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# High nutritional quality is not associated with low greenhouse gas emissions in self-selected diets of French adults $^{\rm 1-3}$

Florent Vieux, Louis-Georges Soler, Djilali Touazi, and Nicole Darmon

#### ABSTRACT

**Background:** Healthy diets are supposed to be more environmentally friendly because they rely mainly on plant-based foods, which have lower greenhouse gas emissions (GHGEs) per unit weight than do animal-based foods.

**Objectives:** The objectives were to estimate the GHGEs associated with the consumption of self-selected diets in France and to analyze their relation with the nutritional quality of diets.

**Design:** For each adult in the national dietary Individual and National Survey on Food Consumption (n = 1918), the GHGEs of his or her diet were estimated based on the GHGEs of 391 foods. Highest-nutritional-quality diets were defined as those having simultaneously I) an energy density below the median, 2) a mean adequacy ratio (MAR) above the median, and 3) a mean excess ratio (MER, percentage of maximum recommended values for nutrients for which intake should be limited) below the median.

**Results:** MAR was positively correlated and MER was negatively correlated with diet-related GHGEs. High-nutritional-quality diets contained more plant-based foods, notably fruit and vegetables, and fewer sweets and salted snacks than did low-quality diets. After adjustment for age, sex, and energy intake, the consumption of sweets and salted snacks was negatively correlated with diet-related GHGEs, whereas the consumption of animal products and of fruit and vegetables was positively associated with them. After adjustment for energy intake, high-nutritional-quality diets had significantly higher GHGEs (+9% and +22% for men and women, respectively) than did low-nutritional-quality diets.

**Conclusion:** Despite containing large amounts of plant-based foods, self-selected diets of the highest nutritional quality are currently not those with the lowest diet-related GHGEs. *Am J Clin Nutr* 2013;97:569–83.

#### INTRODUCTION

The food sector contributes ~ 15-30% of total greenhouse gas emissions (GHGEs)<sup>4</sup> in developed countries (1–4). Food consumption is therefore considered an important driver of climate change and changing the diets as a way of reducing GHGEs. In particular, reducing meat consumption in high-income countries has been proposed as a good way to reduce food-related GHGEs while simultaneously improving health (5–7). Indeed, the production of animal products, particularly red meat from ruminants, uses more energy and generates more GHGEs than does that of plant-based products (3, 8). Moreover, red meat is suspected to have a causal influence on colorectal cancer (9) and other forms of cancers (10) and may be associated with cardiovascular diseases because of its high cholesterol and SFA contents (11). Thus, it is now widely accepted that a global shift toward plant-based diets would have a favorable effect on both the environment and health (12, 13). In addition, vegetarian meals and diets have consistently been shown to have less of an environmental impact than omnivorous ones (14–18). However, meat, fish, and dairy products are unique sources of specific and essential nutrients, and a reduction of their consumption raises many nutritional challenges (19).

Sustainable diets have been defined by the FAO as "diets protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources" (20). Accordingly, the FAO recommends giving due consideration to sustainability when developing foodbased dietary guidelines and policies and acknowledges the need for studies demonstrating the synergies between the different dimensions of sustainability (20). The aim of the current study was therefore to analyze in detail the relation between the nutritional quality of self-selected diets and their associated GHGEs. To account for the actual diversity of food-consumption patterns in France, data from the latest dietary survey conducted among a representative sample of the French adult population were used (21). The daily GHGEs of each diet were estimated on the basis of the GHGEs of several hundred foods consumed in this population (22). The estimated GHGEs of diets were correlated with the consumption of food groups and with indicators of nu-

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<sup>4</sup> Abbreviations used: CO<sub>2</sub>e, CO<sub>2</sub> equivalent; ED, energy density; GHGE, greenhouse gas emission; MAR, mean adequacy ratio; MER, mean excess ratio; MRV, maximum recommended value.

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<sup>&</sup>lt;sup>1</sup> From the Unité Mixte de Recherche (UMR) "Nutrition, Obesity and Risk of Thrombosis," Institut National de la Recherche Agronomique 1260 (INRA), Institut National de la Santé et de la Recherche Médicale 1062 INSERM, Aix-Marseille Université, F-13385, Marseille, France (FV and ND), and the Institut National de Recherche Agronomique UR 1303, Ivry sur Seine, France (L-GS and DT).

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tritional quality. Then, to avoid a priori assumptions about the food content of high and low-nutritional-quality diets, a way of classifying them that only relied on their energy density (ED) and their nutrient contents was specifically developed for this study. The daily GHGEs of diets of increasing nutritional quality according to this classification were compared.

#### SUBJECTS AND METHODS

#### Population sample and dietary data

The dietary data used in the current study were derived from the 7-d food records of a nationally representative random sample of adults (n = 2624; age > 18 y) participating in the Individual and National Survey on Food Consumption, a cross-sectional dietary survey conducted in 2006-2007 by the French Agency for Food, Environmental and Occupational Health Safety (21). The sampling method used was that of 3-stage stratified random sampling (23). To ensure the representativeness of the sample, a statistical adjustment was made for region, town size, age, sex, occupation of the household head, household size, and seasonal variables. After the exclusion of underreporters with the use of standard procedures, the current analysis was conducted on a final sample of 1918 adults (776 men and 1142 women). All of the foods declared as consumed by the participants during the survey (n = 1314 foods and beverages, including water) were listed in a survey-associated food database giving the nutritional composition of each food. The foods were aggregated into 10 main food groups (and 37 food families) as follows: starchy foods (refined grains and unrefined starches such as whole grains, potatoes, and legumes), fruit and vegetables (including fruit juices and nuts); dairy products (milk, fresh dairy products, and cheese); fats (animal and vegetable); fish (including shellfish); ruminant meat (such as beef and lamb); pork, poultry, and eggs (including pork meat and deli meat such as bacon or sausage); drinks (including water, alcohol, and hot and light drinks); a group containing (animal-based and plant-based) mixed dishes; and a group containing sweets and salted snacks (including sweet drinks).

Total diet weight, total energy intakes, and nutrient intakes were calculated on a daily basis for each participant, based on the list of foods and beverages that he or she recorded and the energy and nutrient contents of the foods consumed. The total intake of plant-based products was also calculated as the sum of the intakes of the fruit and vegetables food group, the starches food group, plus plant-based mixed dishes (within the mixed dishes food group) and vegetable fats (within the fats food group).

#### Three indicators of nutritional quality

The mean adequacy ratio (MAR), the mean excess ratio (MER), and the dietary ED were used as nutritional-quality indicators and were estimated without including nutrients from alcoholic beverages.

The MAR was used as an indicator of good nutritional quality, because it has been repeatedly shown to be positively associated with other indexes of dietary quality (24–30) and with health indicators (31, 32). In the current study, the MAR was calculated for the diet of each individual as the mean percentage of daily recommended intakes for 20 key nutrients (namely proteins,

fiber, retinol equivalents, thiamine, riboflavin, niacin, vitamin B-6, folates, vitamin B-12, ascorbic acid, vitamin E, vitamin D, calcium, potassium, iron, magnesium, zinc, copper, iodine, and selenium) as follows:

$$MAR = \frac{1}{20} \times \sum_{bn=1}^{20} \frac{intake_{bn}}{RDA_{bn}} \times 100 \tag{1}$$

where intake<sub>bn</sub> is the daily intake of each beneficial nutrient *bn*, and RDA<sub>bn</sub> is the French Recommended Dietary Allowance (33) for that nutrient, taking into account the age and sex of the individual. As originally proposed (34, 35), each ratio ( $100 \times$ intake<sub>bn</sub>/RDA<sub>bn</sub>) was truncated at 100, so that a high intake of one nutrient could not compensate for the low intake of another.

We developed the MER by analogy with the MAR and used it as an indicator of bad nutritional quality. The MER was calculated for each diet as the mean daily percentage of maximum recommended values (MRVs) for 3 harmful nutrients (hn), namely SFAs, sodium, and free sugars, as follows:

$$MER = \left[\frac{1}{3} \times \left(\sum_{hn=1}^{3} \frac{intake_{hn}}{MRV_{hn}} \times 100\right)\right] - 100 \qquad (2)$$

The term *free sugars* refers to added sugars plus sugars naturally present in honey, syrups, and fruit juices (36). The MRVs for SFAs and free sugars corresponded to 10% of a standard energy intake of 2000 kcal, ie, 22.2 and 50 g, respectively. The MRV for sodium was 3153 mg and corresponded to a daily intake of 8 g NaCl. Each ratio (100 × intake<sub>hn</sub>/MRV<sub>hn</sub>) <100 was set to 100, so that a low intake of one harmful nutrient could not compensate for the high intake of another.

Dietary ED was used as an indicator of bad nutritional quality because diets with a low ED have been shown to have a good overall nutritional quality (37, 38) and because decreasing the ED of the diet is recommended by several public health authorities to prevent obesity and obesity-associated disease conditions (39, 40). Diet weight (in g) and energy intake (in kcal) were calculated for each individual by summing the edible weight and the energy content of the foods consumed by that person. Dietary ED (in kcal/100 g diet) was then calculated by dividing energy intake by diet weight. As proposed by Ledikwe et al (41), only items typically consumed as foods, including soups, were included in the calculation of ED, whereas foods typically consumed as beverages, such as milk, juices, and other drinks, were excluded.

#### Four classes of nutritional quality

A method for classifying individuals based on the nutritional quality of their diets was specifically developed for this study. The 3 indicators of nutritional quality described above were calculated for each diet. Individuals were then ranked according to the values of the 3 indicators compared with their observed sex-specific median. A high-nutritional-quality diet was defined as a diet complying with the 3 following nutritional properties: MAR above the median, MER below the median, and dietary ED below the median. Diets complying with the 3 properties were allocated to the "High" nutritional quality class, whereas those complying with only 2, 1, or 0 of these properties were allocated to the "Intermediate +" (I+), the "Intermediate –" (I–), and the "Low" nutritional-quality classes, respectively. Therefore, each individual diet was classified into 1 of 4 possible sex-specific classes of nutritional quality.

#### **Estimation of diet-related GHGEs**

The estimation of diet-related GHGEs was based on a selection of foods. Within each food family, foods with the highest percentage of consumers were selected as representative of the food family, which resulted in a list of 391 widely consumed foods. Then, an environment consultancy-Greenext-assigned values for GHGEs to the 391 foods. Life cycle analysis as recommended by the International Organization for Standardization 14040-44 (42) norms and by the French regulation BP X 30-323 (43), ie, from cradle to grave, was used to assess the GHGE value for each selected food. The assessment included all the recommended steps, except for transportation by consumers from the retail centers to home, by using a range of life cycle inventory databases (eg, Ecoinvent data for primary agricultural goods). The final GHGEs value reflected the average food product as consumed on the French market and took into account the different geographic sources of the product. The Greenext method is presented in more detail on their website (http://www. greencode-info.fr/index.html). Data were expressed as grams of  $CO_2$  equivalent per 100 g of edible part (g  $CO_2e/100$  g) of the food, ie, once the changes in weight associated with the trimming or cooking processes had been taken into account with use of the appropriate conversion factors (44).

Although the 391 selected foods were highly consumed, they do not represent the totality of food intakes. We therefore developed a way of calculating diet-related GHGEs that took into account the restricted number of foods in the GHGE food database, to correct for the undercoverage of total food intake. For each individual, total diet-related GHGEs were estimated as shown in Equations 3–5, where *i* is the individual, *j* is the food family, *h* is the representative food, GHGE<sub>*i*</sub> is the diet-related GHGE of individual *i* (in g CO<sub>2</sub>e), Q<sub>*ij*</sub> is the quantity consumed of food family *j* by individual *i*, GHGE<sub>*ij*</sub> is the individual (*i*) GHGE of food family *j* (in g CO<sub>2</sub>e/g), N<sub>*ij*</sub> is the number of representative foods consumed by individual *i* in food family *j*,  $W_{ih}^{i}$  is the weighting factor associated with a representative food *h* in a food family *j* for individual *i*, GHGE<sub>*h*</sub> is the GHGE of

#### TABLE 1

Simple and partial Pearson correlations between diet-related GHGEs (in g  $CO_2e/d$ ) and the 3 indicators of nutritional quality (MAR, MER, and ED) in adults (n = 1918) participating in INCA2<sup>1</sup>

	MAR	MER	ED	GHGEs
MAR				
Univariate		$0.43^{2}$	$-0.15^{2}$	$0.62^{2}$
Age and sex adjusted		$0.42^{2}$	$-0.20^{2}$	$0.60^{2}$
Age, sex, and energy adjusted		$-0.27^{2}$	$-0.55^{2}$	$0.27^{2}$
MER				
Univariate			$0.45^{2}$	$0.53^{2}$
Age and sex adjusted			$0.35^{2}$	$0.46^{2}$
Age, sex, and energy adjusted			$0.24^{2}$	$-0.14^{2}$
ED				
Univariate				0.04
Age and sex adjusted				$-0.06^{3}$
Age, sex, and energy adjusted				$-0.33^{2}$

<sup>1</sup>Means (95% CIs): MAR: 82 (82, 83) %; MER: 35 (33, 37) %; ED: 167 (165, 168) kcal/100 g; GHGEs: 4092 (4029, 4155) g CO<sub>2</sub>e/d. MAR (% adequacy/d) was defined as the mean daily percentage recommended intakes for 20 essential nutrients; MER (% excess/d) was defined as the mean daily percentage of maximum recommended values for nutrients for which the intake should be limited; ED (kcal/100 g) was calculated according to Ledikwe et al (41) as the ratio between total energy intake and the intake of food only (ie, excluding beverages). CO<sub>2</sub>e, carbon dioxide equivalent; ED, energy density; GHGEs, greenhouse gas emissions; INCA2, Individual and National Survey on Food Consumption; MAR, mean adequacy ratio; MER, mean excess ratio.

 ${}^{2}P < 0.0001.$  ${}^{3}P = 0.0147.$ 

representative food h (per gram),  $Q_{ih}$  is the quantity consumed of representative food h by individual i,  $N_j$  is the number of representative foods in food family j,  $W_h^j$  is the weighting factor associated with a representative food h in a food family j, and  $Q_{nh}$  is the quantity consumed of representative food h by individual n in the population.

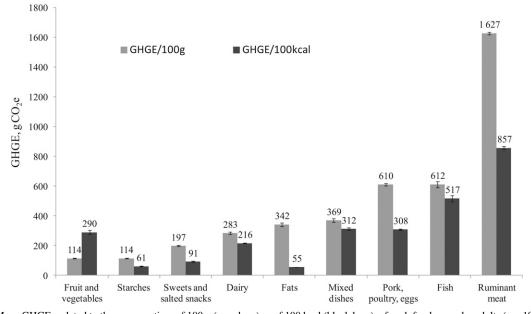
For each individual and each food family, the total quantity consumed was calculated and multiplied by an estimated food family–related GHGE (expressed in g  $CO_2e/g$ ). There were 2 possible cases in the estimation of food family–related GHGEs: they were calculated individually if the individual consumed at least one representative food in the food family [first case (Equation 4)], or they were based on the consumption of the representative foods in the population [second case (Equation 5)]. In the first case, the individual weighting factor associated with

$$GHGE_i = \sum_{j=1}^{37} Q_{ij} \times GHGE_{ij} \tag{3}$$

with

$$GHGE_{ij} = \begin{cases} \sum_{h=1}^{N_{ij}} W_{ih}^{j} \times GHGE_{h} & with \quad W_{ih}^{j} = \frac{Q_{ih}}{\sum_{h=1}^{N_{ij}} Q_{ih}} & \text{if } N_{ij} \ge 1\\ \sum_{h=1}^{N_{j}} W_{ih}^{j} \times CHCE_{h} & with \quad W_{ih}^{j} = \sum_{h=1}^{N_{ij}} Q_{hh} & \times CHCE_{h} & \text{if } N_{h} = 0 \end{cases}$$
(4)

$$= \left\{ \sum_{h=1}^{N_j} W_h^j \times GHGE_h \quad with \quad W_h^j = \frac{\sum_{h=1}^{N_j} Q_{nh}}{\sum_{h=1}^{N_j} \sum_{n=1}^{N_{10}} Q_{nh}} \times GHGE_h \quad \text{if } N_{ij} = 0 \right|$$
(5)



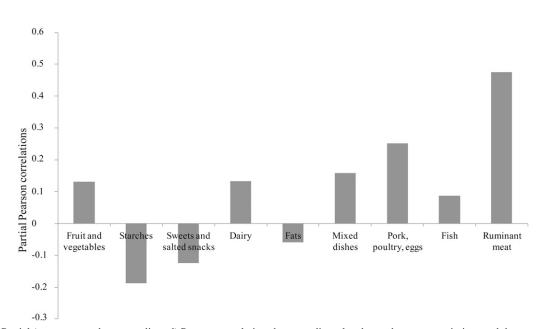
**FIGURE 1.** Mean GHGEs related to the consumption, of 100 g (gray bars) or of 100 kcal (black bars), of each food group by adults (n = 1918) participating in INCA2. Vertical lines represent 95% CIs. CO<sub>2</sub>e, carbon dioxide equivalent; GHGEs, greenhouse gas emissions; INCA2, Individual and National Survey on Food Consumption.

each representative food consumed in a given food family  $(W_{ih}^{j})$ was estimated as the ratio of the individual consumption of the representative food to the individual consumption of all representative foods within a food family. In the second case, the weighting factor  $(W_{h}^{j})$  associated with a given representative food was estimated based on the entire population by the ratio between total consumption of this food and total consumption of all the representative foods included in a food family. This weighting factor was thus the same for all the individuals consuming a food family without consuming a representative food in this food family. The actual quantity consumed by each individual of each food family (ie,  $Q_{ij}$  in the equation) was used to calculate diet-related GHGEs, which enabled us to estimate the GHGEs associated with total food intake.

