Food Quality Scores and Nutrient Ratios Correlate with Healthier Weight and Blood Pressure in a Representative US Cohort

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Abstract

Background

Obesity is on the rise, driven in part by changing patterns in food consumption. Nutrient profiling systems (NPSs) aim to guide healthier food choices through labeling and consumer facing technologies that highlight food quality.

Objectives

This study compares four leading NPSs—Nutri-Score (NS), Health Star (HS), NOVA Classification (NC), Food Compass 2.0 (FC) – with nutrient ratios and a nutrient-ratio-based NPS, Nutrient Consume Score (NCS), for their associations with obesity and blood pressure in the U.S. population using NHANES data.

Methods

NHANES (2015–2016) was analyzed for adults aged 20 and older. Dietary intake was assessed via 24-hour recalls, and NPS scores were calculated. Multivariable regression models adjusted for lifestyle factors were used to assess associations with obesity and blood pressure measures.

Results

All NPSs and nutrient ratios were significantly correlated with healthier weight and showed variable associations with blood pressure. Incorporating alcohol and adjusting for bioactives in a ratio-based NPS improved its association with weight outcomes. The food categories contributing to high and low scores were largely consistent across NPSs.

Conclusions

The NPSs and nutrient ratios evaluated were significantly associated with obesity and blood pressure measures. Intervention studies offering real-time NPS feedback on individual food choices are needed next to evaluate for causal impact of NPSs on metabolic health.

Introduction

The rising incidence and prevalence of obesity (1), metabolic syndrome (2), and other noncommunicable disease (3) in the United States and globally (4) has been linked to shifts in the types of foods available to consumers including increased ultra-processed (5) and hyperpalatable foods (6) with resulting changes in dietary habits (7). Complex, confusing (8), and conflicting (9) nutrition guidance make it difficult for individuals to make informed, healthy choices on food purchases, preparation, and consumption (10).

Nutrient profiling systems (NPSs) aim to simplify nutrition complexity into easier-to-follow ratings that assess the health quality of foods and beverages. These systems can offer real-time guidance through package labeling (11), online websites (12), and smartphone technologies

(13,14), helping individuals make healthier food choices. Additionally, they can support public health recommendations (15) and guide food companies in creating healthier products (16).

While there are over 100 reported NPSs (15,17), a small subset have been rigorously evaluated for their association with health outcomes. Nutri-Score (NS) (18), Health Star (HS) (19), NOVA Classification (NC) (20), and Food Compass (FC) (21,22) are the most studied systems, with links to improved dietary choices and better health.

Nutri-Score (23), popular in several European countries, and Health Star (24), widely used in Australia and New Zealand, rank foods based on nutrient profiles and food categories. The NOVA classification categorizes foods by their degree of processing, popularizing the term ultra-processed food (25). Food Compass evaluates foods across nine health domains, including categories like nutrient ratios, fiber, and phytochemicals (22,26).

The Nutrient Consume Score (NCS) (12) is a web based algorithm that focuses on nutrient ratios – carbohydrate-to fiber (27), saturated fat-to-unsaturated fat (28), sodium-to-potassium (29), and calorie-to-weight (30) – as proxies for the degree of food processing and previously identified as strong predictors of food quality (31). It also incorporates alcohol and adjusts for bioactive food components that support a healthy gut microbiome. This includes positive adjustments for foods containing polyphenols, bioactive fats, fermentable fibers, and fermentation products (32).

Epidemiological research directly comparing the leading NPSs and their links to metabolic health outcomes is limited. This study aims to compare the leading NPSs with NCS, a nutrient ratio-based score, in relation to weight and blood pressure – key prognostic factors in cardiometabolic disease and mortality – in a representative U.S. population, using NHANES data.

Methods

Data Sources and Analytic Population

NHANES is a repeated, cross-sectional analysis that has been conducted continuously since 1999 and data are released in two-year cycles. The survey includes interview and physical measurement components and is conducted in a nationally representative sample of approximately 5000 persons each year from persons located in 15 counties that are randomly selected each year. Data from the continuous survey data releases 2015-2016 was used for this analysis because complete data was available for all of the NPS scores (33). In the 2015-2016 data cycle, 9971 individuals participated in NHANES. The following exclusions were applied in this order to obtain the analytic subsample used (n excluded): age <20 years (n=4252), missing education (n=5), missing poverty-to-income ratio (n=0), missing day 1 dietary intake data (n=699), physiologically unsustainable low dietary intake of <500 kcal (n=42), physiologically unsustainable high dietary intake >5000 kcal (n=57), missing smoking information (n=20), missing waist circumference (n=203), missing body mass index (n=9), missing blood pressure (n=51), or missing exercise data (n=35). NHANES does not have missing data for age, gender, or race/ethnicity. The analytic sample used included 4598 adult individuals with complete data.

Dietary Intake Assessment

Dietary intake is assessed using two multiple pass 24-hour recalls. The first 24-hour recall is conducted in person during the visit to the Mobile Examination Center (MEC). The second 24-hour recall is conducted over the phone 3 to 10 days after the MEC visit. All NHANES participants are eligible for the 24-hour recall interviews. The interviews are conducted using a midnight-to-midnight time frame for the 24-hour period prior to the interview. The USDA Food Survey Research Group for the dietary data collection methodology, maintenance of databases used to code and process data, and data review and processing. The dietary data is released in two files: individual foods and total nutrients. The individual foods file lists each food reported by the participant, along with details of the consumption such as a USDA FNDDS code (food code), eating occasion, and amount of food/beverage consumed in grams. The total nutrient intake file is a daily aggregate of nutrients from the reported foods consumed for that 24-hour recall.

Nutrient Profiling Systems and Nutrient Ratios

This study evaluated five nutrient profiling systems, each rescaled to a 100-point scale for comparison. Nutri-Score (A–E = 100–20), Health Star Rating (0.5–5 = 10–100), NOVA classification (1–4 = 80–20), and Food Compass 2 (1–100 = 1–100) scores were converted from previously reported values (22,26). Alcoholic beverages were assigned null values in systems that did not evaluate them: NS, HS, NC, and FC. Nutrient Consume Score values were retrieved using the NCS algorithm available online at Gutbites.org (12). Additionally, nutrient ratios—carbohydrate-to-fiber, saturated fat-to-unsaturated fat, sodium-to-potassium, and calorie-to-weight—were mapped to a quantized scale of 1 to 3 in 0.125 increments before analysis.

Nutri-Score is a scoring algorithm that balances positively weighted nutrients (e.g., fruits, vegetables, fiber) against negatively weighted ones (e.g., saturated fat, sugars, sodium), resulting in a color-coded rating from A to E (23). Health Star Rating separates foods into three groups – dairy products, non-dairy beverages, and all other foods – and assigns points based on levels of protein, fats, saturated fats, energy, carbohydrates, sugar, and sodium, yielding in a 5-star scale with half-star increments (24). The NOVA Classification ranks foods by processing level, distinguishing between minimally or unprocessed foods, processed ingredients, processed foods, and ultra-processed foods, resulting in a 4-level scale (25). Food Compass assesses foods across nine domains – nutrient ratios, vitamins, minerals, food-based ingredients, additives, processing, specific lipids, fiber & protein, phytochemicals – producing a 100-point score (22,26).

