

ReadMe for WHI's Healthy Eating Index (HEI)-2015 component and total scores computed from the food-frequency questionnaire (FFQ)

Data.

The tab delimited file, *WHI_HEI_2015.dat*, includes participant common ID (*ID*), visit year (*F60VY*; 0 == baseline; 1 to 10 == annual visits), exclusion consideration status (*STATUS*; 1 == energy < 600 kcal consider excluding; 2 == energy > 5000 kcal consider excluding; 3 == energy intake is plausible), HEI-2015 component scores and total score (*HEI2015_TOTAL_SCORE*; sum of its thirteen components ranges from 0 to 100). Higher scores indicate closer conformance to the 2015 dietary guidance for Americans. HEI scores, computed from FFQs completed closest to a participant's expected annual visit ([WHI Data Preparation and Use](#)), corresponding FFQ data ([MPEDs](#), [nutrients](#) or [items](#)) and scoring algorithm are described below, and apply only to [FFQs](#) collected during the [WHI study phase \(1993 to 2005\)](#). Available SAS-code and references, listed below, provide further details and motivation.

Computational note: HEI-2015 counts legumes towards all four components: *Total Vegetables, Greens and Beans, Total Protein Foods, and Seafood and Plant Proteins (1)*.

Description of HEI-2015 scores.

Component	HEI-2015 scores	MPED/FFQ variables	Max score ¹	Standard: max score per 1000 kcal	Standard: min score (zero) per 1000 kcal
Adequacy:					
Total Vegetables ²	<i>HEI2015C1_TOTALVEG</i>	V_TOTAL + LEGUMES	5	≥1.1 cup equiv.	No Vegetables or legumes
Greens and Beans ²	<i>HEI2015C2_GREEN_AND_BEAN</i>	V_DRKGR + LEGUMES	5	≥0.2 cup equiv.	No Dark Green Vegetables or Legumes
Total Fruits ³	<i>HEI2015C3_TOTALFRUIT</i>	F_TOTAL	5	≥0.8 cup equiv.	No Fruit
Whole Fruits	<i>HEI2015C4_WHOLEFRUIT</i>	F_NJ_TOTAL	5	≥0.4 cup equiv.	No Whole Fruit
Whole Grains	<i>HEI2015C5_WHOLEGRAIN</i>	G_WHL	10	≥1.5 oz equiv.	No Whole Grains
Dairy ⁴	<i>HEI2015C6_TOTALDAIRY</i>	D_TOTAL + (D_MILKISM - D_MILK)	10	≥1.3 cup equiv.	No Dairy
Total Protein Foods ²	<i>HEI2015C7_TOTPROT</i>	M_MPF + M_EGG + M_NUTSD + M_SOYESM + (LEGUMES x 4) ⁵	5	≥2.5 oz equiv.	No Protein Foods

Seafood and Plant Proteins ^{2,6}	HEI2015C8_SEAPLANT_PROT	M_FISH_HI + M_FISH_LO + M_SOYESM + M_NUTSD + (LEGUMES x 4) ⁵	5	≥0.8 oz equiv.	No Seafood or Plant Proteins
Fatty Acids	HEI2015C9_FATTYACID	(F60MFA + F60PFA)/F60SFA	10	(PUFAs + MUFAs)/SFAs ≥2.5	(PUFAs + MUFAs)/SFAs ≤1.2
Moderation:					
Sodium ⁷	HEI2015C10_SODIUM	F60SODUM	10	≤1.1 gram	≥2.0 grams
Refined Grains	HEI2015C11_REFINEDGRAIN	G_NWHL	10	≤1.8 oz equiv.	≥4.3 oz equiv.
Saturated Fats	HEI2015C12_SFAT	F60SFA	10	≤8% of energy	≥16% of energy
Added Sugars	HEI2015C13_ADDSUG	ADD_SUG	10	≤6.5% of energy	≥26% of energy

¹ Intakes between the minimum and maximum standards are scored proportionately.

² Includes legumes.

³ Includes 100% juice.

⁴ Total dairy including soy beverages.

⁵ Legumes converted from cup equivalents to oz equivalents.

⁶ Includes soybean products other than beverages.

⁷ The sodium nutrient data is reliant on the WHI FFQ, which did not target dietary sodium assessment and did not assess all sources of sodium. If interested in sodium as a primary exposure, the FFQ sodium should be biomarker-calibrated (5). However, calibrating within a dietary quality index does not apply.

SAS-code.

These SAS programs processed FFQ-derived MPED data and computed HEI-2015 scores:

(i) *f60_hei_2015_pseudoCode_inv.sas*

(ii) *f60_hei_2015_score_macro.sas*

References.

- (1) Krebs-Smith, S.M., Pannucci, T.E., Subar, A.F., Kirkpatrick, S.I., Lerman, J.L., Toozé, J.A., Wilson, M.M. and Reedy, J., 2018. Update of the Healthy Eating Index: HEI-2015. *Journal of the Academy of Nutrition and Dietetics*, 118(9), pp.1591-1602.
- (2) US Department of Health and Human Services, 2017. Dietary guidelines for Americans 2015-2020. Skyhorse Publishing Inc..
- (3) National Cancer Institute. Basic Steps in Calculating HEI Scores. <https://epi.grants.cancer.gov/hei/calculating-hei-scores.html>, Updated February 12, 2018. Accessed (June 20, 2018).
- (4) National Cancer Institute. Developing the Healthy Eating Index. <https://epi.grants.cancer.gov/hei/developing.html#2015>. Updated February 12, 2018. Accessed (June 20, 2018).
- (5) Huang, Y., Van Horn, L., Tinker, L.F., Neuhauser, M.L., Carbone, L., Mossavar-Rahmani, Y., Thomas, F. and Prentice, R.L., 2014. Measurement error corrected sodium and potassium intake estimation using 24-hour urinary excretion. *Hypertension*, 63(2), pp.238-244.