#### Statistical analysis

The relations between diet-related GHGEs and other dietary variables (energy, weight, MAR, MER, ED, and food group intakes) were tested by using both simple and partial (adjustment for age, sex, and energy intakes) Pearson correlation coefficients. The average nutrient intakes, the food group intakes, and the





**FIGURE 2.** Partial (age-, sex-, and energy-adjusted) Pearson correlations between diet-related greenhouse gas emissions and the consumption of each food group by adults (n = 1918) participating in the Individual and National Survey on Food Consumption. All coefficients are significantly different from 0, P < 0.001.

		M	Men			Women	men	
	High $(n = 98)$	I+ $(n = 297)$	I- $(n = 275)$	Low $(n = 106)$	High $(n = 172)$	I+ $(n = 395)$	I- $(n = 386)$	Low $(n = 189)$
Age (y)	$58.4 \pm 12.9$	$53.2 \pm 16.9$	$45.7 \pm 17.8$	$37.0 \pm 13.9$	$49.7 \pm 15.0$	$52.0 \pm 13.8$	$40.0 \pm 14.1$	$37.4 \pm 12.9$
Total energy intake (kcal/d) <sup>2</sup>	$2365.7 \pm 299.0$	$2384.3 \pm 606.8$	$2674.6 \pm 694.1$	$2494.8 \pm 326.5$	$1757.6 \pm 248.9$	$1742.1 \pm 466.1$	$1979.6 \pm 483.6$	$1924.2 \pm 225.8$
Total weight of diet (g/d)	$3230.8 \pm 724.4$	$2964.1 \pm 885.1$	$2893.9 \pm 857.1$	$2595.1 \pm 624.8$	$2975.6 \pm 706.0$	$2635.2 \pm 718.7$	$2430.0 \pm 723.3$	$2390.1 \pm 640.8$
Solid weight (g/d)	$1526.5 \pm 292.1$	$1385.0 \pm 391.3$	$1212.7 \pm 336.3$	$1054.0 \pm 195.2$	$1291.7 \pm 222.3$	$1186.6 \pm 326.9$	$1016.5 \pm 262.6$	$895.9 \pm 151.4$
Weight of plant-based products (% solid weight) <sup>3</sup>	$63.9 \pm 10.6$	$57.3 \pm 11.7$	$49.4 \pm 12.4$	$39.2 \pm 13.2$	$60.1 \pm 9.7$	$58.9 \pm 9.1$	$49.9 \pm 9.7$	$45.2 \pm 10.4$
Energy from plant-based products (% of total energy) <sup>3</sup>	$46.9 \pm 11.5$	$40.3 \pm 11.5$	$35.3 \pm 13.0$	$27.2 \pm 10.4$	$44.6 \pm 10.0$	$42.8 \pm 10.0$	$35.4 \pm 8.6$	$31.0 \pm 9.1$
MAR (% adequacy/d)	$90.7 \pm 3.4$	$84.7 \pm 9.8$	$84.2 \pm 11.5$	$80.1 \pm 5.6$	$87.6 \pm 4.3$	$79.7 \pm 11.6$	$79.5 \pm 12.1$	$74.9 \pm 6.4$
MER (% excess/d)	$22.5 \pm 11.5$	$36.9 \pm 32.6$	$58.5 \pm 45.4$	$63.7 \pm 24.7$	$8.7 \pm 5.7$	$17.2 \pm 16.9$	$32.2 \pm 24.5$	$38.9 \pm 24.9$
ED (kcal/100 g) <sup>4</sup>	$141.3 \pm 22.8$	$154.6 \pm 19.2$	$193.1 \pm 22.6$	$209.6 \pm 25.7$	$127.2 \pm 18.6$	$138.4 \pm 18.9$	$180.6 \pm 20.9$	$195.8 \pm 25.2$
<sup>1</sup> All values are means ± SDs. A high-nutritional-quality diet was defined as compliance with 3 properties: MAR (mean daily percentage of recommended intakes for 20 essential nutrients) above the	quality diet was def	ined as compliance	with 3 properties	MAR (mean daily	percentage of reco	mmended intakes	for 20 essential nu	trients) above the
median; MER (mean daily percentage of the maximum recommended values for nutrients for which the intake should be limited) below the median; and ED below the median. Diets complying with 2, 1, or	recommended value	es for nutrients for	which the intake sl	nould be limited) be	flow the median; ar	nd ED below the m	edian. Diets compl	ying with 2, 1, or
0 properties were allocated to nutritional-quality categories of 1+, 1-, and Low, respectively. For each sex separately, all P values of the linear regression analysis used to compare (crude) means between the 4	ies of I+, I-, and L	ow, respectively. Fo	or each sex separat	ely, all P values of t	he linear regression	analysis used to co	ompare (crude) me	ans between the 4
classes and all tests for linear trend are sionificant $P \le 0.0001$ ED energy density. I intermediate: INCA3 Individual and National Survey on Food Consumption: MAR mean adecuacy ratio: MFR mean	0 0001 FD energy	density. Linterme	ediate: INCA2. Ind	ividual and Nations	d Survey on Food (	Consumption: MAF	2. mean adequacy r	atio: MER mean

# Classification of individuals participating in INCA2 in 4 classes of increasing nutritional quality class (High, I+, I-, and Low) and selected characteristics of their diets<sup>1</sup> TABLE 2

< UJUULL ELD, energy density; I, intermediate; INCA2, Individual and National Survey on Food Consumption; MAR, mean adequacy ratio; MER, mean classes and all tests for linear trend are significant, Pexcess ratio.

<sup>2</sup> Total energy intake, including energy from alcoholic drinks.

<sup>3</sup> Plant-based products included fruit, vegetables, fruit juices, refined starchy food, unrefined starchy food, plant-based mixed dishes, vegetable fats, and nuts. <sup>4</sup> ED was calculated according to Ledikwe et al (41) as the ratio between total energy intake and the intake of food only (ie, excluding beverages).

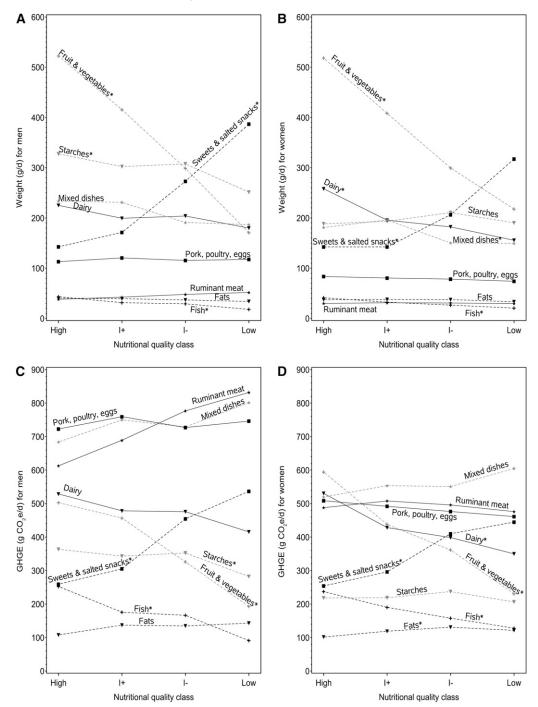
		M	Men					Women	nen			
	High $(n = 98)$	I+ $(n = 297)$	I- $(n = 275)$	Low $(n = 106)$	$P^2$	$T^3$	High $(n = 172)$	I+ $(n = 395)$	I - (n = 386)	Low $(n = 189)$	$P^2$	$T^{3}$
Fat (% of energy) <sup>4</sup>	$34.1 \pm 5.5$	$35.8 \pm 5.6$	$36.2 \pm 5.9$	$38.5 \pm 5.5$	< 0.0001	< 0.0001	$37.0 \pm 5.2$	$38.3 \pm 4.9$	$39.4 \pm 5.1$	$39.1 \pm 5.4$	0.0019	0.0009
SFA (% of energy)	$12.7 \pm 2.9$	$14.4 \pm 3.0$	$15.1 \pm 3.3$	$16.9 \pm 2.9$	< 0.0001	< 0.0001	$13.6\pm2.6$	$15.1 \pm 2.7$	$16.3 \pm 2.6$	$16.8\pm2.8$	< 0.0001	< 0.001
Cholesterol (mg/d)	$351.9 \pm 111.5$	$377.2 \pm 128.7$	$411.9 \pm 148.9$	$397.2 \pm 107.1$	0.0028	0.0012	$282.4 \pm 86.7$	$286.4 \pm 107.3$	$320.4 \pm 101.8$	$301.1 \pm 66.1$	0.0002	0.0014
Carbohydrates	$43.0 \pm 7.2$	$41.2~\pm~8.0$	$41.9 \pm 7.5$	$41.4 \pm 7.9$	0.2813		$42.4 \pm 5.7$	$42.3 \pm 6.1$	$42.8 \pm 5.9$	$43.8 \pm 6.8$	0.1347	
(% of energy)												
Free sugars	$6.7 \pm 3.5$	$7.5 \pm 4.5$	$9.8 \pm 5.9$	$13.2 \pm 6.9$	< 0.0001	< 0.001	$8.2 \pm 3.3$	$8.5 \pm 3.8$	$11.1 \pm 4.0$	$14.6 \pm 7.3$	< 0.0001	< 0.0001
$(\% \text{ of energy})^3$												
Alcohol (g/d)	$20.4 \pm 22.7$	$21.2 \pm 21.2$	$22.8 \pm 24.3$	$16.3 \pm 19.7$	0.1146	I	$5.6 \pm 6.9$	$5.1 \pm 8.2$	$6.1 \pm 8.2$	$6.1 \pm 9.1$	0.4578	
Sodium (mg/d)	$3328.8 \pm 656.1$	$3381.0 \pm 1160.3$	$3651.5 \pm 1263.7$	$3206.4 \pm 799.7$	0.0009	0.7778	$2447.3 \pm 522.4$	$2452.6 \pm 787.9$	$2636.5 \pm 798.9$	$2573.4 \pm 901.7$	0.0062	0.0923
Proteins (g/d)	$99.1 \pm 15.8$	$97.6 \pm 26.1$	$104.2 \pm 30.0$	$96.7 \pm 19.6$	0.0165	0.9591	$77.8 \pm 13.3$	$72.5 \pm 18.8$	$75.9 \pm 18.7$	$70.6 \pm 12.5$	< 0.0001	0.0011
Fiber (g/d)	$23.0 \pm 5.9$	$20.0 \pm 7.8$	$18.5 \pm 6.6$	$15.1 \pm 4.1$	< 0.0001	< 0.0001	$19.0 \pm 4.7$	$16.8\pm5.7$	$15.2 \pm 4.7$	$12.8 \pm 3.1$	< 0.0001	< 0.001
Retinol equivalent	$1536.4 \pm 947.6$	$1440.2 \pm 1146.7$	$1297.4 \pm 1033.8$	$937.5 \pm 569.3$	< 0.0001	< 0.0001	$1298.4 \pm 730.0$	$1343.8 \pm 880.2$	$1127.1 \pm 786.5$	$898.4 \pm 482.7$	< 0.0001	< 0.001
$(\mu g/d)$												
Thiamine (mg/d)	$1.4 \pm 0.3$		$1.4 \pm 0.5$	$1.3 \pm 0.3$	0.0198	0.0377	$1.2 \pm 0.4$	$1.1 \pm 0.5$	$1.1 \pm 0.4$	$1.0 \pm 0.2$	< 0.0001	< 0.0001
Riboflavin (mg/d)	$2.1 \pm 0.5$		$2.1 \pm 0.7$	$1.9 \pm 0.5$	0.0111	0.0062	$1.9 \pm 0.4$	$1.7 \pm 0.6$	$1.7 \pm 0.5$	$1.5 \pm 0.4$	0.0003	< 0.001
Niacin (mg/d)	$22.0 \pm 5.1$	$21.2 \pm 7.5$	$21.8 \pm 7.6$	$19.7 \pm 5.0$	0.0047	0.0037	$18.5 \pm 7.9$	$16.5 \pm 5.9$	$16.0 \pm 4.9$	$14.5 \pm 3.0$	< 0.0001	< 0.0001
Vitamin B-6 (mg/d)	$2.1 \pm 0.5$	$2.0 \pm 0.7$	$1.9 \pm 0.6$	$1.7 \pm 0.4$	< 0.0001	< 0.0001	$1.8\pm0.5$	$1.6 \pm 0.6$	$1.5 \pm 0.5$	$1.3 \pm 0.3$	< 0.0001	< 0.001
Folates ( $\mu g/d$ )	$352.6 \pm 81.1$	$319.2 \pm 106.5$	$301.9 \pm 104.1$	$242.7 \pm 56.4$	< 0.0001	< 0.0001	$323.9 \pm 73.8$	$281.2 \pm 96.8$	$258.2 \pm 81.2$	$206.1 \pm 42.8$	< 0.0001	< 0.001
Vitamin B-12 ( $\mu$ g/d)	$6.7 \pm 4.6$	$6.6 \pm 5.2$	$6.8\pm4.9$	$5.6 \pm 2.7$	0.0170	0.0814	$5.2 \pm 4.2$	$5.4 \pm 4.1$	$5.2 \pm 3.4$	$4.3 \pm 2.5$	0.0080	0.0169
Ascorbic acid (mg/d)	$119.4 \pm 49.6$	$100.6 \pm 56.6$	$84.4 \pm 55.3$	$56.8 \pm 27.2$	< 0.0001	< 0.0001	$124.5 \pm 57.1$	$103.5 \pm 48.1$	$84.7 \pm 42.9$	$65.1 \pm 30.3$	< 0.0001	< 0.001
Vitamin E (mg/d)	$14.2 \pm 7.3$	$11.9 \pm 6.1$	$11.7 \pm 5.4$	$10.5\pm5.4$	0.0037	0.0004	$12.2~\pm~4.0$	$11.0\pm4.9$	$11.5 \pm 5.2$	$9.5 \pm 3.5$	< 0.0001	< 0.001
Vitamin D ( $\mu$ g/d)	$3.2 \pm 1.7$		$2.8 \pm 2.5$	$2.3 \pm 1.3$	0.0007	0.0003	$2.7 \pm 1.5$	$2.6\pm3.5$	$2.5 \pm 1.5$	$1.9 \pm 0.9$	< 0.001	< 0.001
Calcium (mg/d)	$1033.9 \pm 325.5$		$1031.1 \pm 439.1$	$916.5 \pm 265.6$	0.0021	0.0218	$948.5 \pm 203.1$	$850.5 \pm 296.5$	$838.5 \pm 285.7$	$770.1 \pm 223.0$	< 0.001	< 0.001
Potassium (mg/d)	$3760.7 \pm 654.7$	$3401.2 \pm 922.3$	$3190.8 \pm 835.1$	$2767.4 \pm 479.8$	< 0.0001	< 0.0001	$3202.9 \pm 638.6$	$2765.5 \pm 742.5$	$2536.6 \pm 626.4$	$2270.4 \pm 384.1$	< 0.0001	< 0.001
Iron (mg/d)	$14.9 \pm 3.3$		$15.3 \pm 6.6$	$14.0 \pm 4.4$	0.2376		$12.6\pm4.0$	$11.2 \pm 4.2$	$11.8 \pm 3.8$	$10.4 \pm 2.3$	< 0.0001	< 0.001
Magnesium (mg/d)	$360.8 \pm 89.2$	$321.2 \pm 98.2$	$330.7 \pm 106.6$	$284.7 \pm 55.2$	< 0.0001	< 0.0001	$304.9 \pm 130.7$	$260.6 \pm 75.7$	$254.2 \pm 69.4$	$233.3 \pm 42.9$	< 0.0001	< 0.001
Zinc (mg/d)	$12.0 \pm 2.8$	$11.9 \pm 3.3$	$13.2 \pm 4.2$	$12.3 \pm 3.1$	0.0147	0.1821	$9.4 \pm 1.9$	$8.8 \pm 2.6$	$9.4 \pm 2.7$	$8.8 \pm 1.8$	0.0034	0.0534
Copper (mg/d)	$1.7 \pm 0.7$	$1.7 \pm 0.9$	$1.6 \pm 0.8$	$1.3 \pm 0.3$	< 0.0001	< 0.0001	$1.5 \pm 0.7$	$1.4 \pm 0.7$	$1.3 \pm 0.6$	$1.1 \pm 0.2$	< 0.0001	< 0.001
Iodine (mg/d)	$142.2 \pm 40.2$	$130.9 \pm 53.1$	$142.2 \pm 55.9$	$126.8 \pm 45.4$	0.0183	0.0694	$131.5 \pm 40.9$	$119.9 \pm 48.0$	$115.3 \pm 41.4$	$98.7 \pm 23.3$	< 0.001	< 0.001
Selenium ( $\mu$ g/d)	$64.1 \pm 14.4$	$58.3 \pm 19.4$	$59.9 \pm 19.8$	$52.4 \pm 13.9$	< 0.0001	< 0.001	$54.2 \pm 11.4$	$48.3 \pm 15.5$	$46.8 \pm 12.9$	$41.7 \pm 9.7$	< 0.001	< 0.0001
<sup><math>I</math></sup> All values are means $\pm$ SDs. A high-nutritional-quality diet was defined as compliance with 3 properties: mean adequacy ratio (mean daily percentage of recommended intakes for 20 essential nutrients) above the median; mean excess ratio (mean daily percentage of the maximum recommended values for nutrients for which the intake should be limited) below the median; and energy density below the median	neans ± SDs. A l an excess ratio (n	<sup>1</sup> All values are means $\pm$ SDs. A high-nutritional-quality diet was e the median; mean excess ratio (mean daily percentage of the max	ality diet was defin ge of the maximun	defined as compliance with 3 properties: mean adequacy ratio (mean daily percentage of recommended intakes for 20 essential nutrients) cimum recommended values for nutrients for which the intake should be limited) below the median; and energy density below the median.	with 3 propa	erties: mea trients for y	m adequacy ratio ( which the intake sl	(mean daily percent hould be limited) l	ntage of recommedian	and energy dens:	20 essential	nutrients) e median.

