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Healthy Eating Index–2005 Total and Component Scores for Adults Aged 20 and Over: National Health and Nutrition Examination Survey, 2003–2004

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Abstract

Objective—This report provides Healthy Eating Index–2005 (HEI–2005) scores for adults aged 20 and over, by sex, age groups, race and ethnicity, and level of education in the 2003–2004 National Health and Nutrition Examination Survey (NHANES 2003–2004).

Methods—The analytic sample consisted of 4,448 adults aged 20 and over from NHANES 2003–2004. The Day 1 dietary recall was used to estimate the HEI–2005 scores. Food and nutrient intakes were assessed on a density basis. The population's mean usual HEI–2005 component and total scores were calculated using a population ratio method based on programs written by the U.S. Department of Agriculture's Center for Nutrition Policy and Promotion. A two-tailed *t*-test was used to test significant differences between sexes, age and race, and ethnic groups and levels of education. Statistical hypotheses were tested at the $p < 0.05$ level of significance using a *t* statistic. The *t*-value at 0.975 with 15 degrees of freedom was 2.131. The Bonferroni method of adjustment was used to adjust the critical value for the family of pairwise comparisons for age, race and ethnicity, and education.

Results—Adults were below the maximum standard for all the HEI–2005 component scores except for total grains and meat and beans. Females and the oldest age group were more successful in meeting the *Dietary Guidelines for Americans 2005* recommendations for the fruit and vegetable components and discretionary calories, and had a slightly higher overall diet quality score than their counterparts. Adults with more than a high school education more closely complied with the recommendations for many of the components compared with those with less education. No one racial and ethnic group stood out as having the highest HEI–2005 scores across most of the components.

Conclusions—These results demonstrate that adults continue to fall short in meeting the *Dietary Guidelines for Americans 2005* recommendations, and that sociodemographic characteristics influence their food choices and overall diet quality.

Keywords: diets • dietary intakes • Dietary Guidelines for Americans 2005

Introduction

The *Dietary Guidelines for Americans* are the basis of the nutrition policy for the U.S. government and are the foundation for all federal nutrition guidance. The U.S. Department of Agriculture's (USDA) Center for Nutrition Policy and Promotion (CNPP) developed a tool called the Healthy Eating Index (HEI) that is used to measure compliance with federal nutrition guidance. CNPP revised the original HEI to reflect the 2005 Dietary Guidelines and developed a new scoring system to evaluate the diet (1,2). The new HEI is called the HEI–2005. Food and nutrient intakes on the HEI–2005 are expressed on a density basis, that is, as amounts per 1,000 calories of intake, in order to characterize diet quality while controlling for diet quantity (1).

CNPP has reported HEI–2005 scores for the 2003–2004 National Health and Nutrition Examination Survey (NHANES 2003–2004) for the U.S. population aged 2 and over by level of income (3), but not by other sociodemographic characteristics. Intakes may vary by sex. Women tend to have a higher store of nutrient knowledge and diet-health awareness

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than men, which may translate into better diets (4). Tastes change with age and people with fewer teeth, such as older adults, may change the types of foods they consume based on limited dentition (4,5). Individuals with more education may acquire more nutrition information, which may induce them to improve the quality of their diets. Differences in nutrition knowledge and diet-health awareness may play roles in race and ethnic differences, but differences in food choices may also be rooted in traditional food customs (4).

The purpose of this report is to provide HEI–2005 scores for adults aged 20 and over, in the NHANES 2003–2004, and to examine the effects of sex, age groups, race and ethnicity, and level of education on these scores.

Methods

NHANES is a cross-sectional nationally representative health and nutrition examination survey conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics. The survey design is a complex, stratified, multistage probability sample of the civilian noninstitutionalized U.S. population. NHANES 2003–2004 includes oversamples of low-income persons, adolescents aged 12–19, adults aged 60 and over, African-American persons, and Mexican-American persons to improve the precision of the estimates for these groups.

Sample population

A total of 6,916 adults aged 20 and over were eligible to participate in NHANES 2003–2004. The survey includes an interview conducted in the home and a subsequent health examination performed at a mobile examination center (MEC). Of the eligible sample, 5,041 adults aged 20 and over (73%) participated in the household interview and 4,742 (69%) also participated in the MEC exam. Two hundred ninety-four (294) adults with a MEC exam were removed from the sample because they did not have complete and reliable Day 1 dietary recalls. The final analytic sample consisted of 4,448 adults aged 20 and over.

