, Milk Dairy, Yogurt Dairy, Cheese
Plant protein source	Yes—Coded as 1 ¹ No—Coded as 0	USDA Food Patterns Equivalent Database food subgroups ² Soy Products Nuts and Seeds
Food processing: Whole grains	Yes—Coded as 1 No—Coded as 0	USDA Food Patterns Equivalent Database food subgroups ² Whole Grains
Food processing: Refined grains	Yes—Coded as 1 No—Coded as 0	USDA Food Patterns Equivalent Database food subgroups ² Refined Grains
Fiber	Initially coded as: High—Coded as 1; Moderate—Coded as 2; Low—Coded as 3; No Fiber: Coded as 0; For analysis coded as: High to moderate fiber—Coded as 1; Low to No fiber—Coded as 0	Comparison of fiber content to the amount in serving size. FDA defines serving size as the amount of food typically consumed in one sitting for that food and they are determined using Reference Amounts Customarily Consumed (RACC) and procedures described in 21 CFR 101.12(b) and 21 CFR 101.9(b) respectively. ³ Using FDA labeling criterion per serving ³ High fiber food is defined as ≥5 g of fiber; Moderate fiber food is defined as 1.26–4.9 g of fiber; Low fiber food is defined as ≤1.25 g of fiber
Sodium	Initially coded as: High—Coded as 1 Moderate—Coded as 2 Very Low—Coded as 3 No sodium—Coded as 0 For analysis coded as: High to moderate sodium—Coded as 1 Very Low to No sodium—Coded as 0	Comparison of sodium content to the amount in serving size. FDA defines serving size as the amount of food typically consumed in one sitting for that food and they are determined using Reference Amounts Customarily Consumed (RACC) and procedures described in 21 CFR 101.12(b) and 21 CFR 101.9(b) respectively. ³ Using FDA labeling criterion per serving ³ , High sodium food is defined as >140 mg of sodium; Moderate sodium food is defined as 36–140 mg; Very low sodium food is defined as ≤35 mg of sodium
Alcohol	Yes—Coded as 1 No—Coded as 0	Using USDA Food Patterns Equivalent Database food groups ² , only foods listed under Alcoholic Drinks Components to be used to categorize foods as having alcohol or not.
Eicosapentaenoic acid (EPA) Docosahexaenoic acid (DHA)	Initially coded as: High—To be coded as 1; Low—To be coded as 2; No EPA + DHA be coded as 0 For analysis coded as: High EPA/DHA—Coded as 1; Low to No EPA/DHA—Coded as 0	Comparison of total EPA+DHA content to the amount in serving size. High EPA + DHA food is defined as having ≥ 0.90 g of EPA + DHA per serving ⁴ Low EPA + DHA food is defined as having 0.01–0.89 g of EPA + DHA per serving ⁴
Oils	Yes—Coded as 1 No—Coded as 0	USDA Food Patterns Equivalent Database food groups ² Oils
Solid fats	Yes—Coded as 1 No—Coded as 0	USDA Food Patterns Equivalent Database food groups ² Solid fats

¹If a given food code had a nonzero equivalent value in *at least* one of these subgroups, the corresponding attribute was assigned a value of “1” for that food code. If all qualifying subgroups had zero equivalents, the corresponding attribute for that food code was assigned a value of “0”.

²Food Patterns Equivalents Database 2013–14: Methodology and User Guide [4]. ³Food Labeling: Serving sizes of Foods That Can Reasonably Be Consumed at One Eating Occasion; Dual-Column Labeling; Updating, Modifying, and Establishing Certain Reference Amounts Customarily Consumed; Serving size for Breath Mints; and Technical Amendments: Guidance for Industry Small Entity Compliance Guide [5].⁴Food Sources of Omega-3 Fats Factsheet [6].

Table S3. Correlation matrix of dietary diversity and quality measures.

	Count	Evenness-BI	Evenness-HFBI	Dissimilarity
Count	1	0.565 <i>p</i> < 0.001	0.167 <i>p</i> < 0.001	0.209 <i>p</i> < 0.001
Evenness-BI	0.565 <i>p</i> < 0.001	1	0.258 <i>p</i> < 0.001	0.110 <i>p</i> < 0.001
Evenness-HFBI	0.167 <i>p</i> < 0.001	0.258 <i>p</i> < 0.001	1	-0.043 <i>p</i> = 0.049
Dissimilarity	0.209 <i>p</i> < 0.001	0.110 <i>p</i> < 0.001	-0.043 <i>p</i> = 0.049	1
MAR	0.529 <i>p</i> < 0.001	0.434 <i>p</i> < 0.001	0.073 <i>p</i> < 0.001	0.222 <i>p</i> < 0.001
DASH	-0.003 <i>p</i> = 0.898	-0.140 <i>p</i> < 0.001	0.270 <i>p</i> < 0.001	-0.348 <i>p</i> < 0.001

Abbreviations: BI—Berry Index, DASH—Dietary Approaches to Stop Hypertension, HFBI—health value adjusted Berry Index, MAR—Mean Adequacy Ratio.

Table S4. Correlation matrix of food attributes.

	EPA/D HA	Sodium	Alcohol	Fiber	Whole Grains	Refined Grains	Animal Protein	Plant Protein	Oils	Solid Fats
EPA/DHA	1	0.177	-0.054	-0.26 2	-0.071	0.015	0.334	-0.099	0.064	0.096
Sodium	0.177	1	-0.248	0.089	0.098	0.317	0.341	-0.026	0.300	0.338
Alcohol	-0.054	-0.248	1	-0.09 8	-0.038	-0.098	-0.112	-0.037	-0.11 8	-0.141
Fiber	-0.262	0.089	-0.098	1	0.193	0.019	-0.268	0.096	0.164	-0.076
Whole Grains	-0.071	0.098	-0.038	0.193	1	0.159	-0.133	0.134	0.098	-0.082
Refined Grains	0.015	0.317	-0.098	0.019	0.159	1	0.305	0.045	0.304	0.289
Animal Protein	0.334	0.341	-0.112	-0.26 8	-0.133	0.305	1	0.004	0.143	0.458
Plant Protein	-0.099	-0.026	-0.037	0.096	0.134	0.045	0.004	1	0.265	-0.004
Oils	0.064	0.300	-0.118	0.164	0.098	0.304	0.143	0.265	1	0.134
Solid Fats	0.096	0.338	-0.141	-0.07 6	-0.082	0.289	0.458	-0.004	0.134	1

References

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