Nutrient intakes of adults participating in the INCA2 survey, according to the nutritional quality of their diets<sup>1</sup> **TABLE 3** 

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Diets complying with 2, 1, or 0 properties were allocated to nutritional-quality categories of I+, I-, and Low, respectively. I, intermediate; INCA2, Individual and National Survey on Food Consumption. <sup>2</sup> P values were derived from a linear regression analysis used to compare (crude) means between the 4 classes, for each sex separately.  $^{3}T$  values were derived from a test for linear trend (calculated only when the general P value was <0.05).

<sup>4</sup>The calculation of total energy and percentage energy intake included energy from alcohol. <sup>5</sup>Defined as added sugars plus sugars naturally present in honey, syrups, and fruit juices (36).



**FIGURE 3.** Weights and GHGEs of the food groups consumed by men (n = 776) and women (n = 1142) participating in the Individual and National Survey on Food Consumption, according to the nutritional quality of their diets. A: Weights of food groups consumed by men; B: weights of food groups consumed by women; C: GHGEs of food groups consumed by men; and D: GHGEs of food groups consumed by women. \*Significant difference between nutritional-quality classes and a significant linear trend (P < 0.01). A high-nutritional-quality diet was defined as compliance with 3 properties: mean adequacy ratio (mean daily percentage of recommended intakes for 20 essential nutrients) above the median; mean excess ratio (mean daily percentage of the maximum recommended values for nutrients for which the intake should be limited) below the median; and energy density below the median. Diets complying with 2, 1, or 0 properties were allocated to nutritional-quality categories of I+, I-, and Low, respectively.  $CO_2e$ , carbon dioxide equivalent; GHGE, greenhouse gas emission; I, intermediate.

diet-related GHGEs were estimated for the 4 sex-specific nutritional classes. Then, comparisons of means among the 4 classes and tests for linear trends were performed by using regression analysis for sample survey data for men and women separately. In additional analyses, diet-related GHGEs were adjusted for energy or total diet weight intakes with the SAS SURVEYREG procedure, which performs regression analysis for sample survey data, fits linear models, and computes regression coefficients. An  $\alpha$ -level of 0.05 was used to determine statistical significance. Statistical analyses were performed by using SAS software version 9.2 (SAS Institute).

#### RESULTS

# Representativeness of the foods selected for GHGE calculations

The consumption of the 391 representative foods accounted for, on average ( $\pm$ SD), 71  $\pm$  15% of total food consumption and 66%  $\pm$  10% of total energy intake, and the level of coverage varied between food families (data not shown). However, our method of calculation allowed us to estimate the GHGEs associated with total food intake.

#### Correlation between diet-related GHGEs and nutritionalquality indicators

In simple regression analyses, MAR (R = 0.67, P < 0.0001), MER (R = 0.80, P < 0.0001), dietary ED (R = 0.34, P < 0.0001), and diet-related GHGEs (R = 0.75, P < 0.0001) were each positively and significantly correlated with energy intakes (data not shown). As expected, after age, sex, and energy adjustment, dietary MAR was negatively correlated with MER and ED; higher MER scores were associated with higher ED scores (**Table 1**). After age, sex, and energy adjustment, diet-related GHGEs were positively correlated with MAR and negatively with dietary MER and ED.

# GHGEs of food groups and effect of their consumption on total diet-related GHGEs

The GHGEs related to the consumption of each food group are shown in Figure 1. Regardless of the basis of calculation (per 100 g or per 100 kcal food consumed), the highest GHGE value was recorded for the ruminant meat food group followed by the fish food group. The ranking of the other food groups varied depending on the calculation basis. In particular, the fruit and vegetables and the starches food groups had the lowest GHGEs on a weight basis: 114 g CO<sub>2</sub>e/100 g each for fruit and vegetables (95% CI: 110, 117) and starches (95% CI: 113, 115). When expressed per 100 kcal, the GHGE of starches were still among the lowest, whereas that of fruit and vegetables (290 g CO2e/d; 95% CI: 276, 304) increased in rank and was close to that of the mixed dishes (312 g CO<sub>2</sub>e/d; 95% CI: 303, 320) and of the pork, poultry, eggs (308 g CO<sub>2</sub>e/d; 95% CI: 303, 314) food groups and was higher than that of the dairy product food group (216 g CO<sub>2</sub>e/d; 95% CI: 213, 218).

After adjustment for age, sex, and energy intake, a higher consumption of starches, sweets and salted snacks, and fats was associated with lower diet-related GHGEs (Figure 2). In contrast, an increased intake of the other food groups, including that of fruit and vegetables, increased diet-related GHGEs. The strongest positive association was seen for the ruminant meat group.

# Food consumption, nutrient intakes, and GHGEs in the 4 classes of nutritional quality

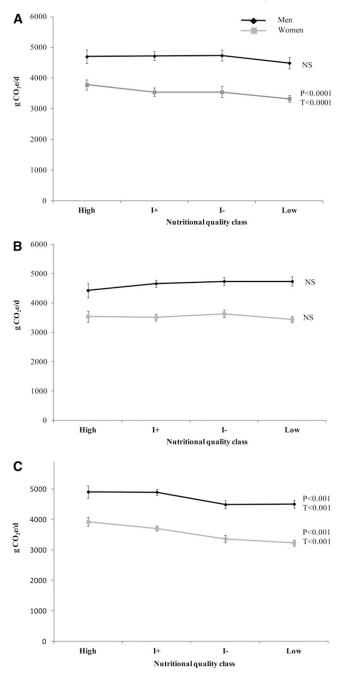
The mean diet-related GHGE value was 4092 g  $CO_2e/d$  (95% CI: 4029, 4155; data not shown). Individuals in the highnutritional-quality class were on average older than individuals in the low-nutritional-quality class. They had lower energy intakes and higher (total or solid) food intakes (**Table 2**). For both sexes, the contribution of all plant-based foods to total weight and energy intake increased significantly with increasing nutritional quality. By definition, high-nutritional-quality diets were those with the highest MAR, the lowest MER, and the lowest ED. Therefore, the daily intakes of fiber and of most vitamins and minerals increased with increasing nutritional-quality classes, whereas that of the harmful components—such as total fat, SFA, cholesterol and free sugars—generally decreased (**Table 3**).

For both sexes, high-nutritional-quality diets contained significantly more fruit and vegetables, more fish, and less sweets and salted snacks than did the low-quality diets (Figure 3). For men, high-nutritional-quality diets also contained more starches than did the low-quality diets, whereas for women they contained more dairy products (because of a significantly higher quantity of fresh dairy products; Appendix A). For both sexes, the quantities of the ruminant meat and of the pork, poultry, and eggs groups did not differ between nutritional-quality classes (Figure 3); but, within the pork, poultry, and eggs food group, high-nutritional-quality diets contained significantly less deli meat than did the low-nutritional-quality diets (Appendix A). For both sexes and all food groups, the patterns of the differences observed between the 4 nutritional classes for the food group-related GHGEs generally followed that of the daily amounts eaten in the corresponding food group. The only exceptions to this rule were observed in women's diets for mixed dishes and for fats: 1) the total intake of mixed dishes increased with increasing nutritional quality but the GHGEs associated with their consumption did not differ (because of an increase in plant-based mixed dishes and a decrease in animal-based mixed dishes; Appendix B), and 2) the total intake of fats did not differ between nutritional-quality classes, but their GHGEs decreased with increasing nutritional quality (because of an increased intake of vegetable fats and a decreased intake of animal fats; Appendix B).

The crude and adjusted values of daily diet-related GHGEs in the 4 classes of nutritional quality are shown in **Figure 4**. Without adjustment (panel A), daily diet-related GHGEs were not significantly different between the 4 classes for men (P = 0.0958) and were greater in the highest nutritional-quality class for women (P < 0.0001). After adjustment for total diet weight (panel B), diet-related GHGEs were not significantly different between nutritional-quality classes, for both sexes (P = 0.1796 for men and 0.0876 for women). In contrast, after adjustment for energy intakes (panel C), high-nutritional-quality diets were associated with higher GHGE values than were the low-nutritional-quality diets (+9% and +22% for men and women, respectively; P <0.0001 for both sexes).

#### DISCUSSION

On the basis of food-consumption data from a representative sample of French adults and on the GHGEs of foods currently consumed in this population, the current study showed that, at a given level of energy intake, diet-related GHGEs tend to be positively associated with nutritional quality: *I*) the more nutrient-dense diets (high MAR) had a high level of GHGEs, whereas the diets with a high content of nutrients to be limited (high MER) and the more energy-dense diets (high ED) had a low level of GHGEs; 2) the consumption of sweets and salted snacks was negatively associated with diet-related GHGEs, whereas the consumption of fruit and vegetables was positively associated with them; *3*) when diets were classified according to their overall nutritional quality, high-nutritional-quality diets tended



**FIGURE 4.** Mean greenhouse gas emissions associated with the diets of adults participating in the Individual and National Survey on Food Consumption (n = 1918), according to the nutritional quality of their diets. A: Crude values; B: values adjusted for total quantities consumed; and C: total energy intakes. Bars represent 95% CIs. A high-nutritional-quality diet was defined as compliance with 3 properties: mean adequacy ratio (mean daily percentage of recommended intakes for 20 essential nutrients) above the median; mean excess ratio (mean daily percentage of the maximum recommended values for nutrients for which the intake should be limited) below the median; and energy density below the median. Diets complying with 2, 1, or 0 properties were allocated to nutritional-quality categories of I+, I-, and Low, respectively. CO<sub>2</sub>e, carbon dioxide equivalent; I, intermediate; P, global P value; T, test for linear P-trend.

to a have high level of GHGEs, although they contained more plant-based products than did the low-nutritional-quality diets.

Compared with other international studies, our approach was original in 2 ways: *I*) we analyzed diets spontaneously consumed

by individuals (we could therefore observe a wide and "natural" variety of realistic food choices), and 2) nutritional quality was introduced into our analyses and was estimated by using nutrientbased indicators rather than preconceived views on the food composition of balanced diets. In contrast, previous studies on the environmental impact of food consumption were based either on stereotyped meals (18) and diets (6, 14, 17) or on a comparison between average and theoretical diets (15, 45-47). Moreover, most studies were focused on the share of animal compared with plantbased products (16). Only one of these (47) precisely controlled the nutrient content of designed theoretical diets, and the conclusion was that "it is possible to create a realistic and affordable diet that meets dietary requirements for health and a 25% reduction in GHGEs." However the "realism" of such a diet was doubtful because it was based on arbitrary decisions on the extent to which changes are culturally and socially acceptable by people. in particular as regards reducing the consumption of meat and dairy products. Other studies also found that vegetarian or vegan diets have a lower environmental impact than do omnivorous diets (6, 14, 18). However, little attention has been paid to the fact that quite radical changes in food consumption would be required to obtain only small differences on the environmental side. For instance, in the comparison between the observed average Finnish diet and various theoretical alternatives, only a fully vegan diet had lower GHGEs than the others (15). Likewise, only a small difference in GHGEs (5%) was found between the observed mean Swedish diet and a Mediterranean diet (45). Another study simulated the effect on GHGEs of reducing meat production but the emissions of the substituted foods were not included in the calculation (11). Recent work has shown that the effect on GHGEs depends very much on the substitutions made to limit environmental damage (48).

The current results (Figure 1) confirm that animal-based products (ruminant meat, fish, dairy products, and pork, poultry, and eggs) have higher GHGEs than do plant-based products (fruit and vegetables and starchy food) on a weight basis (8). We also showed that, among the food groups, ruminant meat, mixed dishes (because of animal-based mixed dishes), and pork, poultry, and eggs were the main contributors to diet-related GHGEs (Figure 3) and were the most strongly and positively associated with them (Figure 2). However, despite the large amounts of plant-based products, diets in the highest-nutritional-quality class were not those with the lowest GHGEs. At a given level of energy intake, they were in fact those with the highest GHGEs. In addition, consumption of the least healthy food group (ie, sweets and salted snacks) was actually associated with a large decrease in energy-adjusted GHGEs. The latter finding may be explained by the high ED and by the relatively low GHGEs of these foods (the latter being putatively associated with their ease of transport and storage and a low risk of wastage). Moreover, our indicator of good nutritional quality (ie, MAR) was positively associated with diet-related GHGEs, and our 2 indicators of low nutritional quality (ie, dietary MER and ED) were negatively associated with them.

Altogether, our results therefore seem to contradict the widely accepted view that diets that are good for health are also good for the planet. This notion has progressively emerged, based on the fact that plant-based products have a lower environmental impact than do animal products and on the belief that vegetarian diets are necessarily healthy. However, the current results show that, when expressed per calorie, fruit and vegetables may have GHGEs similar to those of animal products (excluding ruminant meat). In addition, the good health status of vegetarians is mostly related to their general "health-consciousness" (which leads them to adopt healthier behavior regarding smoking, physical exercise, and overall dietary balance), rather than to the fact that they avoid meat consumption (49). Obviously, not all vegetarian diets are healthy (50) and not all healthy diets are vegetarian. Current dietary guidelines (51–53), including the recently updated Mediterranean diet pyramid (54), actually recommend the consumption of moderate amounts of a variety of animal products. Increased consumption of starches may deserve a specific focus because this food group had one of the lowest GHGEs values, regardless of the calculation basis (in g or kcal), and was negatively correlated with diet-related GHGEs.

This study had limitations. First, diet-related GHGE estimations were based on a limited number of foods. However, those foods were the most frequently consumed in the study population so that their consumption represented  $\sim 75\%$  of total food and energy intakes. In addition, our estimate of the daily GHGEs was of a magnitude similar to those given in studies of other European populations (5, 20), which suggests that our way of calculating diet-related GHGEs was able to overcome the limitation of not having GHGE data for all the food consumed by the population. Second, we used GHGEs as the sole indicator of environmental impact because only GHGE data were available for a large set of foodstuffs. In future studies, other criteria, such as water and land use or biodiversity, must also be considered. Third, the transport from retail to home was not taken into account in food GHGE estimates, and we hypothesized that all the foods consumed came from a retail center (therefore excluding food produced at home or consumed out of home). In addition, the food GHGE data used in the current study reflected the average food products as consumed on the French market, ie, mainly conventional. In future studies, the effect of alternative production, processing, and distribution schemes must also be considered.

The method used to classify diets according to their nutritional quality was not previously published. Our aim was to classify existing diets based only on their nutrient contents and, to our knowledge, at the time we conducted our study, there was no published method allowing such classification. Note that our method identified diets rich in fruit and vegetables with moderate amounts of a variety of animal products and limited amounts of sweets and salted snacks as being of the highest nutritional quality, which agrees with all existing dietary guidelines (51, 52).

In the current study, the healthiness of diets, whether reflected by a high intake of fruit and vegetables, a low intake of sweets and salted snacks, a high nutrient density, a low ED, or a more comprehensive definition of nutritional quality (eg, belonging to a high-nutritional-quality class) was associated with slightly but significantly higher GHGEs. In contrast, increasing the energy provided by sweets and salted snacks, fats, and starches decreased diet-related GHGEs. Unlike modeling studies, which have shown that it is theoretically possible to meet nutrient-based recommendations while achieving major GHGE reduction (47), the current observational study showed that environmental and nutritional objectives do not necessarily concur. However, the relatively high variability of diet-related GHGEs within the high-nutritionalquality class suggests that some individuals have diets with both high nutritional quality and low GHGEs. More research is therefore needed to evaluate the feasibility of adopting sustainable dietary patterns in everyday life.