Dietary data

Trained interviewers conducted dietary recall interviews using an automated data collection system during the MEC examination. Detailed descriptions of the 2003–2004 dietary interview and data processing procedures can be found under the dietary interview components on the NHANES website (6). NHANES 2003–2004 dietary recall data were used instead of more recent data because one needs to use USDA's MyPyramid Equivalents Database (MPED) in CNPP's program for calculating the HEI–2005. The MPED is currently only available through 2003–2004. Two dietary recalls were collected about 3–10 days apart. The Day 1 recall was used to estimate the HEI–2005 scores similar to a report by Guenther et al. (3).

HEI–2005

The HEI–2005 is based on the food patterns found in USDA's MyPyramid food guidance system (1,2). MyPyramid translates key recommendations in the 2005 Dietary Guidelines into specific, quantifiable dietary recommendations (7). The HEI–2005 is composed of 12 components (Table 1). Five components represent the major food groups found in MyPyramid, that is, total fruit, total vegetables, total grains, milk, and meat and beans. Seven additional components were created to represent whole fruit; dark green and orange vegetables and legumes; whole grains; oils; saturated fat; sodium; and calories from solid fat, alcohol, and added sugar (SoFAAS), which serves as a proxy for discretionary calories found in MyPyramid. These 12 components can be grouped into two types (9 adequacy components): total fruit (including 100% juice); whole fruit; total vegetables; dark green and orange vegetables and legumes; total grains; whole grains; milk; meat and beans; and oils and 3 moderation components including saturated fat, sodium, and calories from SoFAAS (1,2).

Standards for scoring the adequacy components

Foods and nutrients in the HEI–2005 are expressed on a density basis, that is, as amounts per 1,000 calories of intake. The recommended amounts of the food groups, oils, and discretionary calories to consume for the 12 different calorie levels (1,000–3,200 calories) found in MyPyramid can also be expressed on a density basis. When the MyPyramid intakes are expressed on a density basis, many of the recommendations are similar across the energy levels. CNPP based the standard for the adequacy components (food groups and oils) on the 1,200- to 2,400-calorie patterns, a range that meets the recommended nutrient intakes of nearly everyone aged 4 and over. CNPP selected the lowest amount per 1,000 calories (that is, the least restrictive or easiest to achieve) within this calorie range as the standard for the maximum score for each of these components (1,2).

The standard for dark green vegetables, orange vegetables, and legumes is the sum of the weekly recommendations for those three subgroups of vegetables, expressed on a per 1,000-calorie basis. Any combination of these three subgroups counts toward meeting this vegetable subgroup standard, except that legumes are counted as vegetables only after the meat and beans standard has been met (1,2,8).

For all the components (adequacy and moderation), intakes at the level of the standard or better were assigned the maximum number of total points allotted (Table 1). The maximum score for the adequacy components was 5 or 10 points (1,2). No extra credit was given for consuming more than the recommended amounts (personal communication). Zero was assigned if there was no intake. Scores for amounts between zero and the standard were prorated linearly (1,2).

Standards for scoring the moderation components

Lower intakes of the moderation components are assigned higher scores. The 2005 Dietary Guidelines recommend consuming less than 10% of calories from saturated fat (9). Both the Dietary Guidelines Advisory Committee and the Food and Nutrition Board of the Institute of Medicine (IOM) recommend that saturated fat consumption be as low as possible (10,11). The Dietary Approaches to Stop Hypertension (DASH) Eating Plan, developed by the National Heart, Lung, and Blood Institute, aims for 7%, and the 2006 American Heart Association guidelines call for "7% or less" (12). Based on these sources, CNPP chose 7% of calories as the standard for the maximum score of 10 for the saturated fat component. The 2005 Dietary Guidelines recommendation of 10% of calories was assigned a score of 8, indicating a good score. Intakes of 15% or more of calories from saturated fat were given the minimum score of zero. Amounts between 7% and 10% and between 10% and 15% were prorated linearly (1,2).