Nutrient Consume Score (NCS) is an online nutrient profiling system based on nutrient ratios – Carbohydrate-to-Fiber, Saturated Fat-to-Unsaturated Fat, Sodium-to-Potassium, and Calorie-to-Weight – and other nutrients (protein, vitamin D, iron, calcium) available on U.S. Nutrition Facts labels (12). It also includes positive adjustments for food categories like fruits, vegetables, nuts, seeds, and whole grains to account for microbiome-supportive and bioactive factors, such as polyphenols, prebiotic fibers, bioactive fats, and fermentation products, which aren't listed on the labels. In addition, negative adjustments are provided for alcohol, soft drinks, processed meats, and processed potatoes to reflect additives and food components linked to negative health outcomes.

All scores and nutrient ratios were evaluated in three ways: weighted by calorie (kcal), weighted by weight (grams), and unweighted. Unweighted scores were calculated for each individual as the average score of each food consumed in the 24-hour period divided the total number of food items. Scores weighted by energy and weight were calculated as the sum of the individual food items' scores multiplied by the kcal or grams provided by the food item, and then divided by the total kcal or grams for the 24-hour period. Scores were classified into tertiles for analysis, and were also analyzed as continuous variables on a 5-unit scale.

Food Categories and Contributions to Scores

To evaluate which foods were contributing to most of the variation in the scores, a compositional approach was applied. Individual foods reported were assigned to food group classifications based on the What We Eat in America (WWEIA) food categories (34). Total intake of food categories was calculated for each person based on percentage energy (kcals) provided by all the foods in that category for the 24-hour dietary intake recall period. Center-log transformed ratios of percentage energy contributed by food categories to overall energy were calculated (35) using the R *compositions* package (36)to include in regression models.

Outcomes

Anthropometry and blood pressure were evaluated as continuous outcomes and as binary outcomes based on established cut-offs. Anthropometric characteristics are measured during the in-person visit by trained technicians. Blood pressure was measured one to four times by trained technicians. Details about measurement and analysis are available from NHANES established procedures. The average of the available measurements for each person was used for analysis.

Obesity was defined as BMI 30 kg/m2 and abdominal obesity was defined as waist circumference >88 cm for women and >102 cm for men. High blood pressure was defined as the presence of systolic blood pressure 130 mm/Hg or diastolic blood pressure 85 mm/Hg (37,38).

Covariates

Personal characteristics were included to describe the analytic group and as adjustment variables in multivariable analyses. Characteristics included were: age (in categories for description and in years for multivariable analyses), gender (female and male), race or ethnicity (non-Hispanic White, non-Hispanic Black, non-Hispanic other, and Hispanic). Education (< high school graduate; high school graduate or equivalent; some college or associate degree; and, four-year college graduate or more), poverty-to-income ratio (PIR, <1, 1 to <2, 2, to <3, and 3+), smoking status (less than 100 cigarettes in lifetime; former smoker; current <20 cigarettes per day; and, current 20+ cigarettes per day), and physical activity (<15, 15 to <75, 75 to <165, 165+ metabolic equivalent score (METS) per week).

Statistical Analysis

Descriptive statistics for covariates were calculated by tertiles of the grams-weighted NCS score. A correlation matrix of Pearson correlations were calculated for the scores and subscores. Means and standard errors were calculated for continuous variables and frequencies and percentages were calculated for categories variables. To evaluate associations of NPSs and ratio scores with anthropometry and blood pressure, multivariable linear and logistic regression analyses were performed for continuous and binary outcomes, respectively, and adjusted for personal characteristics (age, gender, race/ethnicity, education, PIR, smoking, and exercise. Model fit was assessed by calculating root mean square error (RMSE) (linear regression) or Brier score (logistic regression). For food category contributions to scores, linear regression analyses were used to evaluate the contribution of center-log ratio transformed food categories of the energy-weighted scores and subscores. With the exception of the compositional analysis of food category contributions to NPSs and ratios scores, analyses were conducted using population weights supplied by NHANES and incorporating the complex survey design. Statistical significance was considered $p<0.05$ for analyses with cardiometabolic and mortality outcomes. Statistical analysis was conducted in Stata (StataCorp, TX, USA, version 18).

Results

Study Population Characteristics

Study population characteristics by tertiles of energy-weighted NCS scores are presented (Table 1). Categories more represented in the highest tertials included age greater than 65, female gender, Hispanic, non-Hispanic other, four year college graduates, 3+ poverty to income ratios, and never smokers. Categories more represented in the lowest tertials included younger age, non-Hispanic White, non-Hispanic Black, lower education level, current smoker, and highest physical activity level (165+ METS) .

Score and Ratio Associations with Weight and Blood Pressure

All NPS scores showed significant associations or trends with weight-related measures (BMI, waist circumference, and obesity) and blood pressure measures (systolic, diastolic, and high blood pressure) (Table 2, Figure 1).

Salt, energy, and fat ratios were strongly correlated with all weight measures but showed more variable correlations with blood pressure. In contrast, fiber ratios were strongly correlated with all blood pressure measures but not with weight measures. Lower nutrient ratio scores (healthier), expectedly corresponded to higher (healthier) NPS scores.

Among the NPSs, NCS demonstrated the strongest associations with weight measures, including percent obesity (p=0.0004), BMI (p<0.0001), and waist circumference (p=0.0001). Comparing the highest and lowest score tertiles, there was an 11% difference in obesity prevalence, a 5% difference in waist circumference, and a 2-point difference in BMI.

NCS showed a weaker association with blood pressure measures, including percent high blood pressure (p=0.0586), systolic blood pressure (p=0.0051), and diastolic blood pressure (p=0.0026). Differences between the highest and lowest score tertiles included a 3.6% difference in high blood pressure prevalence and a 2-point difference in both systolic and diastolic blood pressure.

Excluding alcohol from NCS strengthened its association with blood pressure (p=0.0109) but weakened its association with obesity (p=0.0046). Removing bioactive adjustments reduced NCS's associations with both obesity (p=0.0046) and blood pressure (p=0.1512).

NPS Food Category Contributors to Scores

The top food categories contributing to NPS variation were largely consistent across scores, with approximately 20 out of 159 categories accounting for over 50% of the variation (Figure 2). Food categories contributing more than 1% of the variation in at least three NPSs included the following:

Positive contributors: “Fish,” “Beans, peas, legumes,” “Nuts and seeds,” “Seafood mixed dishes,” “Rice mixed dishes,” “Stir-fry and soy-based sauce mixtures,” “Soups,” “Rice,” “Yeast breads,” “Oatmeal,” and “Bananas.” Negative contributors: “Pizza,” “Burgers,” “Frankfurter sandwiches,” “Egg/breakfast sandwiches,” “Soft drinks,” “Tea,” “Beer”, and “Liquor and cocktails”.

Despite overall similarities, there were some key differences between scores. For example, NCS had stronger negative contributions from “Pizza”, “Frankfurter sandwiches” “Egg/breakfast sandwiches”, “Biscuits, muffins, quick breads”, and “Cookies and brownies”. Food Compass had stronger positive contributions from “Fish”, “Eggs”, “Nuts & seeds”, “Smoothies & grain drinks”, and “Ready-to-eat cereal, higher sugar (=>21.2g/100g)”.