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The authors' responsibilities were as follows—ND, L-GS, and FV: designed and conducted the research and wrote the manuscript; FV and DT: analyzed the data; and ND: had primary responsibility for the final content. All authors read and approved the final manuscript. No conflicts of interest were reported.

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APPENDIX A Consumption in each food family in adults participating in INCA2 according to the nutritional quality of their diets<sup>1</sup>

				M	Men					Women	men					
add vegetiles         Add           add vegetiles         pdf         pdf         pdf           add vegetiles         pdf         pdf <th colspa="&lt;/th"><th><math>q_0</math> <math>q_0</math>         q_0         q_0         q_0         q_0         <th colspa="&lt;/th"><th>Food group and food family</th><th>11</th><th>11</th><th>= <i>u</i>)</th><th>(n)</th><th><math>P^2</math></th><th><math>T^3</math></th><th>High <math>(n = 172)</math></th><th>= <i>u</i>)</th><th>= <i>u</i>)</th><th></th><th><math>P^2</math></th><th><math>T^3</math></th></th></th></th>	<th><math>q_0</math> <math>q_0</math>         q_0         q_0         q_0         q_0         <th colspa="&lt;/th"><th>Food group and food family</th><th>11</th><th>11</th><th>= <i>u</i>)</th><th>(n)</th><th><math>P^2</math></th><th><math>T^3</math></th><th>High <math>(n = 172)</math></th><th>= <i>u</i>)</th><th>= <i>u</i>)</th><th></th><th><math>P^2</math></th><th><math>T^3</math></th></th></th>	$q_0$ q_0         q_0         q_0         q_0 <th colspa="&lt;/th"><th>Food group and food family</th><th>11</th><th>11</th><th>= <i>u</i>)</th><th>(n)</th><th><math>P^2</math></th><th><math>T^3</math></th><th>High <math>(n = 172)</math></th><th>= <i>u</i>)</th><th>= <i>u</i>)</th><th></th><th><math>P^2</math></th><th><math>T^3</math></th></th>	<th>Food group and food family</th> <th>11</th> <th>11</th> <th>= <i>u</i>)</th> <th>(n)</th> <th><math>P^2</math></th> <th><math>T^3</math></th> <th>High <math>(n = 172)</math></th> <th>= <i>u</i>)</th> <th>= <i>u</i>)</th> <th></th> <th><math>P^2</math></th> <th><math>T^3</math></th>	Food group and food family	11	11	= <i>u</i> )	(n)	$P^2$	$T^3$	High $(n = 172)$	= <i>u</i> )	= <i>u</i> )		$P^2$	$T^3$
and vegendles         287 ± 2088         303 ± 177         103 ± 103         455 ± 601         6000         545 ± 153         303 ± 177         112 ± 2         75 ± 75         600         5000         545 ± 153         753 ± 103         555 ± 53         552 ± 53         6000         5	and organities         2357         2368         3034         1773         1034         265         11357         11357         11357         11357         11357         11357         11357         11357         11357         11357         11357         11357         1135         1135         11357         1035         255         255         255         1035         255         155         1035         255         155         1035         255         155         1035         255         155         1035         255         135         255         1035         255         1035         255         114         252         2005         1035         255         114         252         2005         <			8	<i>P/</i>					69	<i>p</i> /					
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	attraction         238,7 ± 158         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 171,12 ± 94,4         303,4 ± 173,1         303,4 ± 171,12 ± 94,4         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         304,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 173,1         303,4 ± 103,1         304,4 ± 174,1         302,2 ± 173,1         303,4 ± 103,1         304,4 ± 174,1         302,2 ± 114,1         303,4 ± 103,1         303,4 ± 103,1         304,4 ± 174,1         302,2 ± 113,1         304,4 ± 13,1         304	Fruit and vegetables														
Qia theory         Si 1, 10, 12, 23         Si 1, 40, 10         Si 2, 27         O003         Si 2, 40         Si 2, 40 </th <th>Point         Point         <t< th=""><td>Fruit</td><td>208.8</td><td>203.8</td><td><math>103.4 \pm</math></td><td>+1</td><td>&lt; 0.001</td><td>&lt; 0.001</td><td><math>254.5 \pm 153.8</math></td><td>+1</td><td>+1</td><td>+1</td><td>&lt; 0.001</td><td>&lt; 0.001</td></t<></th>	Point         Point <t< th=""><td>Fruit</td><td>208.8</td><td>203.8</td><td><math>103.4 \pm</math></td><td>+1</td><td>&lt; 0.001</td><td>&lt; 0.001</td><td><math>254.5 \pm 153.8</math></td><td>+1</td><td>+1</td><td>+1</td><td>&lt; 0.001</td><td>&lt; 0.001</td></t<>	Fruit	208.8	203.8	$103.4 \pm$	+1	< 0.001	< 0.001	$254.5 \pm 153.8$	+1	+1	+1	< 0.001	< 0.001		
utiliates $138 \pm 773$ $334 \pm 367$ $555 \pm 132$ $138 \pm 772$ $101 \pm 387$ $155 \pm 487$ $148 \pm 493$ $128 \pm 372$ $01031$ Box $1064 \operatorname{stretes}$ $331 \pm 55 + 637$ $115 \pm 487$ $155 \pm 487$ $116 \pm 382$ $115 \pm 563$ $114 \pm 427 \pm 512$ $101 \pm 352$ $103 \pm 252$ $01331$ $328 \pm 563$ $0148 \pm 510$ $00131$ $328 \pm 563$ $014 \pm 324$ $012 \pm 323$ $6013 \pm 414$ $0123 \pm 2133$ $012 \pm 323$ $012 \pm 323$ $012 \pm 323$ $01031$ refined starches $327 \pm 302 \pm 1113$ $328 \pm 103$ $338 \pm 1123$ $538 \pm 103$ $338 \pm 113$ $014 \pm 324$ $012 \pm 323$ $01001$ refined starches $322 \pm 326$ $348 \pm 169$ $338 \pm 113$ $338 \pm 103$ $338 \pm 112$ $01012$ refined starch $322 \pm 323$ $446 \pm 369$ $358 \pm 103$ $338 \pm 103$	and         indicate $173 \pm 712$ $354 \pm 374$ $14 \pm 473$ $369 \pm 371$ $358 \pm 376$ $303 \pm 320$ $365 \pm 372$ $354 \pm 376$ $300 \pm 356$ $302 \pm 322$ $365 \pm 372$ $301 \pm 372$ $301$	Vegetables	$195.1 \pm 110.6$		+1	+1	< 0.001	< 0.001	$197.6 \pm 92.3$	+1	+1	+1	< 0.001	< 0.001		
as $10 \pm 23$ $15 \pm 48$ $10 \pm 33$ $15 \pm 48$ $10 \pm 38$ $15 \pm 48$ $10 \pm 32$ $10 $	me         mod state         10 ± 23         15 ± 48         14 ± 49         10 ± 33         0.937         15 ± 48         0.8 ± 23         0.6 ± 23         0.5 ± 27         0.033           med statelyse         118.7 ± 66         91 ± 73         50.7 ± 114.4         27.3 ± 56         13.8 ± 66         13.9 ± 67         13.4 ± 41.3         0.2 ± 44.3         0.0 ± 46.0         0.088         114.4 ± 23.4         13.2 ± 73.2         0.0 ± 46.0         0.088         114.4 ± 23.4         13.2 ± 23.2         0.0 ± 46.0         0.035         2.4 ± 14.1         0.0 ± 46.0         0.0 \pm 46.0         0.0 \pm 46	Fruit juices	$47.8 \pm 77.2$	$53.4 \pm 98.7$	+1	47.8 ±	0.01	0.43	$64.9\pm81.7$	+1	+1	+1	0.0151	0.7246		
the state index matches         2887 ± 113         290 ± 114         275 ± 135         150 ± 102         6001         714 ± 52.3         709 ± 67.9         70.5 ± 64.7         6001         714 ± 52.3         709 ± 67.9         607 ± 41.4         0.222           reinide statches         118.77 ± 86.9         91.1 ± 75.2         80.0 ± 59.2         76.4 ± 70.0         60001         714 ± 52.3         70.9 ± 67.3         70.1 ± 41.2         70.1 ± 71.1         10.1 ± 41.2         70.1 ± 71.1         10.2 ± 71.1         10.1 ± 41.2         70.1 ± 71.1         10.1 ± 41.2         70.1 ± 71.1         10.1 ± 71.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2         70.1 ± 41.2	the farmely interval int	Nuts	$1.0 \pm 2.3$	$1.5 \pm 4.8$	+1	+1	0.1957	0.8767	+1	+1	+	+	0.0338	0.0079		
Medic statules         2014         2015         113.         50.9         50.9         50.9         50.7         51.4         2025         66.7         60.0         60.0         40.0         50.0         40.0         40.0         40.0         40.0         40.0         40.0         40.0	differ         20X7 ± 113         20X2 ± 123         20X1 ± 123	Starches														
refined starches $1187 \pm 860$ $311 \pm 752$ $800 \pm 852$ $764 \pm 757$ $700$ $7000$ $773 \pm 560$ $714 \pm 252$ $700 \pm 451$ $700 \pm 250$ $701 \pm 241$ $702 \pm 451$ $700$ refined starches $370 \pm 324$ $404 \pm 324$ $836 \pm 725$ $6007$ $348 \pm 195$ $756$ $1137 \pm 873$ $1030 \pm 683$ $655 \pm 608$ $1137 \pm 872$ $0101$ Risk $822 \pm 926$ $404 \pm 324$ $836 \pm 722$ $6001$ $60001$ $100 \pm 110$ $127 \pm 102$ $10018$ Rind $822 \pm 96$ $148 \pm 159$ $155 \pm 102$ $1127 \pm 112$ $1012 \pm 473$ $1012 \pm 473$ $1012 \pm 473$ $1012 \pm 212$ Rind $822 \pm 96$ $148 \pm 159$ $155 \pm 102$ $1124 \pm 120$ $0001$ $20011$ $127 \pm 102$ $10010$ gendle fits $322 \pm 223$ $346 \pm 107$ $1124 \pm 416$ $0001$ $274 \pm 156$ $351 \pm 147$ $355 \pm 123$ $1001 \pm 160$ gendle fits $322 \pm 223$ $346 \pm 107$ $212 \pm 133$ $6001$ $00012$ $10012$ $117 \pm 411$ $194 \pm 478$ $1001 \pm 2001$ gendle fits $322 \pm 323$ $46 \pm 103$ $104 \pm 66$ $0001$ $100012$ $10012$ $10012$ $10012$ $10012$ $10012$ gendle fits $322 \pm 316$ $0022 \pm 304$ $10012$ $00012$ $10012$ $10012$ $10012$ $10012$ $10012$ $10012$ gendle fits $322 \pm 316$ $0022 \pm 304$ $102 \pm 6001$ $00012$ $10012$ $10012$ $10012$ $112 \pm 412$ $302 \pm 212$ $10012$ <t< th=""><th>reduction118.7 <math>\pm</math> 86031.1 <math>\pm</math> 75.280.0 <math>\pm</math> 35.270.4 <math>\pm</math> 75.370.9 <math>\pm</math> 46.360.7 <math>\pm</math> 41.40.223reduction37.0 <math>\pm</math> 39.49.4 <math>\pm</math> 3.2 <math>\pm</math> 31.09.3 <math>\pm</math> 14.2 <math>\pm</math> 39.38.4 <math>\pm</math> 150.40.06972.4 <math>\pm</math> 16865.2 <math>\pm</math> 38.4150.40.011R.K87.0 <math>\pm</math> 113.787.0 <math>\pm</math> 113.787.0 <math>\pm</math> 100.99.0 <math>\pm</math> 17.385.4 <math>\pm</math> 100.985.2 <math>\pm</math> 10.985.2 <math>\pm</math></th><td>Refined starches</td><td><math>208.7 \pm 113.5</math></td><td><math>209.2 \pm 114.4</math></td><td>227.5 ±</td><td>175.0</td><td>&lt; 0.001</td><td>0.0888</td><td></td><td>+1</td><td>+1</td><td>+</td><td>&lt; 0.001</td><td>0.0003</td></t<>	reduction118.7 $\pm$ 86031.1 $\pm$ 75.280.0 $\pm$ 35.270.4 $\pm$ 75.370.9 $\pm$ 46.360.7 $\pm$ 41.40.223reduction37.0 $\pm$ 39.49.4 $\pm$ 3.2 $\pm$ 31.09.3 $\pm$ 14.2 $\pm$ 39.38.4 $\pm$ 150.40.06972.4 $\pm$ 16865.2 $\pm$ 38.4150.40.011R.K87.0 $\pm$ 113.787.0 $\pm$ 113.787.0 $\pm$ 100.99.0 $\pm$ 17.385.4 $\pm$ 100.985.2 $\pm$ 10.985.2 $\pm$	Refined starches	$208.7 \pm 113.5$	$209.2 \pm 114.4$	227.5 ±	175.0	< 0.001	0.0888		+1	+1	+	< 0.001	0.0003		
Tronuest statutes         137         561         177         564         201         700         775         201	Transmer	Thursday atombas	$1107 \pm 060$	031 + 750	+ 0 08	192	100.07	/0.001		+	+	+		0.0424		