The 2005 Dietary Guidelines recommendation for sodium intake for most individuals is less than 2.3 grams (g) per day, but for individuals with hypertension, black persons, and middle-aged and older adults, the recommendation is no more than 1.5 g per day (9). Taking these recommendations into consideration, CNPP chose 1.5 g as the basis for the maximum score of 10, and 2.3 g as the basis for the relatively good score of 8 for the sodium component. In order to express sodium on a density basis, CNPP used the same approach that the IOM used to set the Dietary Reference Intakes (DRIs) for sodium for children and older adults. The DRI panel divided the DRIs they had set for young and middle-aged adults by the estimated median energy intake for that age group (2,150 calories per day) and then used those same densities to set the DRIs for children and older adults. To create the HEI–2005 standard for sodium expressed on a density basis, CNPP assigned the highest possible score of 10 to diets that had less than 0.7 g sodium per 1,000 calories (1.5 g sodium per 2,150 calories) and a score of 8 to diets that had 1.1 g of sodium per 1,000 calories (2.3 g sodium per 2,150 calories). The minimum score of zero was set at 2.0 g per 1,000 calories. The amounts between 0.7 g and 1.1 g per 1,000 calories and between 1.1 g and 2.0 g per 1,000 calories are prorated linearly (1,2).

The 2005 Dietary Guidelines Advisory Committee introduced the concept of "discretionary calories," defined as the "difference between total energy requirements and the energy consumed to meet recommended nutrient intakes" (10). The discretionary calories allowance is a defined number of calories that may come from any mix of solid fat, added sugar, alcohol, or additional amounts of nutrient-rich foods beyond the recommended levels (9).

CNPP developed a component in the HEI–2005 that specifically captures the calories from SoFAAS. The standard for the maximum score of 20 was assigned to intakes of 20% of calories or less. This is the least restrictive, or easiest to achieve, of all the discretionary calorie allowances found in the MyPyramid food intake patterns. Zero was assigned to intakes of 50% of energy or more, and amounts in between were prorated linearly (1,2). For an in-depth discussion of the development of the HEI–2005 scoring system, see references 1 and 2.

Calculating the HEI–2005 component and total scores

When only 1 day of intake data are used, CNPP recommends estimating the HEI–2005 component and total scores based on the population's usual intake. These scores are calculated using the population ratio method (2,13). The population ratio is computed by summing all the individual scores for a component, expressed on a density basis, summing the total caloric intakes for all the individuals, and dividing the total component score by the total number of calories. The total HEI score is the sum of the 12 population component scores (2).

CNPP provides a SAS/SUDAAN program and Excel spreadsheet for calculating the HEI–2005 component and total scores on a population density basis. Additional information on this program is available on the CNPP website (14). Although CNPP used this program to calculate the HEI–2005 component and total scores for NHANES 2001–2002, CNPP states that it can be used to calculate the HEI–2005 scores for NHANES 2003–2004. CNPP also provides a detailed description of how to calculate the HEI–2005 component and total scores (see readme file, 15).

This paragraph briefly describes CNPP's programs for calculating the HEI–2005 component and total scores using the population ratio method. This approach was used in this report. Specifically, the MyPyramid Equivalents Database for USDA survey food codes, 2003–2004, version 2.0; CNPP's 2003–2004 MyPyramid Equivalents Database for whole fruit and fruit juice; and the Day 1 food and nutrient files from NHANES 2003–2004 were used to calculate the population mean intakes. The mean density ratios, standard errors, and 95% confidence intervals for the 12 food and nutrient groups were calculated based on the population ratio method in CNPP's SAS/SUDAAN program. These values were exported into CNPP's Excel spreadsheet where the standards for scoring, described earlier, were applied to the mean density ratios and confidence intervals to produce the nontruncated HEI–2005 component scores. Next, the scoring standards for the minimum and maximum levels for each component were applied to the nontruncated scores to produce the truncated scores. These scores are used to compute the total HEI–2005 score. If a nontruncated component score was equal to or greater than the standard for the maximum score, then the truncated score was set at the maximum score. Likewise, if the 95% confidence intervals were equal to or greater than the standard for the maximum score, then they were also set at the maximum score. The population HEI–2005 total

score is the sum of the truncated population HEI–2005 component scores from the spreadsheet. The final section in CNPP's SAS/SUDAAN program calculates the standard error for the population HEI–2005 total score based on the nontruncated HEI–2005 component scores.