Discussion

Nutrient profiling systems assess the quality of food and beverages, and aim to help consumers, industry, and government select, create, and promote healthier options to improve public and individual health (17). This study shows that leading NPSs are strongly associated with weight and blood pressure, key prognostic factors in cardiometabolic disease, neurological disorders, cancer, and mortality. Notably, the food categories contributing greatest to scores were largely consistent across systems. Those foods contributing most to positive scores included minimally processed foods and those that contributed most to negative scores included ultra-processed foods.

A key finding is that much of the power of NPSs may be captured in the following nutrient ratios: carbohydrate-to fiber (27), saturated fat-to-unsaturated fat (28), sodium-to-potassium (29), and calorie-to-weight (30), which all associated with weight and variably associated with blood pressure. Nutrient ratios reflect nutritional balance in whole foods and the degree to which certain nutrients are concentrated or depleted in processed foods. Ratios are explicitly incorporated in systems like NCS and FC and implicitly applied in systems like NS and HS, which assign positive and negative weights to under- and overrepresented nutrients. Nutrient ratios may complement the NOVA classification, which has been critiqued for grouping all ultra-processed foods together, by offering an empirical approach to assessing the relative healthfulness of different ultra-processed foods (39).

Another key finding is that including alcohol in a ratio-based score may enhance its health-discriminatory power for weight. In NPSs that excluded alcohol from their calculations, alcoholic beverages were contributors to the scores, likely due to co-consumption of alcohol with other foods. This result also highlights an important point about the role of alcohol in overall dietary intake for individuals that choose to consume alcohol. Alcohol contributes at least 16% of the average US adult's daily caloric intake (40), a figure that is likely higher since the impact of COVID-19 on consumption (41). However, many are unaware of alcohol's impact (42). Given the prevalence of alcohol consumption and its association with obesity (43) and other adverse health outcomes(44), there is a need for consumer education and NPSs that account for alcohol's caloric contribution to encourage healthier dietary choices.

A third key takeaway is that removing adjustments for food groups serving as proxies for bioactive factors diminished the ability of NPSs to discriminate associations with weight and blood pressure measures. These food group adjustments included both those linked to positively associated microbiome-active and bioactive factors (e.g., phytochemicals, fermentable fibers, and bioactive fats) and those linked to negatively associated bioactives (e.g., alcohol, fructose, nitrites, acrylamide, advanced glycosylation end products, and trans fats). A better understanding and measurement of these positive and negative health-associated factors, along with their explicit inclusion in food labels and NPS algorithms, are key focuses of current nutrition research (32).

The demographic data showing higher scores in younger individuals and lower scores in those over age 65 may reflect changing eating habits and rising obesity rates in the United States (1). The association between lower scores and higher poverty and lower education levels aligns with known health disparities(45). Differences in scores by race and non-Hispanic ethnicity emphasize the need for future research to evaluate the validity of NPS scores across diverse diets (46). Interestingly, high physical activity was linked to lower scores, possibly due to increased consumption of energy-dense ultra-processed sports foods high in sodium and sugar (47). The link between lower scores and smoking status may reflect reduced health awareness in this group (48).

NPSs have been shown to positively influence consumer buying habits (49) and prospective cohort studies have shown they can positively impact health measures like obesity and mortality (18,50). They can play a key role in public health messaging through front-of-package labels

(11). In countries where front of package labels don't yet exist, web-based portals (12), and smartphone technologies that scan product UPCs to determine food quality could be useful (13,14). A ratio-based score in particular could intuitively encourage individuals to incorporate more fiber- and potassium-rich foods, potentially countering the health impact of foods high in simple carbohydrates and sodium. A ratio-based NPS could also guide the food industry in developing healthier products by providing empirical guide rails to rebalance simple carbohydrates with fiber (51,52) and sodium with potassium (53).

Nutrient profiling systems (NPSs) hold promise for improving health outcomes, but they have limitations. Some systems generate outlier results for certain foods that conflict with epidemiological data (54). Most exclude alcohol, despite its strong association with adverse health outcomes (18,26,55), while others are critiqued for being overly simple or too complex (21). Additionally, most NPSs rely on nutritional databases that lack quantification of the bioactive components of foods, such as microbiome-active components (i.e. polyphenols, fermentable fibers, and fermentation products), and are missing data on food additives that may harm the microbiome and individual (56). Most NPSs fail to account for a food's matrix or ultra-structure, which may be important for understanding the health benefits of unprocessed foods (57). NPS algorithms don't currently provide personalized advice which may be important to account for individual variations in nutrient requirements, including those influenced by the gut microbiome (58,59). Tailoring algorithms in low- and middle-income country cohorts, where baseline macro- and micronutrient intakes differ significantly, may also be necessary.

This study design also has limitations including selection (60), recall (61), and reporting (62) biases. While NHANES attempts to survey respondents to obtain representativeness to the US population, there is still self-selection of participants who are invited to participate in NHANES, and individuals may misreport information in surveys and interviews due to misremembering or aligning responses with social desirability. Additionally, the single assessment of dietary intake may not be reflective of longer term or usual intake. However, the large sample size of NHANES does mitigate some of these biases. Temporality of associations cannot be determined due to the cross-sectional design of NHANES, and weight measures in particular can be subject to reverse causation bias (63). Results regarding weight should be interpreted in this context, and it is possible that individuals of different body sizes eat differently rather than the scores predict weight. Cohort studies demonstrating prospective association between Nutri-score and abdominal obesity suggest that reverse causation may not entirely explain the associations observed (18).

In conclusion, this study highlights the potential of nutrient profiling systems (NPSs) including a nutrient ratio-based score to support personal and public health efforts in curbing weight gain and improving blood pressure. Ratio-based systems, in particular, may guide individuals, food companies, and governments in rebalancing nutrients in our diet. While NPSs offer valuable insights, most don't account for alcohol and are primarily supported by correlative research. Future studies will be essential to assess their potential for personalization, generalizability across diverse populations, and establish their causal impact on metabolic health.

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Data Availability

NHANES data used in this work is freely available from the National Center for Health Statistics. Other data described in the manuscript and a code book will be made available upon request pending approval.

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C.L.F. is an Associate Editor for Journal of Nutrition and Annals of Epidemiology, and works as a consultant for EpidStrategies, LLC. C.J.D. is editor-in-chief at GutBites MD, a not-for-profit web site intended for public good. He is on the scientific advisory board at Supergut, One Bio, and Oobli.

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During the writing of this paper Chat GPT was used at times for editing and improving the clarity of written text. The authors then further reviewed and modified the text as needed.

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Tables and Figure Legends

Table 1. Study population characteristics by tertiles of energy-weighted NCS score in NHANES adults, 2015-2016

Table 2. Anthropometry and blood pressure in relation to kcal-weighted scores in NHANES adults, 2015-2016

Figure 1. Obesity and high blood pressure in relation to kcal-weighted scores in NHANES, 2015-2016

Figure 2. Heatmap of food category contributions to kcal-weighted scores. Values represented are the percentage of variation explained (R-squared*100*indicator for direction of association). Darker shading represents more variation explained, and red indicates inverse associations and green indicates positive associations. Food categories that had no consumption in the study population and foods not included in a WWEIA category are not included.

