THE

HEALTHY EATING INDEX

2010

(HEI–2010)

What are the Dietary Guidelines for Americans?

The Dietary Guidelines are recommendations to help Americans ages 2 years and older choose foods and beverages to achieve and maintain a healthy weight, promote health, and prevent disease. The Guidelines are issued every five years by the U.S. Department of Health and Human Services (HHS) and U.S. Department of Agriculture (USDA). The newest HEI is based on the 2010 Dietary Guidelines for Americans.

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nccor.org/projects/HEI

What is the Healthy Eating Index (HEI)–2010?

The HEI–2010 is the latest iteration of the Healthy Eating Index, a tool designed to measure diet quality—that is, how closely an eating pattern or mix of foods matches the Dietary Guidelines for Americans' recommendations.

Healthy Eating Index

The HEI is not a checklist or other type of diet assessment instrument that gathers data about what people eat. Rather, the HEI is a scoring metric that can be used to determine the diet quality of an existing set of foods or a menu.

How is the HEI-2010 organized?

The Index has 12 components, each of which reflects an important aspect of diet quality. Nine components focus on adequacy (foods we should eat enough of to get the nutrients we need and for overall good health). Three components focus on moderation (dietary components that should be limited or consumed in small amounts).

The 12 HEI-2010 Components

ADEQUACY

1. Total Fruit (all forms of fruit, including fruit juice)
2. Whole Fruit (all forms except fruit juice)
3. Total Vegetables
4. Greens and Beans (dark green vegetables and any beans and peas [i.e., legumes] that are not already counted as protein foods)
5. Whole Grains
6. Dairy (fat-free portion of all milk products; includes fluid milk, yogurt, cheese, and fortified soy beverages)
7. Total Protein Foods (lean portion of meat and poultry; eggs; beans and peas)
8. Seafood and Plant Proteins (fish, shellfish, nuts, seeds, soy foods other than soy beverages, and beans and peas included in Total Protein Foods)
9. Fatty Acids (ratio of polyunsaturated and monounsaturated fatty acids to saturated fatty acids)

MODERATION

10. Refined Grains
11. Sodium
12. Empty calories (calories from solid fats, including the fat from animal foods in the Dairy and Total Protein Food components; added sugars; alcohol consumed beyond moderate amounts)

How does the HEI-2010 measure diet quality?

All of the components are assessed on a density basis. For most of them, that means amounts per 1,000 calories. This is done because dietary recommendations vary based on age, gender, and activity level but, when looked at on a per-1,000 calorie basis, most of them are remarkably similar. For example, the protein foods recommendation is higher for an active teenage boy than it is for an inactive older man, in part because his energy recommendation is higher, too. Using the density approach allows a common standard to be applied to individual diets or any other mix of foods. This approach allows the HEI to capture the balance among the foods—the relative amounts of fruits, vegetables, and whole grains versus empty calories, for example. Capturing this balance means that the HEI can characterize the quality of the diet. One of the great strengths of the HEI-2010 is that it can measure diet quality at various levels of the "food stream," such as the national food supply, the community food environment (e.g., foods available at a school or a fast food menu), and individual food intakes.

Relationship of USDA Food Groups and Subgroups to the 2010 Healthy Eating Index–2010[1]

[1] This table shows how the groups and subgroups of the USDA Food Patterns and alcohol and selected nutrients contribute to the components of the HEI-2010.

[2] Includes all milk products, such as fluid milk, yogurt, and cheese, and fortified soy beverages.

[3] Fat fraction is counted as a solid fat.

[4] Includes nuts, seeds, and soy products (other than beverages).

[5] Included as a ratio of poly- and monounsaturated fatty acids to saturated fatty acids.

[6] Only alcohol beyond a moderate amount is considered to be empty calories.