Descriptive characteristics

Age was categorized into three groups based on the recommendations in the NHANES Analytic Guidelines (16). These age categories were: 20–39, 40–59, and 60 and over. These three age categories were also used in the age-adjustment procedure. Results for non-Hispanic white, non-Hispanic black, and Mexican-American persons were included. Individuals who did not identify themselves as belonging to one of these categories were not analyzed separately but were included in the "total" category. Results for race and ethnicity were age adjusted using the direct method of adjustment to the U.S. resident population aged 20 and over, estimated by the U.S. Census Bureau in the year 2000 (17). Education was categorized into three groups: less than high school, high school diploma including a General Education Development high school equivalency degree (GED), or more than high school.

Data analyses

The HEI–2005 component and total scores were estimated using the SAS/SUDAAN program and Excel spreadsheet that CNPP provided. SAS for Windows (release 9.2; SAS Institute, Cary, N.C.) and SUDAAN (release 10.0; RTI International, Research Triangle Park, N.C.) statistical software programs were used in these analyses. Sample weights were included in the estimation process for all analyses in order to take into account the differential probabilities of selection, nonresponse, and noncoverage. The Day 1 dietary recall sample weights were used in these analyses.

The CNPP program uses SUDAAN's Proc Ratio procedure to calculate the mean density ratios, standard errors, and 95% confidence intervals for the 12 food and nutrient groups. The standard errors were estimated using the Taylor series linearization, a method that incorporates the sample weights and accounts for the sample design (18). A formula in the Excel spreadsheet converted the mean density ratios to nontruncated and truncated component and total HEI scores and the 95% confidence intervals. The spreadsheet does not include a calculation of the standard errors for the nontruncated and truncated component scores. In order to calculate these standard errors, the same formula used to convert the mean density ratios to component HEI scores was used to convert the standard error of the mean density ratios to the standard error of the component HEI scores. A different approach was used to calculate the standard errors for saturated fat, sodium, and SoFAAS from the other components because CNPP used a more complicated algorithm for calculating the HEI–2005 scores for these three components. The standard errors for these components were obtained using the formula for calculating the confidence limits for a mean and the nontruncated HEI component score, the 95% confidence intervals, and the t-value. The t-value at 0.975 with 15 degrees of freedom for NHANES 2003–2004 is 2.131. The population HEI–2005 total score is the sum of the truncated population HEI–2005 component scores from the spreadsheet, but the standard error for the population HEI–2005 total score is derived from the part of the SAS/SUDAAN program that calculates the HEI–2005 nontruncated total score (see readme file) (15).

When the component score was equal to or greater than the standard for the maximum score, the truncated score was set at the maximum score. At the same time one or both of the confidence intervals were equal to or greater than the standard for the maximum score and they were also set at the maximum score. In this situation, CNPP has shown the maximum value for the component score and the confidence intervals in its report using the HEI–2005 (3). In these instances, the maximum score is shown and a standard error is not reported. If the score rounds up to the maximum score, the score and the standard error are shown (Table 2).

A two-tailed t-test was used to test significant differences between sexes, age, racial and ethnic groups, and levels of education. Statistical hypotheses were tested at the $p < 0.05$ level of significance using a t statistic. The t-value at 0.975 with 15 degrees of freedom for NHANES 2003–2004 was 2.131. The Bonferroni method of adjustment was used to adjust the critical value for the family of pairwise comparisons across the three levels for age, race and ethnicity, and education (19). The adjusted critical value was 0.0167 and the interpolated t-value was 2.717. Statistical tests were not performed on component scores in cases where the maximum total point value was assigned and the standard error is not shown. All differences described in the findings are statistically significant unless indicated otherwise.