Supplementary Materials

Supplemental Table 1. Anthropometry and blood pressure in relation to grams-weighted scores in NHANES adults, 2015-2016

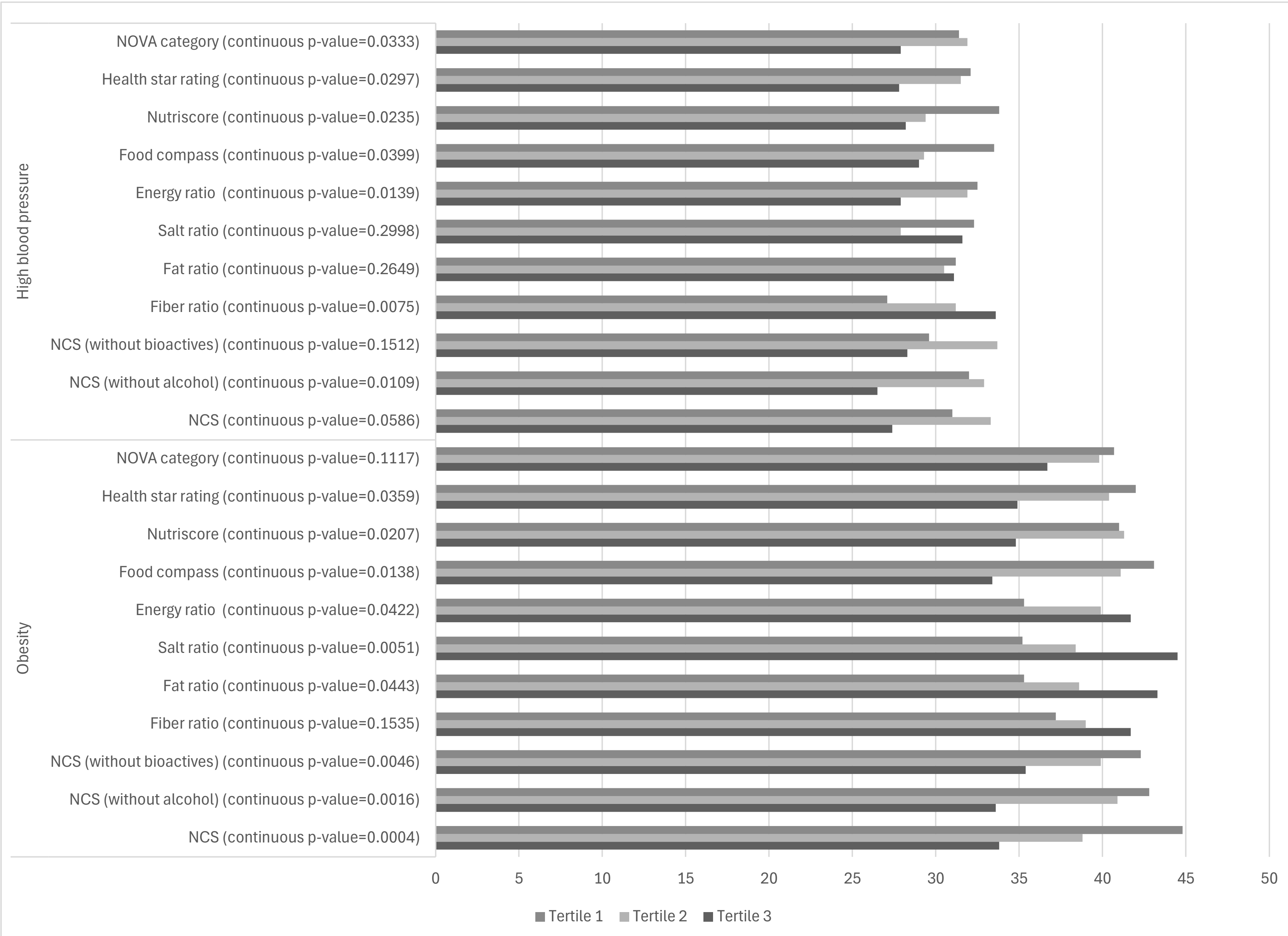
Supplemental Table 2. Anthropometry and blood pressure in relation to unweighted scores in NHANES adults, 2015-2016

Supplemental Figure 1. Distribution of NCS scores for representative foods, organized by food category

	Tertiles of kcal-weighted NCS		
	Tertile 1 (<37.08), n=1533	**Tertile 2 (37.08 to 48.31), n=1533**	**Tertile 3 (>48.31), n=1532**
Age (years)			
20 to 34	458 (33.3%)	370 (25.4%)	360 (25.4%)
35 to 49	415 (26.8%)	392 (24.8%)	339 (22.6%)
50 to 64	380 (25.2%)	434 (28.6%)	403 (27.4%)
65+	280 (14.8%)	337 (21.2%)	430 (24.7%)
Gender			
Male	764 (53.3%)	752 (47.1%)	693 (43.0%)
Female	769 (46.7%)	781 (52.9%)	839 (57.0%)
Race and non-Hispanic ethnicity			
Non-Hispanic White	589 (67.7%)	559 (68.0%)	420 (58.2%)
Non-Hispanic Black	415 (13.8%)	316 (10.4%)	220 (7.6%)
Non-Hispanic Other	116 (4.9%)	199 (8.2%)	333 (16.2%)
Hispanic	413 (13.6%)	459 (13.4%)	559 (18.0%)
Education			
<HS graduate or equivalent	293 (12.4%)	324 (12.8%)	394 (13.5%)
HS graduate or equivalent	412 (26.9%)	347 (21.6%)	264 (13.8%)
Some college or associates degree	527 (36.1%)	463 (33.4%)	389 (30.6%)
Four-year college graduate or more	301 (24.6%)	399 (32.2%)	485 (42.2%)
Poverty-to-income ratio			
<1	307 (14.7%)	265 (10.2%)	312 (13.5%)
1 to <2	399 (19.4%)	387 (20.5%)	338 (15.0%)
2 to <3	252 (18.0%)	262 (16.9%)	219 (12.8%)
3+	460 (41.6%)	488 (45.8%)	500 (49.8%)
Missing	115 (6.3%)	131 (6.6%)	163 (8.9%)
Smoking			
Never	807 (51.6%)	869 (55.4%)	1,009 (64.1%)
Former	338 (23.7%)	360 (26.7%)	365 (25.4%)
Current, less than 20 cig/day	282 (16.0%)	242 (14.2%)	139 (8.6%)
Current, 20+ cig/day	106 (8.6%)	62 (3.7%)	19 (2.0%)
Physical activity (METS)			
<15	666 (38.2%)	680 (40.4%)	688 (36.1%)
15 to <75	431 (31.3%)	453 (32.7%)	510 (41.2%)
75 to <165	219 (15.8%)	195 (14.4%)	197 (13.6%)
165+	217 (14.7%)	205 (12.5%)	137 (9.0%)