W protects $370 \pm 294$ $04 \pm 324$ $412 \pm 390$ $380 \pm 365$ $04083$ $384 \pm 104$ $3326 \pm 534$ $348 \pm 193$ $552 \pm 512$ $50001$ $538 \pm 5123$ $50001$ $538 \pm 5123$ $50001$ $538 \pm 5123$ $50001$ <	$V$ products $370 \pm 294$ $404 \pm 324$ $412 \pm 390$ $800 \pm 565$ $0.4089$ $0.6975$ $248 \pm 169$ $248 \pm 197$ $286 \pm 228$ $280 \pm 247$ $0.148$ $R$		110.7 - 00.9	7.61 - 1.66	-	-1			K.0C - K.11	-1	0.04 - 6.07	-1	777.0	0.0404		
west         37.0         2.9         3.0         5.5         0.4000         0.557         2.34         1.13         7.01         2.3         2.30         2.30         3.57         2.30         3.50         3.55         0.4000         0.43         3.55         6.001         1.43         0.44         3.55         1.01         7.01         2.12         7.01         2.12         7.01         1.03         3.55         5.5         0.4001         0.001         1.13         3.55         5.01         0.001         3.55         5.01         0.001         3.55         5.01         0.001         3.55         5.01         0.001         0.001         1.14         2.02         0.001         0.001         2.01         1.14         2.02         0.001         0.001         2.01         1.01         1.27         1.02         1.50         1.23         2.51         2.001         0.001         2.001         0.001         2.001         0.001         2.001         0.001         2.001         0.001         2.001         2.001         2.001         2.001         2.001         2.001         2.001         2.001         2.001         2.001         2.001         2.001         2.001 <th2.001< th=""> <th2.001< th=""> <th2.001< <="" th=""><th>excess         370 ± 314         <math>371 \pm 312</math> <math>434 \pm 5163</math> <math>0.0877</math> <math>334 \pm 5163</math> <math>0.0877</math> <math>334 \pm 5163</math> <math>0.0877</math> <math>314 \pm 5163</math> <math>553 \pm 603</math> <math>315 \pm 5122</math> <math>0.001</math>           sh diry products         <math>102.2 \pm 1313</math> <math>761 \pm 1312</math> <math>4132 \pm 4133</math> <math>3200 - 2030</math> <math>0.0733</math> <math>355 \pm 603</math> <math>315 \pm 5122</math> <math>0.001</math> <math>301 \pm 1392</math> <math>0.001</math> <math>301 \pm 1392</math> <math>0.001</math> <math>301 \pm 1312</math> <math>312 \pm 1312</math> <math>412243</math> <math>353 \pm 162</math> <math>177 \pm 102</math> <math>1102</math> <math>312 \pm 3232</math> <math>0.001</math> <math>300 \pm 111</math> <math>320 \pm 3234</math> <math>500 \pm 3214</math> <math>300 \pm 3214</math></th><td>Dairy products</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th2.001<></th2.001<></th2.001<>	excess         370 ± 314 $371 \pm 312$ $434 \pm 5163$ $0.0877$ $334 \pm 5163$ $0.0877$ $334 \pm 5163$ $0.0877$ $314 \pm 5163$ $553 \pm 603$ $315 \pm 5122$ $0.001$ sh diry products $102.2 \pm 1313$ $761 \pm 1312$ $4132 \pm 4133$ $3200 - 2030$ $0.0733$ $355 \pm 603$ $315 \pm 5122$ $0.001$ $301 \pm 1392$ $0.001$ $301 \pm 1392$ $0.001$ $301 \pm 1312$ $312 \pm 1312$ $412243$ $353 \pm 162$ $177 \pm 102$ $1102$ $312 \pm 3232$ $0.001$ $300 \pm 111$ $320 \pm 3234$ $500 \pm 3214$ $300 \pm 3214$	Dairy products														
Item         S29 ± 131.6 $\infty111.3$	Ith         R32         1313 $751 \pm 1412$ 1004 \pm 2245         533 \pm 150 $751 \pm 1512$ $751 \pm 1212$ $751 \pm 1222$ $751 \pm 12222$ $751 \pm 1222$	Cheese	$37.0 \pm 29.4$	$40.4 \pm 32.4$	44.2 ±	38.0 ±	0.4089	0.6975	$24.8 \pm 16.9$	$24.8 \pm 19.7$	28.6 ±	28.0	0.1482	0.149		
sh diry products $102.2 \pm 123$ $8.8 \pm 160$ $50.3 \pm 711$ $8.6 \pm 722$ $6001$ $1000$ $115.5 \pm 873$ $605.5 \pm 608$ $15.5 \pm 502$ $7001$ $8000$ stand fars $8.2 \pm 9.6$ $148 \pm 159$ $15.5 \pm 162$ $17.7 \pm 183$ $6001$ $1000 \pm 110$ $12.7 \pm 102$ $15.6 \pm 120$ $15.6 \pm 121$ $15.6 \pm 121$ $15.0 \pm 121$ $0001$ stand sinel smacks $202 \pm 902$ $8.8 \pm 1053$ $15.4 \pm 159$ $15.5 \pm 162$ $17.7 \pm 183$ $1000$ $2100 \pm 110$ $12.7 \pm 102$ $15.0 \pm 121$ $15.0 \pm 121$ $0001$ stand sinel smacks $202 \pm 3323$ $408 \pm 426$ $416 \pm 456$ $0001$ $2000 \pm 110$ $110 \pm 414$ $35.7 \pm 32$ $411 \pm 800$ $10001$ steres $214 \pm 55$ $25.5 \pm 53$ $46 \pm 103$ $40 \pm 96$ $00012$ $00021$ $10021$ $10012$ $1101 \pm 101$ $10012$ $10012$ $10012$ $10012$ $10012$ $10012$ $10012$ $10012$ $10012$ $10012$ $10012$ $1114 \pm 102$ $11012$ $112 \pm 100$ $10012$ $10012$ sterks $1140 \pm 237$ $112 \pm 2019$ $2012 \pm 1012$ $1002 \pm 1012$ $10012$ $10012$ $10012$ $1112 \pm 1012$ $10012$ $10012$ $1001$	sh diry products $1052 \pm 1235$ $828 \pm 1009$ $503 \pm 717$ $886 \pm 722$ $<0001$ $<0001$ $1151 \pm 873$ $1030 \pm 863$ $555 \pm 608$ $515 \pm 502$ $<0001$ gendle farts $322 \pm 223$ $148 \pm 159$ $155 \pm 162$ $177 \pm 185$ $<0001$ $<0001$ $1201 \pm 147$ $<0002$ $$204 \pm 193$ $$154 \pm 103$ $$105 \pm 213$ $<0001$ gendle farts $322 \pm 223$ $346 \pm 107$ $212 \pm 171$ $161 \pm 142$ $<0001$ $<0001$ $$210 \pm 193$ $$264 \pm 133$ $$002 \pm 2334$ $<0001$ eet drinks $223 \pm 553$ $466 \pm 103$ $404 \pm 355$ $0001$ $<0001$ $$1001$ $$110 \pm 441$ $$357 \pm 730$ $421 \pm 323$ $<0001$ eets and spices $213 \pm 500$ $302 \pm 455$ $204 \pm 405$ $2012$ $0001$ $$1001$ $$1001$ $$140 \pm 145$ $$0012$ $$0021$ $$1001$ $$1001$ $$110 \pm 441$ $$357 \pm 730$ $$411 \pm 300$ $0001$ eets and spices $140 \pm 237$ $172 \pm 309$ $294 \pm 405$ $2011 \pm 2001$ $0001$ $$1001$ $$1001$ $$112 \pm 41$ $$0001$ eres and spices $140 \pm 233$ $402 \pm 3323$ $00012$ $00012$ $$1001$ $$1001$ $$142 \pm 897$ $$0011$ eres and spices $140 \pm 233$ $407 \pm 3323$ $4001$ $00012$ $$154 \pm 1123$ $$112 \pm 900$ $$102 \pm 112$ $$112 \pm 102$ $$102 \pm 120$ $$1001$ eres and spices $153 \pm 554$ $441 \pm 851$ $497 \pm 752$ $841 \pm 851$ $112 \pm 120$ $$1001$ eres and spices <t< th=""><td>Milk</td><td><math>82.9 \pm 131.9</math></td><td><math>76.1 \pm 141.2</math></td><td><math>109.4 \pm</math></td><td>83.4 ±</td><td>0.3209</td><td>0.5763</td><td><math>101.8 \pm 139.5</math></td><td><math>67.9 \pm 101.6</math></td><td>88.0 ±</td><td>76.1</td><td>0.1001</td><td>0.3491</td></t<>	Milk	$82.9 \pm 131.9$	$76.1 \pm 141.2$	$109.4 \pm$	83.4 ±	0.3209	0.5763	$101.8 \pm 139.5$	$67.9 \pm 101.6$	88.0 ±	76.1	0.1001	0.3491		
intul8.2 ± 9.614.8 ± 15915.5 ± 16.217.7 ± 18.5<0.001	intel fats $82 \pm 9.6$ $148 \pm 159$ $155 \pm 162$ $177 \pm 185$ $<0001$ $0001$ $100 \pm 11.0$ $127 \pm 10.2$ $150 \pm 12.7$ $0001$ stand stude stacks $322 \pm 223$ $348 \pm 10.5$ $154 \pm 14.2$ $<0001$ $<0001$ $010 \pm 11.6$ $127 \pm 10.2$ $150 \pm 12.0$ $150 \pm 12.7$ $0001$ stand stude stacks $200 \pm 690$ $382 \pm 10.5$ $164 \pm 30.8$ $<0001$ $<0001$ $210 \pm 19.8$ $314 \pm 24.8$ $316 \pm 23.2$ $300 \pm 27.1$ $32.4 \pm 2.0$ $412 \pm 4.26$ $416 \pm 4.36$ $0001$ $210 \pm 19.1$ $314 \pm 4.28$ $316 \pm 2.06$ $300 \pm 27.1$ <th< th=""><td>Fresh dairy products</td><td><math>105.2 \pm 123.5</math></td><td><math>82.8 \pm 100.9</math></td><td>+1</td><td>+1</td><td>&lt; 0.001</td><td>&lt; 0.001</td><td><math>131.5 \pm 87.3</math></td><td><math>103.0 \pm 68.3</math></td><td><math>65.5 \pm</math></td><td>+1</td><td>&lt; 0.001</td><td>&lt; 0.001</td></th<>	Fresh dairy products	$105.2 \pm 123.5$	$82.8 \pm 100.9$	+1	+1	< 0.001	< 0.001	$131.5 \pm 87.3$	$103.0 \pm 68.3$	$65.5 \pm$	+1	< 0.001	< 0.001		
and lates $8.2 \pm 9.6$ $4.8 \pm 15.9$ $15.5 \pm 16.2$ $17.7 \pm 18.5$ $< 0001$ $< 0001$ $27.4 \pm 15.6$ $5.51 \pm 16.2$ $15.0 \pm 12.7$ $0.001$ $3.6$ and suble stacks $3.2 \pm 2.2 \pm 3.2$ $2.0 \pm 19.7$ $2.12 \pm 17.1$ $16.1 \pm 14.2$ $< 0001$ $< 0001$ $27.4 \pm 15.6$ $5.51 \pm 14.7$ $2.60 \pm 12.7$ $5.001$ $5.001$ $3.6$ and suble stacks $2.9 \pm 3.66$ $30.2 \pm 3.103$ $40.8 \pm 4.05$ $4.001$ $< 0001$ $2.001$	simulation $82 \pm 96$ $148 \pm 159$ $155 \pm 162$ $177 \pm 185$ $<0001$ $0001$ $127 \pm 102$ $150 \pm 120$ $150 \pm 127$ $0001$ stand slued $322 \pm 223$ $246 \pm 97$ $212 \pm 111$ $161 \pm 142$ $<0001$ $20001$ $210 \pm 511$ $387 \pm 303$ $382 \pm 163$ $4208 \pm 236$ $3000$ stand slued $323 \pm 356$ $392 \pm 571$ $345 \pm 406$ $4001 \pm 366$ $00012$ $20001$ $2101 \pm 911$ $347 \pm 375$ $340 \pm 426$ $4245$ $402 \pm 36$ $00012$ $00012$ $00012$ $110 \pm 411$ $377 \pm 314$ $387 \pm 336$ $402 \pm 36$ $00012$ steres $213 \pm 250$ $300 \pm 571$ $172 \pm 300$ $294 \pm 405$ $10001$ $50012$ $00012$ $00012$ $00014$ $1120 \pm 113$ $00014$ $1120 \pm 411$ $387 \pm 336$ $00010$ steres $140 \pm 237$ $172 \pm 103$ $390 \pm 571$ $347 \pm 203$ $294 \pm 405$ $291 \pm 546$ $2101$ $1129 \pm 131$ $0001$ steres $140 \pm 352$ $140 \pm 475$ $300 \pm 571$ $132 \pm 463$ $400010$ $10001$ $1001 \pm 112$ $1001 \pm 112$ $00014$ steres $140 \pm 238$ $445$ $6001$ $60012$ $50014$ $5001$ $50014$ $50023$ $3242$ $50023$ $3242$ $50023$ $3242$ $50023$ $3242$ $50023$ steres $140 \pm 387$ $1101$ $168 \pm 121$ $172 \pm 141$ $10021$ $1204$ $1212$ $1212$ $1202$ $1212$ $1202$ $1212$ $1202$ $1212$ $1202$	Fats														
and stately $3.2.2 \pm 2.3$ $3.06 \pm 1.07$ $1.2.5 \pm 1.1$ $1.01 \pm 1.42$ $2.0001$ $2.001$ $2.0011$ $2.011 \pm 1.07$ $3.011 \pm 1.07$ $3.0101 \pm 1.07$ $3.0011 \pm 1.07$ $3.001$	and states $32.2 \pm 23.3$ $30.8 \pm 103$ $11.2 \pm 33.3$ $0000$ $27.4 \pm 15.6$ $55.1 \pm 14.7$ $25.2 \pm 33.3$ $40.8 \pm 93.3$ $10.8 \pm 33.3$ $10.000$ $21.4 \pm 15.6$ $55.1 \pm 14.7$ $25.3 \pm 33.3$ $0000$ $25.3 \pm 33.3$ $0000$ $2000$	Animal fats	80+06	148 + 150	+	177 + 185	< 0.001	<0.001	10.0 + 11.0	107 + 100	15.0 + 12.0	150 + 177	0.0010	0 001 1		
spectrum $3.2.2 \pm 2.2.3$ $4.0 \pm 1.9.7$ $1.1.2 \pm 1.0.1$ $1.0.1 \pm 1.4.2$ $0.001$ $2.1.2 \pm 1.4.1$ $1.0.2 \pm 1.4.1$ $2.0.2 \pm 1.2.3$ $0.001 \pm 2.0.2 \pm 2.3.4$ $0.001 \pm 2.3.4 \pm 1.1.4$ $1.0.2 \pm 4.7.3$ $2.1.4 \pm 8.0$ $0.001 \pm 2.0.2 \pm 2.3.4$ $0.001 \pm 2.0.2 \pm 2.3.4$ $0.001 \pm 2.3.7$ $1.2.4 \pm 1.1.2$ $0.001 \pm 2.3.7$ $1.0 \pm 4.1.4$ $8.3 \pm 7.3.4$ $4.1 \pm 8.0$ $0.001 \pm 2.3.7$ $1.0 \pm 4.1.4$ $8.3 \pm 7.3.4$ $4.1 \pm 8.0$ $0.001 \pm 2.3.7$ $1.0 \pm 4.1.4 \pm 8.7$ $0.001 \pm 2.3.7$ $1.0 \pm 4.1.4 \pm 8.7$ $0.001 \pm 2.3.7$ $1.0 \pm 4.1.4 \pm 8.7$ $0.001 \pm 2.3.7$ $1.0 \pm 4.7.8 \pm 2.3.6$ $0.001 \pm 2.3.7$ $1.0 \pm 4.7.8 \pm 2.3.6$ $0.001 \pm 2.3.6$ $0.001 \pm 2.3.7$ $1.0 \pm 4.7.8 \pm 2.3.6$ $0.001 \pm 2.3.7$ <th>3.2.2         3.2.2         3.2.2         2.1.2         11.1         10.1         14.2         <math>&lt;</math>0001         2.1.2         11.4</th> <td></td> <td>0.0 + 0.00</td> <td></td> <td>L H</td> <td></td> <td>100.02</td> <td>100.07</td> <td>L H</td> <td></td> <td>I H</td> <td></td> <td>100.0</td> <td>100.07</td>	3.2.2         3.2.2         3.2.2         2.1.2         11.1         10.1         14.2 $<$ 0001         2.1.2         11.4		0.0 + 0.00		L H		100.02	100.07	L H		I H		100.0	100.07		