Results

The HEI–2005 component scores measure compliance with key diet-related recommendations from the 2005 Dietary Guidelines. The HEI–2005 component scores for adults aged 20 and over in NHANES 2003–2004 were below the maximum scores for all of the components except for total grains and meats and beans (Table 2). The scores for dark green and orange vegetables and legumes (1.3), whole grains (1.0), sodium (3.8), and calories from SoFAAS (7.8), were especially low. Each one was less than one-half of the standard for a maximum score for that component. Lower scores for the adequacy components indicate lower intakes of these foods, while lower scores for the moderation components indicate higher intakes of those foods or nutrients. Higher scores indicate closer compliance with diet-related recommendations in the 2005 Dietary Guidelines. The overall HEI score, which is a measure of the overall quality of the diet, was 57.2 out of a possible 100.

The following sections describe the HEI–2005 component scores based on selected demographic characteristics.

Sex

- Females had slightly higher mean scores for total fruit, whole fruit, total vegetables, dark green and orange vegetables and legumes, oils, and calories from SoFAAS than males. The higher scores indicate that females had higher intakes of the fruits, vegetables and legumes, and oils than males, but consumed fewer calories from solid fats, alcoholic beverages, and added sugars than males. Also, the overall quality of their diets was slightly higher than that of males (60.3 compared with 54.8) (Table 2).
- Both sexes met or exceeded the standards for a maximum score for total grains and meats and beans.

Age

- Adults aged 60 and over had higher mean component scores for total fruit, total vegetables, dark green and orange vegetables and legumes, calories from SoFAAS, and the overall HEI score than the two younger age groups (Table 2).
- Adults aged 40–59 had a higher mean whole fruit score than adults aged 20–39 (3.5 compared with 2.0) and, even though it could not be tested statistically, adults aged 60 and over had a whole fruit score that reached the maximum score (5.0).
- The whole grains scores for all three age groups were different from each other. Those aged 40–59 had a higher mean score than those aged 20–39 (1.0 compared with 0.7), and those aged 60 and over had a higher mean score (1.5) than those aged 40–59.
- All three age groups met or exceeded the standards for a maximum score for total grains and meats and beans.

Race and ethnicity

- The mean total vegetable scores for non-Hispanic white (3.6) and Mexican-American (3.8) persons were higher than the score for non-Hispanic black persons (3.0), but not significantly different from each other (Table 2). Mexican-American persons (1.9) had a higher mean score for the dark green and orange vegetables and legumes component than the other two racial and ethnic groups (1.3 and 1.4) who were not significantly different from each other.
- Non-Hispanic white persons had a higher mean whole grains score than Mexican-American persons (1.1 compared with 0.7), but non-Hispanic black persons (0.8) were not significantly different from either of the other two groups.
- Non-Hispanic white persons had a higher mean milk component score than non-Hispanic black persons (6.0 compared with 4.0), but Mexican-American persons were not significantly different from either of the other two groups (5.0).
- Mexican-American persons had a lower mean oils component score (5.1) than the other two racial and ethnic groups (7.3 for each group). Non-Hispanic white persons (5.6) had a lower mean saturated fat score than non-Hispanic black (6.6) or Mexican-American (7.0) persons; the latter two groups were not significantly different from each other.
- Non-Hispanic white persons had a lower mean sodium component score than Mexican-American persons (3.7 compared with 4.3), but non-Hispanic black persons (4.4) were not significantly different from either of the other two groups.
- Non-Hispanic white and Mexican-American persons met or exceeded the standards for a maximum score for total grains. All three racial and ethnic groups met or exceeded the standards for a maximum score for meats and beans.

Education

- Those with more than a high school education had the highest mean scores and those with a high school education or GED had the lowest mean scores for whole fruit (3.6 compared with 2.5), total vegetables (3.7 compared with 3.3), dark green and orange vegetables and legumes (1.5 compared with 1.1), calories from SoFAAS (8.6 compared with 6.3), and the overall HEI score (59.5 compared with 53.0) (Table 2). The scores for those with less than a high school education fell between these two groups and were not significantly different from them.
- Those with more than a high school education had the highest mean scores and those with less than a high school education had the lowest mean scores for the whole grains (1.1 compared with 0.8) and oils (7.7 compared with 5.7) components, but had the lowest mean score for sodium while those with less than a high school education had the highest mean score (3.6 compared with 4.4). The scores for those with a high school education or GED fell between these two groups and were not significantly different from them.
- Those with less than or more than a high school education had higher mean total fruit component scores than those with a high school education or GED (3.0, 3.0, and 2.1, respectively).
- Those with less than a high school education had a higher mean saturated fat score than those with a high school education or GED (6.9 compared with 5.4). The score for those with more than a high school education fell between these two groups and was not significantly different from them.
- All three educational groups met or exceeded the standards for a maximum score for total grains and meats and beans.