Scoring System			Tertile 1	Tertile 2	Tertile 3	Continuous	Model fit (root mean-squared error) Tertiles	Continuous
NCS	Body Mass Index (kg/m**2)	Mean (SE)	30.3 (0.3)	29.3 (0.2)	28.2 (0.2)			
		Beta (95% CI), p-value	reference	-0.93 (-1.44, -0.42), 0.0014	-1.88 (-2.59, -1.17), <0.0001	-0.32 (-0.43, -0.21), <0.0001	6.723	6.831
	Waist Circumference (cm)	Mean (SE)	102.8 (0.6)	100.2 (0.6)	97.6 (0.6)			
		Beta (95% CI), p-value		-2.62 (-3.99, -1.25), 0.0010	-4.58 (-6.51, -2.64), 0.0001	-0.81 (-1.11, -0.51), <0.0001	15.815	15.862
	Systolic blood pressure (mmHg)	Mean (SE)	124.0 (0.6)	124.0 (0.6)	121.9 (0.7)			
		Beta (95% CI), p-value		-0.81 (-2.65, 1.02), 0.3603	-2.97 (-4.82, -1.12), 0.0037	-0.51 (-0.83, -0.18), 0.0051	15.921	16.126
	Diastolic blood pressure (mmHg)	Mean (SE)	71.0 (0.4)	70.6 (0.4)	69.1 (0.4)			
		Beta (95% CI), p-value		-0.26 (-1.39, 0.88), 0.6400	-1.78 (-2.87, -0.69), 0.0033	-0.28 (-0.45, -0.12), 0.0026	11.774	11.846
NCS (without alcohol)	Body Mass Index (kg/m**2)	Mean (SE)	29.9 (0.2)	29.7 (0.3)	28.2 (0.2)			
		Beta (95% CI), p-value		-0.32 (-1.06, 0.42), 0.3652	-1.61 (-2.24, -0.97), 0.0001	-0.26 (-0.36, -0.16), <0.0001	6.734	6.842
	Waist Circumference (cm)	Mean (SE)	101.8 (0.6)	101.3 (0.6)	97.6 (0.6)			
		Beta (95% CI), p-value		-0.94 (-2.65, 0.77), 0.2603	-3.81 (-5.51, -2.10), 0.0003	-0.66 (-0.94, -0.38), 0.0001	15.850	15.892
	Systolic blood pressure (mmHg)	Mean (SE)	124.2 (0.6)	124.0 (0.6)	121.7(0.6)			
		Beta (95% CI), p-value		-1.72 (-3.48, 0.04), 0.0546	-3.85 (-5.96, -1.73), 0.0015	-0.62 (-0.96, -0.29), 0.0012	15.906	16.104
	Diastolic blood pressure (mmHg)	Mean (SE)	71.2 (0.4)	70.6 (0.4)	68.9 (0.4)			
		Beta (95% CI), p-value		-0.47 (-1.63, 0.69), 0.3976	-2.12 (-3.37, -0.86), 0.0027	-0.40 (-0.58, -0.21), 0.0004	11.768	11.834
NCS (without bioactives)	Body Mass Index (kg/m**2)	Mean (SE)	30.0 (0.2)	29.3 (0.2)	28.5 (0.2)			
		Beta (95% CI), p-value		-0.61 (-1.15, -0.08), 0.0274	-1.33 (-2.03, -0.64), 0.0010	-0.29 (-0.45, -0.13), 0.0013	6.737	6.847
	Waist Circumference (cm)	Mean (SE)	102.0 (0.6)	100.2 (0.6)	98.5 (0.6)			
		Beta (95% CI), p-value		-1.77 (-2.95, -0.59), 0.0061	-3.09 (-4.91, -1.27), 0.0025	-0.72 (-1.12, -0.32), 0.0016	15.861	15.906
	Systolic blood pressure (mmHg)	Mean (SE)	123.5 (0.6)	124.1 (0.6)	122.3 (0.7)			
		Beta (95% CI), p-value		0.07 (-1.73, 1.87), 0.9334	-1.79 (-3.70, 0.12), 0.0645	-0.47 (-0.86, -0.08), 0.0223	15.915	16.127
	Diastolic blood pressure (mmHg)	Mean (SE)	70.7 (0.4)	70.7 (0.4)	69.2 (0.4)			
		Beta (95% CI), p-value		0.24 (-0.71, 1.18), 0.6037	-1.27 (-2.26, -0.27), 0.0164	-0.26 (-0.45, -0.08), 0.0094	11.770	11.848
Fiber ratio	Body Mass Index (kg/m**2)	Mean (SE)	29.0 (0.2)	29.4 (0.3)	29.5 (0.2)			
		Beta (95% CI), p-value		0.07 (-0.63, 0.77), 0.8328	0.27 (-0.71, 1.25), 0.5631	0.81 (-0.57, 2.20), 0.2302	6.757	6.865
	Waist Circumference (cm)	Mean (SE)	99.6 (0.6)	100.4 (0.6)	100.9 (0.6)			
		Beta (95% CI), p-value		0.14 (-1.77, 2.04), 0.8815	1.04 (-1.07, 3.16), 0.3098	1.95 (-1.38, 5.29), 0.2313	15.901	15.957
	Systolic blood pressure (mmHg)	Mean (SE)	122.1 (0.7)	123.6 (0.6)	124.4 (0.6)			
		Beta (95% CI), p-value		1.38 (-0.11, 2.86), 0.0668	3.02 (1.50, 4.54), 0.0007	4.24 (1.62, 6.86), 0.0035	15.927	16.126
	Diastolic blood pressure (mmHg)	Mean (SE)	69.7 (0.4)	70.1 (0.4)	70.9(0.5)			
		Beta (95% CI), p-value		0.46 (-0.68, 1.61), 0.3999	1.23 (0.53, 1.92), 0.0019	1.03 (-0.09, 2.15), 0.0690	11.776	11.854
Fat ratio	Body Mass Index (kg/m**2)	Mean (SE)	28.6 (0.2)	29.4 (0.2)	29.8 (0.3)			
		Beta (95% CI), p-value		0.75 (-0.13, 1.63), 0.0888	1.19 (0.34, 2.03), 0.0089	2.24 (-0.06, 4.53), 0.0552	6.766	6.874
	Waist Circumference (cm)	Mean (SE)	98.2 (0.6)	100.6 (0.6)	101.8 (0.6)			
		Beta (95% CI), p-value		2.07 (-0.10, 4.24), 0.0602	3.57 (1.61, 5.54), 0.0015	6.11 (0.89, 11.33), 0.0247	15.919	15.974
	Systolic blood pressure (mmHg)	Mean (SE)	123.0 (0.6)	123.8 (0.6)	123.3 (0.6)			
		Beta (95% CI), p-value		0.12 (-2.10, 2.34), 0.9112	0.02 (-1.81, 1.86), 0.9783	-0.18 (-4.33, 3.98), 0.9291	15.945	16.152
	Diastolic blood pressure (mmHg)	Mean (SE)	70.9 (0.4)	70.4 (0.4)	69.6 (0.4)			
		Beta (95% CI), p-value		-0.44 (-1.90, 1.02), 0.5344	-1.08 (-2.32, 0.17), 0.0845	-2.87 (-6.11, 0.36), 0.0778	11.798	11.867
Salt ratio	Body Mass Index (kg/m**2)	Mean (SE)	28.7 (0.2)	29.2 (0.2)	30.1 (0.3)			
		Beta (95% CI), p-value		0.48 (-0.05, 1.01), 0.0720	1.39 (0.66, 2.12), 0.0010	1.74 (0.65, 2.82), 0.0038	6.743	6.847
	Waist Circumference (cm)	Mean (SE)	98.9 (0.6)	100.2 (0.6)	101.9 (0.6)			
		Beta (95% CI), p-value		1.26 (-0.16, 2.68), 0.0780	3.14 (1.33, 4.95), 0.0022	3.90 (1.40, 6.40), 0.0046	15.873	15.909
	Systolic blood pressure (mmHg)	Mean (SE)	123.0 (0.7)	123.4 (0.6)	123.7 (0.6)			
		Beta (95% CI), p-value		0.80 (-0.84, 2.45), 0.3159	1.69 (-0.26, 3.65), 0.0846	2.86 (0.46, 5.26), 0.0227	15.932	16.131
	Diastolic blood pressure (mmHg)	Mean (SE)	69.9 (0.4)	70.6 (0.4)	70.3 (0.4)			
		Beta (95% CI), p-value		0.64 (-0.61, 1.89), 0.2901	0.31 (-0.57, 1.18), 0.4707	0.24 (-1.13, 1.60), 0.7164	11.788	11.861
Energy ratio	Body Mass Index (kg/m**2)	Mean (SE)	28.5 (0.2)	29.4 (0.2)	29.8 (0.3)			
		Beta (95% CI), p-value		0.81 (0.13, 1.48), 0.0220	1.12 (0.49, 1.76), 0.0019	1.75 (0.30, 3.19), 0.0210	6.747	6.857
	Waist Circumference (cm)	Mean (SE)	98.3 (0.6)	100.5 (0.6)	101.6 (0.6)			
		Beta (95% CI), p-value		1.61 (0.03, 3.19), 0.0463	2.70 (1.13, 4.27), 0.0023	3.94 (0.64, 7.25), 0.0226	15.884	15.937
	Systolic blood pressure (mmHg)	Mean (SE)	123.6 (0.7)	123.6 (0.6)	122.9 (0.6)			