and salied states         201 $\pm 699$ 388 $\pm 1053$ 1054 $\pm 2384$ 1051 $\pm 3334$ C001         condimination of the colspan="5">condimination condimination of the colspan="5">condimination condimination of the colspan="5">condimination condimination condination condination condimination condimination condimicon condi	west and stated300388 ± 10531054 ± 20872113 ± 3330 $< 0001$ $< 210 \pm 518$ $< 140 \pm 473$ $$ 508 \pm 983$ $< 1005 \pm 3243$ $< 0001$ west drinks $273 \pm 266$ $302 \pm 332$ $< 40 \pm 413$ $< 0001$ $< 0001$ $< 100 \pm 413$ $< 166 \pm 214$ $387 \pm 304$ $< 424 \pm 283$ $< 0001$ west drinks $273 \pm 266$ $302 \pm 332$ $< 408 \pm 405$ $< 5001$ $< 0001$ $< 1001 \pm 416$ $< 144$ $= 387 \pm 304$ $< 424 \pm 283$ $< 0001$ west and spices $182 \pm 250$ $300 \pm 455$ $164 \pm 352$ $129 \pm 154$ $00033$ $00003$ $828 \pm 667$ $258 \pm 734$ $414 \pm 187$ $111 \pm 91 \pm 131$ $0003$ west and spices $182 \pm 253$ $236 \pm 455$ $164 \pm 352$ $129 \pm 124$ $00033$ $00003$ $828 \pm 667$ $258 \pm 734$ $414 \pm 187$ $111 \pm 91 \pm 131$ $0003$ west and spices $182 \pm 250$ $236 \pm 455$ $164 \pm 352$ $129 \pm 123$ $0001$ $6001$ $168 \pm 2110$ $159 \pm 227$ $233 \pm 239$ $40003$ west and vegetshes $382 \pm 546$ $348 \pm 666$ $382 \pm 5467$ $353 \pm 439$ $1007$ $329 \pm 402$ $333 \pm 439$ $1003$ $324 \pm 67$ $333 \pm 439$ $1003$ $324 \pm 63$ $30001$ $321 \pm 142$ $30001$ $321 \pm 142$ $3000 \pm 127$ $300 \pm 127$ $30001$ $3100 \pm 127$ $323 \pm 149$ $1$	vegetable fats	$52.2 \pm 22.5$	$24.0 \pm 19.7$	ΗI	$10.1 \pm 14.2$	<0.001	<0.001	ΗI	$1.4.1 \pm 1.62$	ΗI	ΗI	<0.001	<0.001		
ever chinks $200 \pm 609$ $388 \pm 1063$ $10$	eet cirrins         230         400         3000 $400 \pm 333$ 140         423         5005         500         513         530         540         513         500         513         500         513         500         510         513         500         510         500         500         511         500	Sweets and salted snacks														
weeks $27.3 \pm 2.66$ $30.2 \pm 33.2$ $40.8 \pm 4.26$ $44.6 \pm 4.36$ $6.001$ $<0001$ $210 \pm 19.1$ $24.6 \pm 21.4$ $38.7 \pm 36.4$ $42.4 \pm 28.3$ $<00014$ weeks $21.8 \pm 6.6$ $30.6 \pm 39.6$ $30.2 \pm 37.1$ $76.2 \pm 71.9$ $84.9 \pm 76.6$ $00015$ $50.1 \pm 346$ $35.7 \pm 31.3$ $41.4 \pm 18.7$ $11.9 \pm 11.3$ $10.0075$ serves $18.2 \pm 25.0$ $23.6 \pm 45.5$ $16.4 \pm 35.2$ $12.9 \pm 15.4$ $00003$ $50.01 \pm 306$ $70.8 \pm 39.9$ $70.01 \pm 30.1$ $140 \pm 23.7$ $17.2 \pm 30.9$ $29.4 \pm 40.5$ $29.4 \pm 40.5$ $29.4 \pm 40.5$ $29.4 \pm 40.5$ $10.9 \pm 13.1$ $00015$ $140 \pm 23.7$ $17.2 \pm 30.9$ $29.4 \pm 40.5$ $20.9 \pm 23.5$ $11.9 \pm 14.4$ $87.7 \pm 13.2$ $11.9 \pm 13.1$ $00075$ $140 \pm 13.7$ $56 \pm 15.8$ $49.7 \pm 71.1$ $33.2 \pm 48.3$ $0001$ $5001$ $18.8 \pm 53.7$ $28.3 \pm 23.7$ $11.9 \pm 14.7$ $10007$ $150 \pm 110$ $16.4 \pm 19.2$ $109 \pm 23.5$ $11.9 \pm 14.2$ $109 \pm 23.5$ $11.9 \pm 14.2$ $1003$ $39.9 \pm 16.7$ $130 \pm 100 \pm 100$ $56 \pm 15.8$ $64 \pm 19.2$ $109 \pm 23.5$ $11.9 \pm 13.2$ $509 \pm 40.2$ $30.3 \pm 16.7$ $20001$ $56 \pm 158$ $64 \pm 19.2$ $11.3 \pm 27.1$ $48 \pm 13.7$ $6001 \pm 1001$ $152 \pm 12.2$ $71.4 \pm 18.7$ $11.9 \pm 16.7$ $20001$ $110 \pm 100 \pm 100$ $150 \pm 10.2$ $100 \pm 10.7$ $111 \pm 100 \pm 100 \pm 10.7$ $11.3 \pm 12.2$	weeks $2.73 \pm 2.66$ $30.2 \pm 33.2$ $40.8 \pm 4.26$ $44.6 \pm 4.36$ $6.0012$ $0.0012$ $1.7 \pm 11$ $1.1 \pm 12$ $3.7 \pm 3.64$ $2.4 \pm 2.83$ $4.04 \pm 1.87$ $1.11 \pm 80$ $0.003$ steres $51.8 \pm 50.6$ $30.0 \pm 57.1$ $7.52 \pm 71.9$ $10.2 \pm 4.13$ $50.11 \pm 9.96$ $7.0012$ $10.001$ $10.012$ $20.0014$ $10.012$ $20.0014$ $20.0014$ $20.014 \pm 9.66$ $20.11 \pm 9.96$ $20.0012$ $20.0014$ $20.0014$ $20.0014$ $20.0014$ $20.0014$ $20.014 \pm 9.66$ $20.14 \pm 9.66$ $20.34 \pm 2.36$ $20.34 \pm 2.36$ $20.34 \pm 2.36$ $20.34 \pm 2.36$ $20.014 \pm 1.93$ $20.0014$ $20.0014$ $20.0114$ $20.014 \pm 1.92$ $20.024 \pm 1.27$ $20.04 \pm 1.32$ $20.024 \pm 1.27$ $20.04 \pm 1.32$ $20.0014$ $20.0101$ $20.014 \pm 1.32$ $20.012 \pm 1.32$ $20.014 \pm 1.32$ $20.012 \pm 1.$	Sweet drinks	$29.0 \pm 69.9$	$38.8 \pm 105.3$	+1	+	< 0.001	< 0.001	+1	+	+1	+	< 0.001	< 0.001		
Inclusions $2.4 \pm 4.5$ $2.5 \pm 5.3$ $4.6 \pm 10.3$ $4.0 \pm 9.6$ $0.001$ $0.001$ $0.011 \pm 4.4$ $3.5 \pm 7.3$ $4.1 \pm 8.0$ $0.001$ seems $1.12 \pm 4.4$ $3.5 \pm 7.3$ $4.1 \pm 8.0$ $0.001$ $0.001$ $0.001 \pm 9.6$ $0.001$ $0.001$ seems $1.12 \pm 4.4$ $3.5 \pm 7.3$ $4.1 \pm 8.0$ $0.001$ $0.001$ $0.012 \pm 8.6$ $0.012 \pm 8.6$ $0.001 \pm 9.6$ </th <th>Inclustor<math>24 \pm 45</math><math>52 \pm 53</math><math>46 \pm 103</math><math>40 \pm 96</math><math>0012</math><math>0001</math><math>500 \pm 41</math><math>35 \pm 773</math><math>411 \pm 80</math><math>0000</math>seems<math>518 \pm 506</math><math>590 \pm 571</math><math>752 \pm 171</math><math>614 \pm 352</math><math>129 \pm 154</math><math>6012</math><math>0001</math><math>500 \pm 413</math><math>501 \pm 414</math><math>35 \pm 773</math><math>411 \pm 80</math><math>0000</math>seems<math>1182 \pm 1250</math><math>236 \pm 4551</math><math>664 \pm 352</math><math>129 \pm 154</math><math>6001 \pm 362</math><math>400 \pm 207</math><math>119 \pm 131</math><math>0001</math>strike<math>112 \pm 2371</math><math>122 \pm 309</math><math>294 \pm 400</math><math>300 \pm 1001</math><math>888 \pm 657</math><math>233 \pm 286</math><math>233 \pm 286</math><math>234 \pm 230</math><math>236 \pm 126</math><math>20001</math>and starch<math>528 \pm 1216</math><math>133 \pm 286</math><math>133 \pm 286</math><math>133 \pm 1226</math><math>1312 \pm 126</math><math>1312 \pm 122</math><math>1212 \pm 126</math><math>1212 \pm 126</math>&lt;</th> <td>Sweets</td> <td>373 + 266</td> <td>30.2 + 33.2</td> <td>+</td> <td>+</td> <td>&lt; 0.001</td> <td>&lt; 0.001</td> <td>+</td> <td>+</td> <td>+</td> <td>+</td> <td>&lt; 0.001</td> <td>&lt; 0.001</td>	Inclustor $24 \pm 45$ $52 \pm 53$ $46 \pm 103$ $40 \pm 96$ $0012$ $0001$ $500 \pm 41$ $35 \pm 773$ $411 \pm 80$ $0000$ seems $518 \pm 506$ $590 \pm 571$ $752 \pm 171$ $614 \pm 352$ $129 \pm 154$ $6012$ $0001$ $500 \pm 413$ $501 \pm 414$ $35 \pm 773$ $411 \pm 80$ $0000$ seems $1182 \pm 1250$ $236 \pm 4551$ $664 \pm 352$ $129 \pm 154$ $6001 \pm 362$ $400 \pm 207$ $119 \pm 131$ $0001$ strike $112 \pm 2371$ $122 \pm 309$ $294 \pm 400$ $300 \pm 1001$ $888 \pm 657$ $233 \pm 286$ $234 \pm 230$ $236 \pm 126$ $20001$ and starch $528 \pm 1216$ $133 \pm 286$ $133 \pm 286$ $133 \pm 1226$ $1312 \pm 126$ $1312 \pm 122$ $1212 \pm 126$ $1212 \pm 126$ <	Sweets	373 + 266	30.2 + 33.2	+	+	< 0.001	< 0.001	+	+	+	+	< 0.001	< 0.001		
and states $5.15 \pm 5.06 \pm 5.57$ $5.62 \pm 7.19$ $5.49 \pm 7.50$ $5.000 \pm 7.10$ $5.00 \pm 7.51$ $7.52 \pm 7.19$ $5.72 \pm 7.15$ $7.52 \pm 7.13$ $7.52 \pm 7.23$ $7$	The matrix states $51.8 \pm 50.6$ $50.0 \pm 57.1$ $55.2 \pm 71.9$ $50.01 \pm 50.6$ $50.1 \pm 4.9.6$ $75.0 \pm 5.9.5$ $75.0 $	Coltad concle	<u>s</u> v + v c	2 x + x 2	+ 1	+	0.0177	77000		+	+	+	0.0014	0,0067		
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stries $14.0 \pm 23.7$ $17.2 \pm 30.9$ $29.4 \pm 40.5$ $29.1 \pm 32.6$ $<0.001$ $<0.001$ $16.8 \pm 21.0$ $15.9 \pm 22.7$ $28.3 \pm 28.6$ $23.3 \pm 23.9$ $<0.001$ gatishesand starch $5.6 \pm 15.8$ $6.4 \pm 19.2$ $10.9 \pm 23.5$ $11.9 \pm 19.8$ $0.0046$ $0.0012$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 14.9$ $10.3 \pm 16.7$ $0.2095$ airly products and starch $5.6 \pm 15.8$ $6.4 \pm 19.2$ $10.9 \pm 23.5$ $11.9 \pm 19.8$ $0.0046$ $0.0012$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 14.9$ $10.3 \pm 16.7$ $0.2095$ and starch $23.8 \pm 35.4$ $44.2 \pm 79.9$ $50.5 \pm 69.1$ $6.9 \pm 16.3$ $40.01$ $50.01$ $50.01$ $50.0 \pm 62.2$ $42.5 \pm 50.9$ $<0.001$ and vægetables $8.5 \pm 20.7$ $11.3 \pm 27.71$ $48 \pm 13.7$ $6.001$ $50.01$ $50.01$ $50.01$ $50.01$ $50.01$ and vægetables $8.5 \pm 20.7$ $11.3 \pm 27.1$ $48 \pm 13.7$ $6.001$ $50.01$ $50.01$ $50.01$ $50.01$ $50.01$ and vægetables $8.5 \pm 20.7$ $11.3 \pm 27.1$ $6.4 \pm 17.2$ $0.071$ $0.073$ $50.4 \pm 2.2$ $37.3 \pm 37.4$ $<0.001$ start $17.6 \pm 19.7$ $10.5 \pm 20.1$ $6.4 \pm 17.7$ $0.071$ $0.073$ $50.4 \pm 2.2$ $17.4 \pm 2.2.3$ $50.01$ and været $8.5 \pm 15.1$ $10.5 \pm 10.6$ $10.7 \pm 16.6$ $6.001$ $5.2 \pm 12.6$ $7.7 \pm 18.7$ $10.9 \pm 17.2$ $0.001$ start $17.7 \pm 18.7$ $10.7 \pm 16.6$ $6.001$ $10.7 \pm 1$	stries $14.0 \pm 23.7$ $7.2 \pm 30.9$ $29.4 \pm 40.5$ $29.1 \pm 32.5$ $< 0.001$ $< 0.001$ $(6.8 \pm 21.0)$ $159 \pm 22.7$ $28.3 \pm 28.6$ $23.3 \pm 25.9$ $< 0.001$ ad ishes $56 \pm 15.8$ $64 \pm 19.2$ $109 \pm 23.5$ $119 \pm 19.8$ $0.0046$ $0.0012$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 14.9$ $10.3 \pm 16.7$ $0.209$ and starch $56 \pm 15.8$ $64 \pm 19.2$ $109 \pm 23.5$ $119 \pm 19.8$ $0.0046$ $0.0012$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 33.7$ $29.0 \pm 40.2$ $30.3 \pm 38.7$ $< 0.001$ and starch $56 \pm 15.8$ $64 \pm 19.2$ $109 \pm 23.5$ $119 \pm 19.8$ $0.0046$ $0.0012$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 37.4$ $< 0.001$ and starch $23.8 \pm 35.1$ $44.2 \pm 79.9$ $50.5 \pm 69.1$ $60.4 \pm 7 \pm 14.7$ $0.0011$ $0.0011$ $0.7 \pm 14.6$ $8.3 \pm 37.4$ $< 0.001$ and starch $23.8 \pm 35.1$ $44.2 \pm 70.9$ $10.9 \pm 31.2$ $21.0 \pm 29.7$ $< 0.001$ $< 0.0011$ $0.011$ $0.7 \pm 14.4$ $0.0012$ $0.011$ $1.78 \pm 28.8$ $3.4 \pm 3.3$ $3.0 \pm 17.2$ $0.001$ and varch $8.6 \pm 21.3$ $7.6 \pm 20.1$ $1.64 \pm 6.3.7$ $0.024.8$ $6.1 \pm 12.5$ $7.8 \pm 19.5$ $3.7 \pm 10.2$ $0.0012$ $8.6 \pm 17.6$ $11.3 \pm 27.1$ $1.8 \pm 17.2$ $0.7 \pm 17.1$ $1.28 \pm 29.7 \pm 24.2$ $0.001$ $8.6 \pm 17.7$ $11.2 \pm 7.7 \pm 19.2$ $11.2 \pm 7.7 \pm 19.2$ $7.7 \pm 19.2$ $7.7 \pm 19.2$ $7.2 \pm 14.2$ $0.001$ $10.7 \pm 16.1$ $17.7 \pm$	Sauces and spices	$18.2 \pm 25.0$	$23.6 \pm 45.5$	+1	$12.9 \pm 15.4$	0.0033	0.0078	+1	+1	+1	+1	0.0075	0.0051		