Summary and Conclusions

The *Dietary Guidelines for Americans* are the basis of the nutrition policy for the U.S. government and are the foundation for all federal nutrition guidance. The HEI is a tool to evaluate the quality of the diet in terms of its conformity to the *Dietary Guidelines for Americans*. The original HEI was revised to reflect the 2005 Dietary Guidelines, and a new scoring system

was developed (1,2). Food and nutrient intakes are expressed on a density basis in the revised HEI, that is, as amounts per 1,000 calories of intake, in order to characterize diet quality while controlling for diet quantity (1).

Adults aged 20 years and over were below the maximum standard for all the HEI–2005 component scores except for total grains and meat and beans. Those components that were especially low were dark green and orange vegetables and legumes, whole grains, sodium, and calories from SoFAAS (calories from solid fats, alcoholic beverages, and added sugars). Scores for each of these components were less than one-half of the standard, indicating dietary intakes were less than one-half of the Dietary Guidelines recommendations. Scores for the remaining components indicate intakes between 50% and 70% of the Dietary Guidelines recommendations. The overall HEI score, which is a sum of the component scores and serves as a measure of diet quality, was 57.2 out of 100, indicating Americans' diets need improvement. Examining the component and total scores by sex, age, race and ethnicity, and education did not substantially alter these results.

Females had slightly higher intakes than males of total and whole fruit, total and dark green and orange vegetables and legumes, and oils, and slightly lower intakes of calories from SoFAAS. They also had a slightly higher overall score than males. In general, the oldest age group (60 and over) was more successful at adhering to the Dietary Guidelines' recommendations for the fruit and vegetable components, whole grains, and calories from SoFAAS, and had a slightly higher overall score than the younger age groups.

The HEI component scores varied by race and ethnicity across all 12 components, with no one group having the highest scores. Many of the differences may be rooted in cultural differences in the types of foods consumed and cooking styles. Non-Hispanic white and non-Hispanic black persons had slightly higher mean intakes of total vegetables than did Mexican-American persons, but Mexican-American persons had slightly higher mean intakes of dark green and orange vegetables and legumes. Non-Hispanic white persons were more successful at consuming whole grains than were Mexican-American persons, but the opposite was true for reducing sodium intake. Non-Hispanic white persons were also more successful in consuming milk and milk products than were non-Hispanic black persons, but this may be because lactose intolerance is common in black, Asian, and Middle Eastern populations (20). Non-Hispanic white and non-Hispanic black persons consumed more vegetable oils and oils in fish, nuts, and seeds than did Mexican-American persons, but non-Hispanic black and Mexican-American persons were more successful in reducing the saturated fat in their diets.

Adults with more than a high school education had higher scores for many of the HEI–2005 components than those with less education. Specifically, those with more than a high school education had higher mean intakes of whole fruit, both vegetable components, and calories from SoFAAS, and had a higher overall HEI score than those with a high school education or GED. They also had higher mean intakes of whole grains and oils that those with less than a high school education. Those with more than and less than a high school education had higher mean total fruit intakes than those with a high school education or GED. On the other hand, those with less than a high school education were more successful in reducing their saturated fat intakes than those with a high school education or GED, and were also more successful in reducing their sodium intake than those with more than a high school education.

These results demonstrate that adults continue to fall short of federal dietary guidance and sociodemographic characteristics influence their food choices and overall diet quality. To improve their HEI–2005 scores and their compliance with federal dietary recommendations, adults need to increase their intake of most of these components except for total grains and meat and beans, but they especially need to increase their intake of dark green and orange vegetables and legumes and whole grains, and reduce their intake of sodium and calories from SoFAAS.