		Beta (95% CI), p-value		-0.49 (-2.55, 1.58), 0.6235	-1.02 (-3.48, 1.44), 0.3915	-0.66 (-4.10, 2.78), 0.6886	15.943	16.151
	Diastolic blood pressure (mmHg)	Mean (SE)	70.5 (0.4)	70.7 (0.4)	69.7 (0.4)			
		Beta (95% CI), p-value		0.14 (-1.20, 1.48), 0.8291	-0.76 (-1.70, 0.18), 0.1038	-0.97 (-2.59, 0.64), 0.2170	11.792	11.865
Food compass	Body Mass Index (kg/m**2)	Mean (SE)	30.0 (0.2)	29.6 (0.3)	28.2 (0.2)			
		Beta (95% CI), p-value	reference	-0.40 (-1.21, 0.40), 0.3021	-1.66 (-2.20, -1.12), <0.0001	-0.25 (-0.35, -0.16), <0.0001	6.730	6.844
	Waist Circumference (cm)	Mean (SE)	102.1 (0.6)	101.2 (0.6)	97.3 (0.6)			
		Beta (95% CI), p-value	reference	-0.77 (-2.53, 0.99), 0.3642	-4.07 (-5.80, -2.34), 0.0002	-0.63 (-0.91, -0.36), 0.0002	15.839	15.901
	Systolic blood pressure (mmHg)	Mean (SE)	124.4 (0.6)	123.4 (0.6)	122.2 (0.7)			
		Beta (95% CI), p-value	reference	-1.25 (-2.48, -0.01), 0.0478	-2.78 (-4.33, -1.23), 0.0017	-0.52 (-0.80, -0.23), 0.0015	15.907	16.106
	Diastolic blood pressure (mmHg)	Mean (SE)	70.9 (0.4)	70.7 (0.4)	69.2 (0.4)			
		Beta (95% CI), p-value	reference	-0.20 (-1.68, 1.28), 0.7762	-1.65 (-3.17, -0.14), 0.0344	-0.29 (-0.52, -0.05), 0.0193	11.772	11.840
Nutriscore	Body Mass Index (kg/m**2)	Mean (SE)	29.7 (0.2)	29.5 (0.3)	28.5 (0.2)			
		Beta (95% CI), p-value		-0.32 (-0.79, 0.16), 0.1771	-1.15 (-1.91, -0.38), 0.0059	-0.20 (-0.31, -0.09), 0.0012	6.740	6.854
	Waist Circumference (cm)	Mean (SE)	101.7 (0.6)	100.9 (0.6)	97.8 (0.6)			
		Beta (95% CI), p-value		-1.07 (-2.26, 0.12), 0.0756	-3.24 (-5.12, -1.35), 0.0023	-0.53 (-0.79, -0.26), 0.0007	15.855	15.924
	Systolic blood pressure (mmHg)	Mean (SE)	124.6 (0.6)	123.1 (0.6)	122.2 (0.7)			
		Beta (95% CI), p-value		-2.28 (-3.73, -0.82), 0.0046	-3.20 (-5.52, -0.88), 0.0102	-0.60 (-0.98, -0.22), 0.0045	15.916	16.125
	Diastolic blood pressure (mmHg)	Mean (SE)	71.6 (0.4)	69.8 (0.4)	69.2 (0.4)			
		Beta (95% CI), p-value		-1.62 (-2.58, -0.66), 0.0026	-2.10 (-3.44, -0.76), 0.0045	-0.40 (-0.61, -0.19), 0.0009	11.770	11.834
Health star rating	Body Mass Index (kg/m**2)	Mean (SE)	29.8 (0.2)	29.4 (0.3)	28.6 (0.2)			
		Beta (95% CI), p-value		-0.32 (-0.96, 0.31), 0.2962	-1.13 (-1.79, -0.47), 0.0023	-0.15 (-0.27, -0.04), 0.0124	6.744	6.858
	Waist Circumference (cm)	Mean (SE)	101.8 (0.6)	100.5 (0.6)	98.3 (0.6)			
		Beta (95% CI), p-value		-1.23 (-2.79, 0.33), 0.1132	-2.84 (-4.59, -1.09), 0.0035	-0.39 (-0.68, -0.10), 0.0114	15.873	15.936
	Systolic blood pressure (mmHg)	Mean (SE)	124.0 (0.6)	123.7 (0.6)	122.3 (0.6)			
		Beta (95% CI), p-value		-0.98 (-3.16, 1.21), 0.3552	-2.53 (-4.85, -0.22), 0.0342	-0.51 (-0.91, -0.10), 0.0187	15.923	16.122
	Diastolic blood pressure (mmHg)	Mean (SE)	71.3 (0.4)	70.3 (0.4)	69.0 (0.4)			
		Beta (95% CI), p-value		-0.89 (-2.23, 0.45), 0.1771	-2.14 (-3.38, -0.90), 0.0023	-0.38 (-0.59, -0.16), 0.0022	11.772	11.837
NOVA category	Body Mass Index (kg/m**2)	Mean (SE)	29.67 (0.2)	29.4 (0.2)	28.7 (0.2)			
		Beta (95% CI), p-value		-0.29 (-0.86, 0.29), 0.3096	-0.82 (-1.40, -0.23), 0.0092	-0.16 (-0.28, -0.04), 0.0128	6.742	6.851
	Waist Circumference (cm)	Mean (SE)	101.5 (0.6)	100.4 (0.6)	98.6 (0.6)			
		Beta (95% CI), p-value		-0.89 (-2.08, 0.29), 0.1281	-1.92 (-3.78, -0.06), 0.0439	-0.40 (-0.75, -0.06), 0.0253	15.874	15.922
	Systolic blood pressure (mmHg)	Mean (SE)	123.6 (0.6)	124.0 (0.6)	122.2 (0.7)			
		Beta (95% CI), p-value		-0.03 (-1.85, 1.79), 0.9747	-1.79 (-3.30, -0.29), 0.0228	-0.41 (-0.71, -0.11), 0.0100	15.920	16.122
	Diastolic blood pressure (mmHg)	Mean (SE)	71.1 (0.4)	69.9 (0.4)	69.8 (0.4)			
		Beta (95% CI), p-value		-1.10 (-2.40, 0.20), 0.0918	-1.17 (-2.33, -0.01), 0.0478	-0.27 (-0.49, -0.05), 0.0205	11.777	11.846