Adapted from Guenther PM, Casavale KO, Reedy J, et al. Update of the Healthy Eating Index: HEI-2010. *Journal of the Academy of Nutrition and Dietetics.* 2013 Feb 13. pii: S2212-2672(12)02049-7. doi: 10.1016/j.jand.2012.12.016. [Epub ahead of print].

How does the HEI–2010 scoring work?

For each component, the HEI–2010 designates a certain amount as the standard (the best possible). A maximum score—5, 10, or 20 points depending on the component—is given to amounts that meet the standard. Amounts that don't meet the standard get fewer points, with zero being the minimum score.

Regardless of which level the HEI–2010 is evaluating, the steps for determining the overall score for a set of foods or a menu are the same: (1) identify the set of foods under consideration; (2) determine the amount of each relevant dietary constituent in the set of foods; and (3) derive pertinent ratios of dietary constituents to energy and score each HEI-2010 component using the relevant standard.

Why do the maximum points differ by component?

Most of the components are weighted equally, with 10 points each. When a major food group and a subgroup are included—such as Total Fruit and Whole Fruit—each gets 5 points to maintain equality across the major food groups. Empty Calories (solid fats, added sugars, alcohol), with 20 points, is the exception because they displace nutrient-dense foods in the diet and they add calories without adding nutrients. Adding up all the components, an ideal overall score would be 100.

How is the HEI used?

The HEI is a flexible tool that can be used in various ways. Government agencies use the HEI to see how the eating patterns of Americans compare to the Dietary Guidelines recommendations and to monitor changes in dietary patterns nationwide and over time. For more on this analysis, see:

- Guenther PM, Casavale KO, Kirkpatrick SI, et al. Diet quality of Americans in 2001-2002 and 2007-2008 as measured by the Healthy Eating Index-2010. Center for Nutrition Policy and Promotion, USDA. *Nutrition Insight 51*, February 2013.

The HEI also can be used to evaluate nutrition interventions and consumer nutrition education programs.

Researchers find it a valuable tool in epidemiologic and economic research. For example, scientists at the National Cancer Institute used a former version, the HEI–2005, to examine whether HEI scores were related to risk of developing colorectal cancer. For more on that study, see:

- Reedy J, Mitrou PN, Krebs-Smith SM, et al. Index-based dietary patterns and risk of colorectal cancer: the NIH-AARP Diet and Health Study. *American Journal of Epidemiology* 2008;168(1):38-48.

The NCI researchers also used the HEI–2005 to score the overall U.S. food supply and see whether the score had

HEI–2010 Components and Scoring Standards

HEI–2010[1] COMPONENT	MAXIMUM	STANDARD FOR MAXIMUM SCORE	STANDARD FOR MINIMUM SCORE OF ZERO
▲ ADEQUACY *(higher score indicates higher consumption)*			
Total Fruit[2]	5	≥ 0.8 cup equiv. / 1,000kcal[10]	No fruit
Whole Fruit[3]	5	≥ 0.4 cup equiv. / 1,000kcal	No whole fruit
Total Vegetables[4]	5	≥ 1.1 cup equiv. / 1,000kcal	No vegetables
Greens and Beans[4]	5	≥ 0.2 cup equiv. / 1,000kcal	No dark-green vegetables, beans, or peas
Whole Grains	10	≥ 1.5 cup equiv. / 1,000kcal	No whole grains
Dairy[5]	10	≥ 1.3 cup equiv. / 1,000kcal	No dairy
Total Protein Foods[6]	5	≥ 2.5 ounce equiv. / 1,000kcal	No protein foods
Seafood and Plant Proteins[6,7]	5	≥ 0.8 ounce equiv. / 1,000kcal	No seafood or plant proteins
Fatty Acids[8]	10	(PUFAs + MUFAs) / SFAs ≥ 2.5	(PUFAs + MUFAs) / SFAs ≤ 1.2
▼ MODERATION *(higher score indicates lower consumption)*			
Refined Grains	10	≤ 1.8 ounce equiv. / 1,000kcal	≥ 4.3 ounce equiv. / 1,000kcal
Sodium	10	≤ 1.1 gram / 1,000kcal	≥ 2.0 grams / 1,000kcal
Empty Calories[9]	20	≤ 19% of energy	≥ 50% of energy

Source: Center for Nutrition Policy and Promotion, USDA. Healthy Eating Index http://www.cnpp.usda.gov/HealthyEatingIndex.htm

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

[2] Includes 100% fruit juice.