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Table 1. Healthy Eating Index–2005: Components and standards for scoring

Components	Maximum points	Standard for maximum score	Standard for minimum score of zero
Total fruit (included 100% juice)	5	≥ 0.8 cup equiv. per 1,000 kcal	No fruit
Whole fruit (not juice)	5	≥ 0.4 cup equiv. per 1,000 kcal	No whole fruit
Total vegetables	5	≥ 1.1 cup equiv. per 1,000 kcal	No vegetables
Dark green and orange vegetables and legumes[1]	5	≥ 0.4 cup equiv. per 1,000 kcal	No dark green or orange vegetables or legumes
Total grains	5	≥ 3.0 oz equiv. per 1,000 kcal	No grains
Whole grains	5	≥ 1.5 oz equiv. per 1,000 kcal	No whole grains
Milk[2]	10	≥ 1.3 cup equiv. per 1,000 kcal	No milk
Meat and beans	10	≥ 2.5 oz equiv. per 1,000 kcal	No meat or beans
Oils[3]	10	≥ 12 grams per 1,000 kcal	No oil
Saturated fat	10	≤ 7% of energy[4]	≥ 15% of energy
Sodium	10	≥ 0.7 grams per 1,000 kcal[4]	≥ 2.0 grams per 1,000 kcal
Calories from solid fat, alcohol, and added sugar (SoFAAS)	20	≤ 20% of energy	≥ 50% of energy

[1]Legumes counted as vegetables only after meat and beans standard is met.

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

[3]Includes nonhydrogenated vegetable oils and oils in fish, nuts, and seeds.

[4]Saturated fat and sodium get a score of 8 for the intake levels that reflect the 2005 Dietary Guidelines: less than 10% of calories from saturated fat and 1.1 grams of sodium per 1,000 kilocalories, respectively.

NOTE: Intakes between the minimum and maximum levels are scored proportionately, except for saturated fat and sodium (see footnote 4).

SOURCE: Center for Nutrition Policy and Promotion (CNPP) Fact Sheet No. 1. Healthy Eating Index-2005, available from: http://www.cnpp.usda.gov/Publications/HEI/healthyeatingindex 2005factsheet.pdf.

Table 2. Mean Healthy Eating Index component and overall scores for adults aged 20 and over, by age, race and ethnicity, and education: United States, 2003–2004