High blood pressure
NOVA category (continuous p-value=0.0333)
Health star rating (continuous p-value=0.0297)
Nutriscore (continuous p-value=0.0235)
Food compass (continuous p-value=0.0399)
Energy ratio (continuous p-value=0.0139)
Salt ratio (continuous p-value=0.2998)
Fat ratio (continuous p-value=0.2649)
Fiber ratio (continuous p-value=0.0075)
NCS (without bioactives) (continuous p-value=0.1512)
NCS (without alcohol) (continuous p-value=0.0109)
NCS (continuous p-value=0.0586)
Obesity
NOVA category (continuous p-value=0.1117)
Health star rating (continuous p-value=0.0359)
Nutriscore (continuous p-value=0.0207)
Food compass (continuous p-value=0.0138)
Energy ratio (continuous p-value=0.0422)
Salt ratio (continuous p-value=0.0051)
Fat ratio (continuous p-value=0.0443)
Fiber ratio (continuous p-value=0.1535)
NCS (without bioactives) (continuous p-value=0.0046)
NCS (without alcohol) (continuous p-value=0.0016)
NCS (continuous p-value=0.0004)
0
5
10
15
20
25
30
35
40
45
50
Tertile 1
Tertile 2
Tertile 3

What We Eat in America (WWEIA) Food Category	NCS	Food Compass	Nutriscore	Health Star Rating	NOVA Category
Milk, whole	0.49	0.76	0.44	0.21	0.93
Milk, reduced fat	0.28	0.51	0.66	0.68	0.98
Milk, lowfat	0.17	0.10	0.33	0.22	0.02
Milk, nonfat	0.00	-0.01	0.03	0.01	0.00
Flavored milk, whole	-0.06	-0.26	-0.11	-0.18	-0.08
Flavored milk, reduced fat	-0.05	-0.15	-0.01	-0.05	-0.34
Flavored milk, lowfat	0.06	-0.06	0.05	0.05	-0.17
Flavored milk, nonfat	0.04	0.03	0.37	0.22	0.01
Milk shakes and other dairy drinks	0.07	-0.03	0.14	-0.02	-0.14
Milk substitutes	0.01	-0.04	0.01	-0.01	0.00
Cheese	0.00	0.07	-0.08	-0.36	-0.02
Cottage/ricotta cheese	0.25	0.10	0.06	0.13	0.00
Yogurt, whole and reduced fat	0.35	0.49	0.16	0.19	0.19
Yogurt, lowfat and nonfat	0.45	0.14	0.38	0.47	-0.05
Yogurt, regular	0.30	0.03	0.09	0.41	0.00
Yogurt, Greek	0.92	0.77	0.61	0.72	0.00
Beef, excludes ground	-0.03	-0.27	-0.60	-0.09	0.47
Ground beef	0.15	0.04	-0.07	-0.03	0.19
Pork	0.09	0.01	-0.23	-0.05	0.21
Lamb, goat, game	0.06	0.14	0.05	0.04	0.32
Liver and organ meats	0.00	0.07	0.00	0.00	0.08
Chicken, whole pieces	0.18	0.19	-0.23	0.00	0.05
Chicken patties, nuggets and tenders	-0.27	-0.13	-0.34	-0.04	-0.46
Turkey, duck, other poultry	0.05	0.19	0.07	0.27	0.11
Fish	2.52	4.60	0.66	0.68	1.63
Shellfish	-0.02	0.13	-0.03	-0.06	0.08
Eggs and omelets	0.70	1.92	0.06	0.42	0.36
Cold cuts and cured meats	-0.32	-0.38	-0.37	-0.53	-0.56
Bacon	-0.01	0.02	-0.01	-0.02	-0.03
Frankfurters	-0.01	-0.17	-0.05	-0.06	-0.11
Sausages	-0.50	-0.52	-1.21	-0.84	-0.68
Beans, peas, legumes	5.91	4.36	5.66	5.44	1.64
Nuts and seeds	4.53	9.81	1.14	3.70	1.67
Processed soy products	0.05	0.07	0.05	0.02	-0.07
Meat mixed dishes	0.26	0.01	0.63	0.83	0.42
Poultry mixed dishes	0.24	0.17	0.41	0.28	0.04
Seafood mixed dishes	1.09	1.31	0.45	0.31	0.12
Bean, pea, legume dishes	0.02	0.00	0.03	0.03	-0.01
Vegetable dishes	0.00	0.03	-0.01	-0.01	0.01
Rice mixed dishes	1.96	1.24	1.60	1.71	1.25
Pasta mixed dishes, excludes macaroni and cheese	0.09	0.23	1.45	0.38	0.45
Macaroni and cheese	0.07	0.01	-0.01	0.03	0.02
Turnovers and other grain-based items	-0.02	0.01	-0.01	0.02	0.26
Fried rice and lo/chow mein	0.01	0.02	0.52	0.42	3.04
Stir-fry and soy-based sauce mixtures	1.09	0.58	0.33	0.18	1.57
Egg rolls, dumplings, sushi	0.02	0.00	0.00	-0.01	0.25
Burritos and tacos	-0.19	-0.06	-0.04	0.04	0.63
Nachos	0.00	-0.04	-0.02	-0.05	-0.08
Other Mexican mixed dishes	-0.05	0.00	0.04	0.01	1.35
Pizza	-5.49	-1.47	-1.97	-2.50	-3.02