[3] Includes all forms except juice.

[4] Includes any beans and peas not counted as Total Protein Foods.

[5] Includes all milk products, such as fluid milk, yogurt, and cheese, and fortified soy beverages.

[6] Beans and peas are included here (and not with vegetables) when the Total Protein Foods standard is otherwise not met.

[7] Includes seafood, nuts, seeds, soy products (other than beverages) as well as beans and pease counted as Total Protein Foods.

[8] Ratio of poly- and monounsaturated fatty acids (PUFAs and MUFAs) to saturated fatty acids (SFAs).

[9] Calories from solid fats, alcohol, and added sugars; threshold for counting alcohol is > 13 grams/1,000 kcal.

[10] Equiv. = equivalent, kcal = kilocalories.

changed between 1970 and 2007, and which areas of the food supply may have changed more than others. In 1970, the food supply's overall HEI score was 48; in 2007 it was 53. Subsequent analyses showed that the food supply's 2010 score was 55. For more on this study and the later analyses, see:

- Krebs-Smith SM, Reedy J, Bosire C. Healthfulness of the U.S. Food Supply: Little Improvement Despite Decades of Dietary Guidance. *American Journal of Preventive Medicine* 2010;38(5):472-477.
- *Let's Talk about Food*, an NCCOR animated video about the later study using the HEI-2010.
- NCCOR's Healthy Diet and HEI Infographic Series.

Showing the HEI's usefulness in evaluating the nutritional quality of any mix of foods, the NCI researchers also have applied the HEI to the dollar menu at a fast food restaurant. The menu received a score of 43, reflecting the fact that most of the items on the menu are high in saturated fats, sodium, and sugar; low in vegetables and fruits; and lack whole grains. For more on this and another related study, see:

- Reedy J, Krebs-Smith SM, Bosire C. Evaluating the Food Environment: Application of the Healthy Eating Index-2005. *American Journal of Preventive Medicine* 2010;38(5):465-471.
- Kirkpatrick SI, Reedy J, Kahle LL, Harris JL, Ohri-Vachaspati P, Krebs-Smith SM. Fast-Food Menu Offerings Vary in Dietary Quality, but are Consistently Poor. *Public Health Nutrition* 2013; January 15: 1-8.

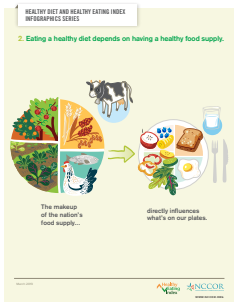
To learn more about research uses of the HEI-2010 and how to calculate HEI scores in different types of analyses, visit the National Cancer Institute's HEI website.

Learn More about the Healthy Eating Index

For more information on the HEI–2010, see:

- Guenther PM, Casavale KO, Reedy J, Kirkpatrick SI, Hiza HAB, Kuczynski KJ, Kahle LL, Krebs-Smith SM. Update of the Healthy Eating Index: HEI-2010, *Journal of the Academy of Nutrition and Dietetics*. 2013 Feb 13. pii: S2212-2672(12)02049-7. doi: 10.1016/j.jand.2012.12.016. [Epub ahead of print].

The HEI was originally developed in 1995 and it has been updated to reflect changes in the Dietary Guidelines. To learn more about the history of the HEI and how it has evolved, visit USDA's Center for Nutrition Policy and Promotion HEI website.



To learn about how scientists applied the HEI to the U.S. food supply, view the "Let's Talk About Food" video and see our infographics series.