Characteristic	Sample size	Total fruit	Whole fruit	Total vegetables	Dark green and orange vegetables and legumes	Total grains	Whole grains	Milk	Meat and beans	Oils	Saturated fat	Sodium	Calories from solid fats, alcoholic beverages, and added sugars (SoFAAS)	Overall HEI
							Mean (standard error)							
Total[1]	4,448	2.8 (0.16)	3.3 (0.20)	3.5 (0.05)	1.3 (0.06)	5.0 (–)[2]	1.0 (0.04)	5.6 (0.19)	10.0 (–)[2]	7.1 (0.17)	6.0 (0.18)	3.8 (0.10)	7.8 (0.27)	57.2 (0.76)
Sex														
Male	2,135	2.4 (0.17)[a,3]	2.8 (0.21)[a]	3.3 (0.06)[a]	1.2 (0.06)[a]	5.0 (–)[2]	0.9 (0.04)	5.4 (0.19)	10.0 (–)[2]	6.7 (0.23)[a]	6.2 (0.16)	3.9 (0.12)	7.0 (0.30)[a]	54.8 (0.78)[a]
Female	2,313	3.2 (0.20)[b]	3.9 (0.25)[b]	3.8 (0.09)[b]	1.5 (0.12)[b]	5.0 (–)[2]	1.0 (0.05)	5.9 (0.22)	10.0 (–)[2]	7.6 (0.16)[b]	5.8 (0.28)	3.8 (0.16)	8.8 (0.35)[b]	60.3 (1.12)[b]
Age														
20–39 years	1,536	2.1 (0.21)[a]	2.0 (0.19)[a]	3.3 (0.09)[a]	1.2 (0.07)[a]	5.0 (–)[2]	0.7 (0.06)[a]	5.8 (0.22)	10.0 (–)[2]	6.8 (0.26)	6.2 (0.23)	3.9 (0.17)	6.9 (0.33)[a]	54.2 (0.88)[a]
40–59 years	1,251	2.9 (0.19)[a]	3.5 (0.29)[b]	3.5 (0.08)[a]	1.3 (0.07)[a]	5.0 (0.14)[2]	1.0 (0.05)[b]	5.3 (0.24)	10.0 (–)[2]	7.4 (0.26)	5.7 (0.31)	3.9 (0.16)	7.5 (0.42)[a]	57.0 (0.76)[a]
60 years and over	1,661	4.0 (0.17)[b]	5.0 (–)[2]	4.1 (0.08)[b]	1.7 (0.13)[b]	5.0 (–)[2]	1.5 (0.08)[c]	5.8 (0.23)	10.0 (–)[2]	7.0 (0.31)	6.1 (0.25)	3.4 (0.18)	10.2 (0.28)[b]	63.8 (0.72)[b]
Race and ethnicity														
Non-Hispanic white	2,391	2.7 (0.17)	3.4 (0.22)	3.6 (0.06)[a]	1.3 (0.06)[a]	5.0 (–)[2]	1.1 (0.05)[a]	6.0 (0.20)[a]	10.0 (–)[2]	7.3 (0.14)[a]	5.6 (0.22)[a]	3.7 (0.10)[a]	7.7 (0.27)	57.3 (0.84)
Non-Hispanic black	867	3.0 (0.16)	2.9 (0.18)	3.0 (0.09)[b]	1.4 (0.07)[a]	4.8 (0.11)[2]	0.8 (0.07)[a,b]	4.0 (0.18)[b]	10.0 (–)[2]	7.3 (0.45)[a]	6.6 (0.18)[b]	4.4 (0.27)[a,b]	6.9 (0.69)	55.0 (1.51)
Mexican American	882	3.2 (0.31)	3.6 (0.38)	3.8 (0.08)[a]	1.9 (0.15)[b]	5.0 (–)[2]	0.7 (0.11)[b]	5.0 (0.37)[a,b]	10.0 (–)[2]	5.1 (0.52)[b]	7.0 (0.34)[b]	4.3 (0.12)[b]	8.6 (0.56)	58.3 (1.65)
Education														
Less than high school	1,288	3.0 (0.28)[a]	3.4 (0.34)[a,b]	3.3 (0.13)[a,b]	1.3 (0.13)[a,b]	5.0 (–)[2]	0.8 (0.06)[a]	5.0 (0.25)	10.0 (–)[2]	5.7 (0.48)[a]	6.9 (0.31)[a]	4.4 (0.19)[a]	7.4 (0.43)[a,b]	56.2 (1.09)[a,b]
High school diploma or GED[5]	1,111	2.1 (0.15)[b]	2.5 (0.24)[a]	3.3 (0.07)[a]	1.1 (0.07)[a]	5.0 (–)[2]	0.9 (0.05)[a,b]	5.6 (0.28)	10.0 (–)[2]	6.8 (0.25)[a,b]	5.4 (0.30)[b]	4.0 (0.16)[a,b]	6.3 (0.43)[a]	53.0 (1.17)[a]
More than high school	2,043	3.0 (0.20)[a]	3.6 (0.21)[b]	3.7 (0.06)[b]	1.5 (0.08)[b]	5.0 (–)[2]	1.1 (0.06)[b]	5.8 (0.21)	10.0 (–)[2]	7.7 (0.26)[b]	6.1 (0.21)[a,b]	3.6 (0.13)[b]	8.6 (0.31)[b]	59.5 (0.78)[b]

[1]Includes other race and ethnic groups not shown separately and missing or unknown responses for education.

[2]If a score exceeds the maximum points allowed for a component then the score shown on the table is changed to the maximum points and the SEM is not reported. If a score rounded up to the maximum score, then the maximum score and the SEM are shown on the table.

[3]Critical value: $p < 0.05$, df 15. The Bonferroni method of adjusting for the family of pairwise comparisons was used when a characteristic was composed of three levels (adjusted p-value: $p < 0.0167$). Means with different letters are siginficantly different from each other. No standard error is shown when the component score is the maximum points and there is no test for significant differences between groups.

[4]Age adjusted using the direct method of adjustment to the U.S. resident population, aged 20 and over, estimated by the U.S. Census Bureau in the year 2000.

[5]GED is General Educational Development high school equivalency diploma.

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