d dishesad dishes15.2 ± 171016.4 ± 145.8497 ± 71.133.2 ± 48.3<0.001<0.00118.2 ± 13.513.00 ± 127.950.9 ± 6.22 $42.6 \pm 50.9$ <0.001sigetibles and starch55.6 ± 15.86.4 ± 19.210.9 ± 23.511.9 ± 19.80.00460.0012 $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 14.9$ 10.3 ± 16.70.2095sich vegetables. and starch55.8 ± 54.63.8 ± 65.6 $48.6 \pm 68.2$ $49.2 \pm 70.4$ <0.001 $10.013$ $19.7 \pm 34.6$ $18.3 \pm 33.3$ $29.0 \pm 40.2$ $30.3 \pm 38.7$ <0.001send starch $5.8 \pm 54.6$ $3.8 \pm 65.6$ $4.8 \pm 13.7$ $6.4 \pm 17.9$ $0.0031$ $10.767$ $6.9 \pm 15.5$ $7.8 \pm 19.5$ $37.3 \pm 37.4$ <0.001send starch $8.8 \pm 21.21$ $1.6 \pm 22.01$ $1.9 \pm 22.6$ $4.7 \pm 14.7$ $0.0031$ $0.1767$ $6.9 \pm 15.5$ $7.8 \pm 19.5$ $37.3 \pm 37.4$ <0.001send and vegetables $8.4 \pm 17.2$ $10.3 \pm 22.01$ $1.9 \pm 22.6$ $1.7 \pm 14.7$ $0.0031$ $0.0051$ $0.1767$ $6.9 \pm 15.5$ $7.6 \pm 13.4$ $1.28 \pm 18.2$ $16.4 \pm 23.3$ $5.0 \pm 17.2$ $0.0011$ set and dairy products $8.4 \pm 17.2$ $10.3 \pm 12.4$ $0.0011$ $19.7 \pm 12.2$ $7.7 \pm 15.4$ $9.1 \pm 14.2$ $<0.0011$ set and dairy products $8.4 \pm 17.2$ $10.3 \pm 17.4$ $0.0021$ $5.2 \pm 12.6$ $0.025$ $5.6 \pm 12.6$ $0.0025$ set and diviry inducts $8.4 \pm 17.2$ $10.3 \pm 17.4$ $0.0011$ $10.4 \pm 16.5$ $8.8 \pm 14.2$ $9.1 \pm 14.2$ <th>d dishesad dishes<math>52.8 \pm 1710</math><math>164 \pm 145.8</math><math>49.7 \pm 711</math><math>33.2 \pm 483</math><math>&lt;0001</math><math>&lt;0001</math><math>118.2 \pm 132.5</math><math>130.0 \pm 127.9</math><math>50.9 \pm 62.2</math><math>42.6 \pm 50.9</math><math>&lt;0001</math>arg boles and starch<math>55 \pm 15.8</math><math>64 \pm 192</math><math>10.9 \pm 23.5</math><math>11.9 \pm 19.8</math><math>00001</math><math>18.2 \pm 13.5</math><math>83.2 \pm 34.9</math><math>10.3 \pm 16.7</math><math>02.90</math>arch yegetables, and tarch<math>55 \pm 54.6</math><math>34.8 \pm 65.6</math><math>48.6 \pm 68.2</math><math>49.2 \pm 70.4</math><math>&lt;0001</math><math>00013</math><math>19.7 \pm 34.6</math><math>83.2 \pm 33.3</math><math>29.0 \pm 40.2</math><math>30.3 \pm 38.7</math><math>&lt;0001</math>arch yegetables, and tarch<math>55 \pm 12.6</math><math>14.2 \pm 79.9</math><math>50.5 \pm 69.1</math><math>60.4 \pm 63.3</math><math>&lt;0001</math><math>00013</math><math>19.7 \pm 34.6</math><math>83.2 \pm 33.0</math><math>37.4 \pm 10.3</math><math>60.2 \pm 17.2</math><math>0003</math>arch vegetables<math>8.5 \pm 21.7</math><math>14.2 \pm 779</math><math>50.5 \pm 69.1</math><math>60.4 \pm 63.3</math><math>&lt;0001</math><math>0001</math><math>19.7 \pm 27.1</math><math>18.8 \pm 13.7</math><math>00.2 \pm 10.2</math><math>00.2</math>art and vegetables<math>8.5 \pm 21.3</math><math>17.2 \pm 10.7</math><math>10.3 \pm 10.7</math><math>0001</math><math>0001</math><math>19.7 \pm 27.1</math><math>18.3 \pm 10.3</math><math>10.4 \pm 23.6</math><math>10.4 \pm 23.6</math>art and diriy products<math>8.4 \pm 17.2</math><math>10.3 \pm 24.0</math><math>15.4</math><math>50.2 \pm 10.6</math><math>0001</math><math>10.1 \pm 16.5</math><math>8.2 \pm 12.6</math><math>0001</math>art and diriy products<math>8.4 \pm 17.2</math><math>10.3 \pm 12.4</math><math>10.2 \pm 12.6</math><math>13.1 \pm 21.9</math><math>10.2 \pm 12.6</math><math>10.4 \pm 23.6</math><math>11.4 \pm 6.6</math>art and vegetables<math>8.5 \pm 15.1</math><math>17.4 \pm 16.7</math><math>60.2 \pm 14.6</math><math>50.2 \pm 12.6</math><math>10.2 \pm 14.2</math><math>10.2 \pm 14.2</math><math>10.2 \pm</math></th> <th>Pastries</th> <th><math>\pm 1</math></th> <th>+1</th> <th>+1</th> <th><math>29.1 \pm 32.6</math></th> <th>&lt; 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getables and starch $1528 \pm 171.0$ $16.4 \pm 145.8$ $49.7 \pm 71.1$ $33.2 \pm 48.3$ $<0.001$ $<0.001$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 14.9$ $10.3 \pm 16.7$ $0.2095$ arch, vegetables, and meat $5.6 \pm 15.8$ $6.4 \pm 19.2$ $10.9 \pm 23.3$ $11.9 \pm 19.8$ $0.0016$ $0.0012$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 14.9$ $10.3 \pm 16.7$ $0.2095$ arch, vegetables, and meat $25.8 \pm 54.6$ $48.8 \pm 63.5$ $48.6 \pm 33.2$ $11.3 \pm 27.1$ $48.8 \pm 13.7$ $6.4 \pm 17.9$ $0.0011$ $10.021$ $5.7 \pm 14.0$ $6.9 \pm 14.5$ $8.3 \pm 4.30.3$ $3.7 \pm 37.3$ $< 0.001$ and vegetables $8.6 \pm 21.3$ $7.6 \pm 20.1$ $9.6 \pm 26.6$ $4.7 \pm 14.7$ $0.0721$ $0.2485$ $6.1 \pm 12.2$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $5.6 \pm 12.6$ $0.0012$ $8.6 \pm 21.3$ $7.6 \pm 20.1$ $9.6 \pm 26.6$ $4.7 \pm 14.7$ $0.0721$ $0.2485$ $6.1 \pm 12.2$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $5.6 \pm 12.6$ $0.0012$ $8.6 \pm 21.3$ $7.6 \pm 20.1$ $9.6 \pm 26.6$ $4.7 \pm 14.7$ $0.0721$ $0.2485$ $6.1 \pm 12.2$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $5.6 \pm 12.6$ $0.0012$ $8.6 \pm 21.3$ $7.6 \pm 21.0$ $10.0 \pm 17.0$ $6.0 \pm 116.7$ $5.2 \pm 12.6$ $7.6 \pm 13.4$ $10.8 \pm 18.7$ $10.9 \pm 18.2$ $10.9 \pm 13.2$ $0.0011$ $8.6 \pm 21.5$ $5.7 \pm 15.3$ $6.0 \pm 17.6$ $5.2 \pm 12.6$ $7.7 \pm 18.7$ $10.9 \pm 13.2$ $9.1 \pm 14.2$ $0.0011$ $8.6 \pm 21.5$ $5.7 \pm 15.3$ $6.0 \pm 17.6$ $5.2 \pm 12.6$ $7$	getables and starch $152 \pm 171.0$ $1164 \pm 145.8$ $497 \pm 71.1$ $332 \pm 48.3$ $<0001$ $<0001$ $1182 \pm 132.5$ $1300 \pm 127.9$ $50.9 \pm 62.2$ $42.6 \pm 50.9$ $<0001$ sity products and starch $5.6 \pm 15.8$ $6.4 \pm 19.2$ $1092 \pm 23.3$ $11.9 \pm 34.6$ $10.23$ $33.2 \pm 14.9$ $10.23 \pm 16.7$ $0.2001$ and starch $5.6 \pm 15.8$ $6.4 \pm 19.2$ $10.9 \pm 23.3$ $11.9 \pm 13.7$ $6.4 \pm 17.9$ $00011$ $00011$ $9.7 \pm 13.4$ $6.9 \pm 15.7$ $3.00 \pm 410.2$ $30.3 \pm 38.7$ $<0001$ and vegtables $8.5 \pm 20.7$ $11.3 \pm 27.1$ $4.8 \pm 13.7$ $6.4 \pm 17.9$ $00051$ $0.1767$ $6.9 \pm 15.2$ $7.7 \pm 19.5$ $3.7 \pm 10.3$ $6.9 \pm 17.2$ $0.003$ and vegtables $8.6 \pm 21.3$ $7.6 \pm 20.1$ $9.6 \pm 26.6$ $4.7 \pm 14.7$ $0.0011$ $0.0011$ $5.2 \pm 12.6$ $7.2 \pm 10.3$ $6.9 \pm 17.2$ $0.003$ and vegtables $8.6 \pm 21.3$ $7.6 \pm 20.1$ $9.6 \pm 26.6$ $4.7 \pm 14.7$ $0.0021$ $0.2485$ $61 \pm 12.2$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $5.6 \pm 12.6$ $0.003$ and adity products $8.4 \pm 17.2$ $10.3 \pm 22.6$ $1.17.0 \pm 19.7$ $10.4 \pm 22.6$ $1.17.0 \pm 12.7$ $10.9 \pm 17.2$ $10.7 \pm 16.7$ $0.001$ and adity fish $17.8 \pm 22.3$ $11.2 \pm 17.0$ $10.0 \pm 17.7$ $0.229$ $4.7 \pm 14.2$ $0.001$ $5.2 \pm 12.6$ $7.6 \pm 14.2$ $3.7 \pm 14.2$ $0.001$ and adity products $8.6 \pm 15.1$ $10.2 \pm 16.7$ $10.7 \pm 16.7$ $10.2 \pm 12.6$ $10.4 \pm 12.6$	Mixed dishes														
introducts and starch $56 \pm 158$ $64 \pm 192$ $109 \pm 235$ $119 \pm 198$ $0.0046$ $0.0012$ $577 \pm 14,0$ $69 \pm 145$ $8.3 \pm 14,9$ $10.3 \pm 167$ $0.2095$ arch, vegetables, and meat $25.8 \pm 54.6$ $34.8 \pm 63.6$ $48.6 \pm 68.2$ $492 \pm 704$ $6.0011$ $197 \pm 34.6$ $183 \pm 33.3$ $290 \pm 40.2$ $30.3 \pm 38.7$ $<0.0011$ and starch $23.8 \pm 35.1$ $44.2 \pm 79.9$ $50.5 \pm 69.1$ $60.4 \pm 17.9$ $0.0061$ $0.0011$ $192 \pm 27.1$ $178 \pm 128$ $36.4 \pm 17.2$ $0.0031$ and starch $8.5 \pm 21.3$ $7.6 \pm 20.1$ $9.6 \pm 26.6$ $4.7 \pm 14.7$ $0.00721$ $0.2185$ $61.4 \pm 12.2$ $77 \pm 15.4$ $91.1 \pm 16.5$ $56.4 \pm 12.2$ $0.0031$ and dairy products $8.4 \pm 17.2$ $10.3 \pm 24.0$ $16.9 \pm 31.2$ $21.0 \pm 29.7$ $20.01$ $<0.0011$ $91.2 \pm 12.2$ $77 \pm 18.7$ $10.9 \pm 13.2$ $10.1 \pm 14.2$ $0.0012$ and dairy products $8.4 \pm 17.2$ $10.3 \pm 16.0$ $16.9 \pm 31.2$ $21.0 \pm 29.7$ $<0.001$ $<0.001$ $52.4 \pm 12.6$ $7.6 \pm 12.6$ $0.0012$ and dairy fish $17.0 \pm 19.7$ $10.3 \pm 16.9$ $5.8 \pm 12.9$ $0.001$ $<0.001$ $52.4 \pm 12.6$ $7.5 \pm 18.7$ $10.9 \pm 12.6$ $0.0012$ and tairy fish $8.5 \pm 15.1$ $5.7 \pm 15.3$ $5.2 \pm 12.6$ $0.001$ $<0.001$ $10.1 \pm 12.2$ $7.7 \pm 18.7$ $10.9 \pm 13.2$ $7.5 \pm 11.1$ $0.0012$ and tairy fish $8.5 \pm 15.1$ $5.7 \pm 15.3$ $6.0 \pm 17.2$ $6.0 \pm 14.7$ $5.2 \pm 12.6$	in products and starch $56 \pm 158$ $64 \pm 192$ $109 \pm 235$ $119 \pm 108$ $0.0046$ $0.0012$ $57 \pm 14.0$ $69 \pm 14.5$ $83 \pm 34.4$ $10.3 \pm 16.7$ $0.203$ arch, vegetables, and meat $258 \pm 546$ $34.8 \pm 63.6$ $48.6 \pm 68.2$ $49.2 \pm 70.4$ $<0.001$ $19.7 \pm 34.6$ $18.3 \pm 33.3$ $29.0 \pm 40.2$ $30.3 \pm 38.7$ $<0.001$ ared starch $258 \pm 35.1$ $44.2 \pm 79.9$ $50.5 \pm 50.1$ $50.4 \pm 63.3$ $<0.001$ $10.013$ $19.7 \pm 34.6$ $18.3 \pm 33.3$ $29.0 \pm 40.2$ $30.3 \pm 38.7$ $<0.001$ and starch $23.8 \pm 35.1$ $44.2 \pm 21.3$ $7.6 \pm 20.1$ $9.6 \pm 21.3$ $7.6 \pm 20.1$ $9.64 \pm 17.2$ $0.0021$ $(-112.2)$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $56.4 \pm 12.3$ $0.0031$ and variables $8.6 \pm 21.3$ $7.6 \pm 20.1$ $10.6 \pm 21.6$ $0.0011$ $(-10.2 \pm 12.2)$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $56.4 \pm 12.3$ $0.0012$ and dairy products $8.4 \pm 17.2$ $10.4 \pm 22.6$ $13.1 \pm 21.9$ $5.8 \pm 12.9$ $0.0001$ $(-10.01)$ $19.8 \pm 20.4$ $17.5 \pm 18.7$ $10.9 \pm 16.6$ $0.0011$ ntatt $17.0 \pm 19.7$ $10.4 \pm 22.6$ $13.1 \pm 21.9$ $5.8 \pm 12.9$ $0.0011$ $(-10.2 \pm 12.2)$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $5.6 \pm 17.2$ $0.0011$ nt tatt $17.5 \pm 18.7$ $10.4 \pm 22.6$ $13.1 \pm 21.9$ $5.3 \pm 12.9$ $0.0011$ $10.1 \pm 16.5$ $7.2 \pm 18.7$ $10.9 \pm 16.6$ $7.5 \pm 11.1$ $0.0001$ nt tatt $8.5 \pm 15.1$ $12.4 \pm 22.3$ $4.7 \pm 14.2$ <th>Vegetables and starch</th> <th>152.8 + 171.0</th> <th>116.4 + 145.8</th> <th>+</th> <th>+</th> <th>&lt; 0.001</th> <th>&lt;0.001</th> <th>+</th> <th>130.0 + 127.9</th> <th>+</th> <th>+</th> <th>&lt; 0.001</th> <th>&lt;0.001</th>	Vegetables and starch	152.8 + 171.0	116.4 + 145.8	+	+	< 0.001	<0.001	+	130.0 + 127.9	+	+	< 0.001	<0.001		
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The formation of the f	archvegetables, and starch3.8.8 ± 2.5.3 at 42.2 ± 70.95.0.5 ± 6.91 5.0.5 ± 6.916.0.4 ± 6.3.3 6.0.016.0.001 c.0.00119.1 ± 2.2.3 19.1 ± 2.2.33.2.9 ± 4.2.2 3.7.3 ± 3.7.43.0.4 ± 5.3.0 3.7.3 ± 10.33.7.2 ± 10.3 6.9 ± 17.20.001 0.00119.2 ± 2.7.117.8 ± 2.8.8 3.7.4 ± 10.30.012 ± 10.2 6.9 ± 17.20.001 0.0010.001510.2 ± 2.7.117.8 ± 2.8.8 3.7.4 ± 10.30.1.2 ± 10.3 6.9 ± 17.20.032 6.1 ± 1.2.20.013 7.6 ± 13.417.1 ± 11.20.1.2 ± 10.3 6.9 ± 17.20.1.2 ± 10.2 6.0 ± 17.60.1.2 ± 12.2 6.0 ± 17.60.1.2 ± 12.2 6.0 ± 13.40.1.2 ± 12.2 7.7 ± 15.40.021 ± 12.2 9.1 ± 14.20.001 6.0 ± 13.4and dairy products8.4 ± 17.210.3 ± 24.010.0 ± 17.06.2 ± 16.00.0010.00119.8 ± 20.417.5 ± 18.710.9 ± 13.09.1 ± 14.20.001ultish8.5 ± 15.15.7 ± 15.36.0 ± 15.45.9 ± 20.70.42990.327.2 ± 16.16.0 ± 14.76.2 ± 14.03.9 ± 8.20.011ultish8.5 ± 15.15.7 ± 15.3<	Fund products and starting		- 1	- 1	- 1	0.0010	2100.0	I -	- 1	- 1	-	0.02.0	10000 0		