Burgers (single code)	-1.11	-1.87	-1.28	-0.60	-3.81
Frankfurter sandwiches (single code)	-3.29	-2.51	-0.90	-0.88	-1.68
Chicken/turkey sandwiches (single code)	-0.45	-0.35	-0.01	0.00	-1.00
Egg/breakfast sandwiches (single code)	-2.95	-0.71	-1.04	-0.54	-0.45
Other sandwiches (single code)	0.01	-0.16	0.07	0.02	-0.57
Cheese sandwiches (single code)	-0.01	0.00	-0.14	-0.20	-0.05
Peanut butter and jelly sandwiches (single code)	0.05	0.05	0.00	0.01	-0.19
Seafood sandwiches (single code)	0.00	0.00	0.00	0.00	0.00
Soups	1.05	0.81	2.03	2.05	1.15
Rice	6.14	4.70	6.90	5.39	12.89
Pasta, noodles, cooked grains	0.09	0.20	0.15	0.03	0.70
Yeast breads	1.10	1.09	2.65	1.79	0.02
Rolls and buns	-0.32	-0.74	0.00	-0.03	-0.71
Bagels and English muffins	0.00	-0.17	0.10	0.04	-0.32
Tortillas	0.41	0.19	1.32	1.21	0.08
Biscuits, muffins, quick breads	-0.92	-0.15	-0.20	-0.26	0.00
Pancakes, waffles, French toast	-0.19	-0.03	0.02	0.03	-0.02
Ready-to-eat cereal, higher sugar (>21.2g/100g)	0.02	0.44	0.04	0.09	0.02
Ready-to-eat cereal, lower sugar (=<21.2g/100g)	0.24	0.58	0.57	0.57	-0.09
Oatmeal	3.22	3.33	3.01	1.70	2.04
Grits and other cooked cereals	0.00	-0.06	-0.02	0.00	0.00
Potato chips	-0.38	-0.22	-0.66	-0.29	-1.22
Tortilla, corn, other chips	-0.53	0.00	-0.02	0.00	-0.11
Popcorn	-0.79	-0.10	-0.59	-0.56	-0.34
Pretzels/snack mix	-0.31	-0.03	-0.02	-0.06	-0.12
Crackers, excludes saltines	-0.20	0.02	-0.04	0.00	-0.04
Saltine crackers	0.00	0.00	0.04	0.01	0.00
Cereal bars	-0.01	0.05	0.00	-0.01	-0.02
Nutrition bars	0.00	0.04	-0.03	-0.04	-0.03
Cakes and pies	-0.59	-0.96	-0.76	-0.57	-0.03
Cookies and brownies	-1.71	-0.89	-1.15	-0.90	-0.46
Doughnuts, sweet rolls, pastries	-0.54	-0.60	-0.06	-0.13	-0.10
Candy containing chocolate	-0.23	-0.16	-0.24	-0.58	-0.38
Candy not containing chocolate	-0.19	-0.13	-0.24	-0.17	-0.28
Ice cream and frozen dairy desserts	0.13	-0.36	-0.07	-0.03	-0.35
Pudding	0.36	0.11	0.09	0.17	0.31
Gelatins, ices, sorbets	0.00	0.01	0.00	0.00	0.00
Apples	0.17	0.13	0.02	0.05	0.00
Bananas	1.13	1.42	1.03	0.84	1.13
Grapes	0.12	0.10	0.13	0.06	0.01
Peaches and nectarines	-0.06	-0.19	-0.04	-0.07	-0.06
Berries	-0.03	-0.24	-0.05	0.00	-0.07
Blueberries and other berries	0.00	0.00	0.00	0.00	0.00
Citrus fruits	-0.01	-0.05	-0.10	-0.08	0.00
Melons	0.06	0.29	0.01	0.00	0.08
Dried fruits	-0.11	-0.03	-0.18	-0.10	-0.01
Other fruits and fruit salads	0.02	0.01	0.03	0.02	0.00
Pineapple	0.00	0.00	0.00	0.00	0.00
Mango and papaya	0.07	0.15	0.11	0.06	0.08
Tomatoes	-0.07	-0.34	-0.01	0.00	-0.20
Carrots	0.00	-0.07	0.02	0.04	-0.05
Other red and orange vegetables	0.01	0.00	0.00	0.00	0.01
Broccoli	0.00	0.06	0.17	0.09	0.01
Dark green vegetables, excludes lettuce	-0.30	-0.88	-0.25	-0.15	-0.27
Spinach	-0.14	-0.11	-0.09	-0.04	-0.12
Lettuce and lettuce salads	0.14	-0.01	0.45	0.97	0.11

Other dark green vegetables	0.01	0.00	0.03	0.00	0.10
String beans	0.01	-0.05	0.00	-0.01	-0.04
Cabbage	0.00	-0.05	0.00	0.00	0.00
Onions	0.17	-0.01	0.09	0.07	0.07
Corn	-0.02	0.00	0.04	0.04	-0.07
Other starchy vegetables	0.46	0.64	0.20	0.46	0.54
Other vegetables and combinations	0.00	0.00	0.16	0.20	-0.02
Vegetable mixed dishes	0.24	0.36	0.04	0.19	0.16
Fried vegetables	0.00	0.01	0.00	0.00	-0.01
Coleslaw, non-lettuce salads	0.06	0.04	0.03	0.03	0.05
Vegetables on a sandwich	0.00	0.00	0.00	0.00	0.00
White potatoes, baked or boiled	0.03	0.10	0.00	0.03	0.33
French fries and other fried white potatoes	-0.90	-0.18	-0.08	0.08	-1.54
Mashed potatoes and white potato mixtures	-0.13	0.01	-0.35	0.01	-0.01
Citrus juice	0.05	0.74	0.01	0.18	1.09
Apple juice	-0.02	0.07	0.00	0.00	0.17
Other fruit juice	0.01	0.39	0.00	0.01	0.45
Vegetable juice	0.02	0.11	0.00	0.00	0.00
Diet soft drinks	0.00	-0.02	0.00	-0.13	0.28
Diet sport and energy drinks	0.02	0.00	0.02	0.01	0.00
Other diet drinks	0.00	0.00	-0.01	-0.01	-0.07
Soft drinks	-3.51	-3.56	-1.09	-3.37	-1.05
Fruit drinks	-0.01	-0.12	-0.03	-0.13	-0.08
Sport and energy drinks	-0.16	-0.40	-0.23	-0.88	-0.04
Nutritional beverages	0.09	0.11	-0.02	-0.13	0.00
Smoothies and grain drinks	0.72	2.33	0.00	-0.05	1.64
Coffee	-0.11	-0.07	-0.02	-0.15	0.00
Tea	-1.75	-2.31	-1.85	-2.58	-0.92
Beer	-0.02	-4.40	-11.67	-10.51	-5.96
Wine	0.00	-0.07	-1.13	-0.76	-0.30
Liquor and cocktails	-0.98	-0.95	-3.48	-2.61	-1.71
Tap water	0.00	0.00	0.00	0.00	0.00
Bottled water	0.00	0.00	0.00	0.00	0.00
Flavored or carbonated water	0.05	-0.02	0.02	0.01	-0.02
Enhanced or fortified water	-0.01	-0.05	0.00	-0.03	-0.01
Butter and animal fats	0.03	0.11	0.02	0.05	0.07
Margarine	-0.02	-0.01	0.00	-0.02	0.01
Cream cheese, sour cream, whipped cream	-0.09	-0.11	-0.17	-0.33	-0.10
Cream and cream substitutes	0.10	0.01	0.13	0.00	0.01
Mayonnaise	0.20	0.32	0.03	0.05	0.32
Salad dressings and vegetable oils	-0.49	-0.02	-0.71	-1.19	-0.41
Tomato-based condiments	0.50	0.53	1.29	0.68	0.33
Soy-based condiments	-0.14	-0.11	-0.22	-0.21	-1.06
Mustard and other condiments	0.00	-0.10	0.02	0.05	-0.08
Olives, pickles, pickled vegetables	0.59	0.51	0.61	0.56	0.34
Pasta sauces, tomato-based	0.20	0.23	0.01	0.13	0.06
Dips, gravies, other sauces	-0.03	0.00	-0.03	-0.02	-0.19
Sugars and honey	-0.05	-0.03	-0.20	-0.29	-0.32
Sugar substitutes	0.00	-0.02	-0.03	-0.09	0.25
Jams, syrups, toppings	0.00	0.02	-0.02	0.00	0.00
Baby food: cereals	0.06	0.02	0.14	0.12	-0.01
Baby food: fruit	-0.10	-0.05	-0.13	-0.05	-0.26
Baby food: yogurt	0.00	0.00	0.00	0.00	0.00
Baby juice	0.00	0.00	0.00	0.00	0.00
Baby water	0.00	0.00	0.00	0.00	0.00
Protein and nutritional powders	0.01	0.06	-0.06	-0.04	-0.01