i and starch $2.38 \pm 35.1$ $44.2 \pm 79.9$ $50.5 \pm 69.1$ $60.4 \pm 63.3$ $6.0001$ $19.2 \pm 27.1$ $17.8 \pm 28.8$ $36.4 \pm 53.0$ $37.3 \pm 37.4$ $6.0001$ eat and vegetables $8.5 \pm 20.7$ $11.3 \pm 27.1$ $4.8 \pm 13.7$ $6.4 \pm 17.9$ $0.0051$ $0.1767$ $6.9 \pm 15.5$ $7.8 \pm 19.5$ $37.3 \pm 13.4$ $6.0001$ s and dairy products $8.4 \pm 17.2$ $10.3 \pm 24.0$ $16.9 \pm 31.2$ $21.0 \pm 29.7$ $6.0001$ $<0.0021$ $6.24165$ $5.2 \pm 12.6$ $0.17 \pm 16.5$ $5.6 \pm 12.6$ $0.0021$ and tairy products $8.4 \pm 17.2$ $10.3 \pm 24.0$ $16.9 \pm 31.2$ $21.0 \pm 29.7$ $<0.001$ $<0.001$ $5.2 \pm 12.6$ $7.7 \pm 15.4$ $9.1 \pm 16.5$ $5.6 \pm 12.6$ $0.0021$ and tairy products $8.4 \pm 17.2$ $10.3 \pm 24.0$ $16.9 \pm 31.2$ $21.0 \pm 29.7$ $<0.001$ $<0.001$ $5.2 \pm 12.6$ $7.6 \pm 13.4$ $12.8 \pm 18.2$ $16.4 \pm 23.3$ $<0.001$ and tairy products $8.4 \pm 17.2$ $10.3 \pm 24.0$ $16.9 \pm 17.0$ $10.0 \pm 17.0$ $6.021$ $6.001$ $<0.001$ $4.1 \pm 16.5$ $8.8 \pm 14.2$ $9.1 \pm 14.2$ $6.001$ $17.8 \pm 22.3$ $11.2 \pm 17.0$ $10.0 \pm 17.0$ $6.2 \pm 16.0$ $6.024$ $6.001$ $6.001$ $4.1 \pm 16.5$ $8.8 \pm 14.2$ $9.1 \pm 14.2$ $6.001$ $17.8 \pm 22.3$ $11.8 \pm 22.3$ $11.2 \pm 16.5$ $6.0 \pm 14.7$ $6.2 \pm 14.0$ $3.9 \pm 8.2$ $0.001$ $11.8 \pm 22.3$ $3.11 \pm 216.7$ $3.12 \pm 216.7$ $10.1 \pm 16.5$ $3.2 \pm 214.2$ $0.2024$ $11.1 $ min	i and starch $2.3.8 \pm 35.1$ $44.2 \pm 79.9$ $50.5 \pm 60.1$ $60.4 \pm 63.3$ $<0.001$ $9.12 \pm 27.1$ $17.8 \pm 28.8$ $36.4 \pm 53.0$ $37.3 \pm 37.4$ $<0.001$ eat and vegetables $8.5 \pm 20.7$ $11.3 \pm 27.1$ $4.8 \pm 13.7$ $6.4 \pm 17.9$ $0.0051$ $0.1767$ $6.9 \pm 15.5$ $7.8 \pm 19.5$ $3.7 \pm 10.3$ $6.9 \pm 17.2$ $0.003$ and airy products $8.4 \pm 17.2$ $10.3 \pm 24.0$ $16.9 \pm 31.2$ $21.0 \pm 29.7$ $<0.001$ $<0.001$ $5.2 \pm 12.6$ $7.6 \pm 13.4$ $12.8 \pm 18.2$ $16.4 \pm 23.3$ $<0.001$ and ity products $8.4 \pm 17.2$ $10.3 \pm 24.0$ $16.9 \pm 31.2$ $21.0 \pm 29.7$ $<0.001$ $<0.001$ $5.2 \pm 12.6$ $7.6 \pm 13.4$ $12.8 \pm 18.2$ $16.4 \pm 23.3$ $<0.001$ and ity fish $17.0 \pm 197$ $14.4 \pm 22.6$ $13.1 \pm 21.9$ $5.8 \pm 12.9$ $<0.001$ $<0.001$ $<0.001$ $14.1 \pm 16.5$ $8.8 \pm 14.2$ $9.1 \pm 14.2$ $<0.001$ $17.8 \pm 22.3$ $11.2 \pm 17.0$ $10.0 \pm 17.0$ $6.2 \pm 16.0$ $<0.001$ $<0.001$ $<0.001$ $14.1 \pm 16.5$ $8.8 \pm 14.2$ $9.3 \pm 8.2$ $0.001$ $117.8 \pm 22.3$ $11.2 \pm 17.0$ $10.0 \pm 17.0$ $6.2 \pm 16.0$ $<0.001$ $<0.001$ $10.14.1 \pm 16.58.8 \pm 14.29.1 \pm 14.2<0.001118.85.7 \pm 15.15.7 \pm 15.36.0 \pm 15.45.9 \pm 20.70.42990.327.2 \pm 16.16.0 \pm 14.76.2 \pm 14.0>9.1 \pm 28.20.001110.1  mat meat38.1 \pm 35.647.9 \pm 41.151.7 \pm 44$	Starch, vegetables, and meat	± 8.02	$34.8 \pm 03.0$	ΗI	Η	<0.001	0.0013	+I	Η	ŧΙ	ŧΙ	<0.001	0.0027		
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$8.5 \pm 15.1$ $5.7 \pm 15.3$ $6.0 \pm 15.4$ $5.9 \pm 20.7$ $0.4299$ $0.32$ $7.2 \pm 16.1$ $6.0 \pm 14.7$ $6.2 \pm 14.0$ $3.9 \pm 8.2$ $0.0312$ $8.5 \pm 15.1$ $5.7 \pm 15.3$ $6.0 \pm 15.4$ $5.9 \pm 20.7$ $0.4299$ $0.32$ $7.2 \pm 16.1$ $6.0 \pm 14.7$ $6.2 \pm 14.0$ $3.9 \pm 8.2$ $0.0312$ $38.1 \pm 35.0$ $42.3 \pm 37.5$ $47.9 \pm 41.1$ $51.7 \pm 44.2$ $0.0984$ $0.0142$ $30.0 \pm 24.9$ $31.0 \pm 22.6$ $30.7 \pm 23.8$ $29.7 \pm 24.2$ $0.9245$ $31.4 \pm 28.9$ $33.9 \pm 32.6$ $29.11 \pm 31.5$ $27.5 \pm 33.0$ $0.1231$ $0.2934$ $20.7 \pm 17.1$ $22.7 \pm 19.2$ $20.7 \pm 24.2$ $0.9229$ $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.8683$ $0.6918$ $29.0 \pm 31.1$ $26.1 \pm 27.8$ $27.6 \pm 20.9$ $0.2829$ $16.6 \pm 21.7$ $16.6 \pm 21.5$ $12.8 \pm 17.2$ $0.345$ $0.2085 18.3 \pm 17.4$ $15.1 \pm 15.5$ $14.3 \pm 17.1$ $9.7 \pm 10.5$ $0.0039$ $24.8 \pm 25.5$ $31.4 \pm 34.0$ $33.4 \pm 33.6$ $0.9025 < 0.001$ $15.5 \pm 15.5$ $16.6 \pm 16.1$ $20.1 \pm 18.0$ <	$8.5 \pm 15.1$ $5.7 \pm 15.3$ $6.0 \pm 15.4$ $5.9 \pm 20.7$ $0.4299$ $0.32$ $7.2 \pm 16.1$ $6.0 \pm 14.7$ $6.2 \pm 14.0$ $3.9 \pm 8.2$ $0.031$ $8.5 \pm 15.1$ $5.7 \pm 15.3$ $6.0 \pm 15.4$ $5.9 \pm 20.7$ $0.4299$ $0.32$ $7.2 \pm 16.1$ $6.0 \pm 14.7$ $6.2 \pm 14.0$ $3.9 \pm 8.2$ $0.031$ $38.1 \pm 35.0$ $42.3 \pm 37.5$ $47.9 \pm 41.1$ $51.7 \pm 44.2$ $0.0984$ $0.0142$ $30.0 \pm 24.9$ $31.0 \pm 22.6$ $30.7 \pm 23.8$ $29.7 \pm 24.2$ $0.924$ $31.4 \pm 28.9$ $33.9 \pm 32.6$ $29.1 \pm 31.5$ $27.5 \pm 33.0$ $0.1231$ $0.2934$ $20.7 \pm 17.1$ $22.7 \pm 19.2$ $20.1 \pm 18.3$ $22.6 \pm 20.9$ $0.232$ $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.8683$ $20.7 \pm 31.1$ $26.1 \pm 27.8$ $22.9 \pm 25.1$ $21.6 \pm 19.1$ $0.278$ $16.6 \pm 20.0$ $16.9 \pm 17.9$ $16.6 \pm 21.5$ $12.8 \pm 17.2$ $0.345$ $20.7 \pm 27.8$ $22.9 \pm 25.1$ $21.6 \pm 19.1$ $0.278$ $16.6 \pm 220.0$ $16.9 \pm 17.2$ $0.34 \pm 33.6$ $0.0025 < 0.001$ $15.5 \pm 15.5$ $14.3 \pm 17.4$ $9.7$	Eatty fieh	178 + 373	+	+	+	/0.001	/0001	+	+	+ 1	+ 1	2000.0	0.0003		
	8.5 $\pm$ 15.1       5.7 $\pm$ 15.3       6.0 $\pm$ 15.4       5.9 $\pm$ 20.7       0.4299       0.52       7.2 $\pm$ 16.1       6.0 $\pm$ 14.7       6.2 $\pm$ 14.0       5.9 $\pm$ 8.2       0.031         38.1 $\pm$ 35.0       42.3 $\pm$ 37.5       47.9 $\pm$ 41.1       51.7 $\pm$ 44.2       0.0984       0.0142       30.0 $\pm$ 24.9       31.0 $\pm$ 22.6       30.7 $\pm$ 23.8       29.7 $\pm$ 24.2       0.924         31.4 $\pm$ 28.9       33.9 $\pm$ 32.6       29.1 $\pm$ 31.5       27.5 $\pm$ 33.0       0.1231       0.2934       20.7 $\pm$ 17.1       22.7 $\pm$ 19.2       20.1 $\pm$ 18.3       22.6 $\pm$ 20.9       0.282         40.1 $\pm$ 42.2       38.3 $\pm$ 46.3       36.5 $\pm$ 40.4       37.6 $\pm$ 42.2       0.345       0.2035       18.3 $\pm$ 17.4       15.1 $\pm$ 18.3       22.6 $\pm$ 20.9       0.282         16.6 $\pm$ 21.7       16.6 $\pm$ 21.5       12.8 $\pm$ 17.2       0.345       0.2035       18.3 $\pm$ 17.4       15.1 $\pm$ 15.5       14.3 $\pm$ 17.1       9.7 $\pm$ 10.5       0.003         24.8 $\pm$ 25.5       31.4 $\pm$ 34.0       33.4 $\pm$ 33.6       0.0025       <0.001       15.5 $\pm$ 15.5       16.6 $\pm$ 16.1       20.8 $\pm$ 19.6       20.1 $\pm$ 18.0       0.003	rany nan		ŀ	- I -	- I -	100.0/	100.0~	- I -	•	÷	•	0.000.0	C000.0		
$38.1 \pm 35.0$ $42.3 \pm 37.5$ $47.9 \pm 41.1$ $51.7 \pm 44.2$ $0.0984$ $0.0142$ $30.0 \pm 24.9$ $31.0 \pm 22.6$ $30.7 \pm 23.8$ $29.7 \pm 24.2$ $0.9245$ $31.4 \pm 28.9$ $33.9 \pm 32.6$ $29.1 \pm 31.5$ $27.5 \pm 33.0$ $0.1231$ $0.2934$ $20.7 \pm 17.1$ $22.7 \pm 19.2$ $20.1 \pm 18.3$ $22.6 \pm 20.9$ $0.2829$ $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.8683$ $0.6918$ $29.0 \pm 31.1$ $26.1 \pm 27.8$ $22.9 \pm 25.1$ $21.6 \pm 19.1$ $0.2781$ $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.8683$ $0.6918$ $29.0 \pm 31.1$ $26.1 \pm 27.8$ $27.9 \pm 25.1$ $21.6 \pm 19.1$ $0.2781$ $16.6 \pm 17.9$ $16.6 \pm 21.5$ $12.8 \pm 17.2$ $0.345$ $0.2085$ $18.3 \pm 17.4$ $15.1 \pm 15.5$ $14.3 \pm 17.1$ $9.7 \pm 10.5$ $0.0035$ $24.8 \pm 25.5$ $31.4 \pm 34.0$ $39.7 \pm 33.6$ $0.0025 < 0.001$ $15.5 \pm 15.5$ $16.6 \pm 16.1$ $20.1 \pm 18.0$ $0.0039$	$38.1 \pm 35.0$ $42.3 \pm 37.5$ $47.9 \pm 41.1$ $51.7 \pm 44.2$ $0.0984$ $0.0142$ $30.0 \pm 24.9$ $31.0 \pm 22.6$ $30.7 \pm 23.8$ $29.7 \pm 24.2$ $0.924$ $31.4 \pm 28.9$ $33.9 \pm 32.6$ $29.1 \pm 31.5$ $27.5 \pm 33.0$ $0.1231$ $0.2934$ $20.7 \pm 17.1$ $22.7 \pm 19.2$ $20.1 \pm 18.3$ $22.6 \pm 20.9$ $0.282$ $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.8683$ $0.618$ $29.0 \pm 31.1$ $26.1 \pm 27.8$ $22.9 \pm 25.1$ $21.6 \pm 19.1$ $0.278$ $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.345$ $0.2938$ $18.3 \pm 17.4$ $15.1 \pm 12.5$ $14.3 \pm 17.1$ $0.77 \pm 10.5$ $0.0025$ $16.6 \pm 20.0$ $16.9 \pm 17.2$ $0.34 \pm 33.6$ $9.07 \pm 33.6$ $0.0025 < 0.001$ $15.5 \pm 15.5$ $16.6 \pm 19.6$ $20.1 \pm 18.0$ $0.003$ $24.8 \pm 25.5$ $31.4 \pm 34.0$ $39.7 \pm 33.6$ $0.0025 < 0.001$ $15.5 \pm 15.5$ $16.6 \pm 19.6$ $20.1 \pm 18.0$ $0.003$	Shellfish	$1.61 \pm 0.8$	$5.7 \pm 15.3$	ŧΙ	+1	0.4299	0.32	+1	+1	+I	+1	0.0312	0.0122		
$38.1 \pm 35.0  42.3 \pm 37.5  47.9 \pm 41.1  51.7 \pm 44.2  0.0984  0.0142  30.0 \pm 24.9  31.0 \pm 22.6  30.7 \pm 23.8  29.7 \pm 24.2  0.9245$ $31.4 \pm 28.9  33.9 \pm 32.6  29.1 \pm 31.5  27.5 \pm 33.0  0.1231  0.2934  20.7 \pm 17.1  22.7 \pm 19.2  20.1 \pm 18.3  22.6 \pm 20.9  0.2829$ $40.1 \pm 42.2  38.3 \pm 46.3  36.5 \pm 40.4  37.6 \pm 42.2  0.8683  0.6918  29.0 \pm 31.1  26.1 \pm 27.8  22.9 \pm 25.1  21.6 \pm 19.1  0.2781$ $16.6 \pm 20.0  16.9 \pm 17.9  16.6 \pm 21.5  12.8 \pm 17.2  0.345  0.2085  18.3 \pm 17.4  15.1 \pm 15.5  14.3 \pm 17.1  9.7 \pm 10.5  0.003$ $24.8 \pm 25.5  31.4 \pm 34.0  33.4 \pm 33.6  39.7 \pm 33.6  0.0025 < 0.001  15.5 \pm 15.5  16.6 \pm 16.1  20.8 \pm 19.6  20.1 \pm 18.0  0.0039$	$38.1 \pm 35.0  42.3 \pm 37.5  47.9 \pm 41.1  51.7 \pm 44.2  0.0984  0.0142  30.0 \pm 24.9  31.0 \pm 22.6  30.7 \pm 23.8  29.7 \pm 24.2  0.924  31.4 \pm 28.9  33.9 \pm 32.6  29.1 \pm 31.5  27.5 \pm 33.0  0.1231  0.2934  20.7 \pm 17.1  22.7 \pm 19.2  20.1 \pm 18.3  22.6 \pm 20.9  0.282  40.1 \pm 42.2  38.3 \pm 46.3  36.5 \pm 40.4  37.6 \pm 42.2  0.8683  0.6918  29.0 \pm 31.1  26.1 \pm 27.8  22.9 \pm 25.1  21.6 \pm 19.1  0.278  16.6 \pm 20.0  16.9 \pm 17.9  16.6 \pm 21.5  12.8 \pm 17.2  0.345  0.2085  18.3 \pm 17.4  15.1 \pm 15.5  14.3 \pm 17.1  9.7 \pm 10.5  0.003  24.8 \pm 25.5  31.4 \pm 34.0  33.4 \pm 33.6  39.7 \pm 33.6  0.0025 < 0.001  15.5 \pm 15.5  16.6 \pm 16.1  20.8 \pm 19.6  20.1 \pm 18.0  0.003$	Ruminant meat														
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ 31.4 \pm 28.9  33.9 \pm 32.6  29.1 \pm 31.5  27.5 \pm 33.0  0.1231  0.2934  20.7 \pm 17.1  22.7 \pm 19.2  20.1 \pm 18.3  22.6 \pm 20.9  0.282 \\ 40.1 \pm 42.2  38.3 \pm 46.3  36.5 \pm 40.4  37.6 \pm 42.2  0.8683  0.6918  29.0 \pm 31.1  26.1 \pm 27.8  22.9 \pm 25.1  21.6 \pm 19.1  0.278 \\ 16.6 \pm 20.0  16.9 \pm 17.9  16.6 \pm 21.5  12.8 \pm 17.2  0.345  0.2085  18.3 \pm 17.4  15.1 \pm 15.5  14.3 \pm 17.1  9.7 \pm 10.5  0.003 \\ 24.8 \pm 25.5  31.4 \pm 34.0  33.4 \pm 33.6  39.7 \pm 33.6  0.0025 < 0.001  15.5 \pm 15.5  16.6 \pm 16.1  20.8 \pm 19.6  20.1 \pm 18.0  0.003 \\ \end{array} $	Ruminant meat	+	+1	+1	+	0.0984	0.0142	+1	+1	+ 23	+1	0.9245	0.8696		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Pork. poultry, and eggs														
ame $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.8683$ $0.6918$ $29.0 \pm 31.1$ $26.1 \pm 27.8$ $22.9 \pm 25.1$ $21.6 \pm 19.1$ $0.2781$ $16.6 \pm 20.0$ $16.9 \pm 17.9$ $16.6 \pm 21.5$ $12.8 \pm 17.2$ $0.345$ $0.2085$ $18.3 \pm 17.4$ $15.1 \pm 15.5$ $14.3 \pm 17.1$ $9.7 \pm 10.5$ $0.003$ $24.8 \pm 25.5$ $31.4 \pm 34.0$ $33.4 \pm 33.6$ $39.7 \pm 33.6$ $0.0025 < 0.001$ $15.5 \pm 15.5$ $16.6 \pm 16.1$ $20.8 \pm 18.0$ $0.0039$	ame $40.1 \pm 42.2$ $38.3 \pm 46.3$ $36.5 \pm 40.4$ $37.6 \pm 42.2$ $0.8683$ $0.6918$ $29.0 \pm 31.1$ $26.1 \pm 27.8$ $22.9 \pm 25.1$ $21.6 \pm 19.1$ $0.278$ $16.6 \pm 20.0$ $16.9 \pm 17.9$ $16.6 \pm 21.5$ $12.8 \pm 17.2$ $0.345$ $0.2085$ $18.3 \pm 17.4$ $15.1 \pm 15.5$ $14.3 \pm 17.1$ $9.7 \pm 10.5$ $0.003$ $24.8 \pm 25.5$ $31.4 \pm 34.0$ $33.4 \pm 33.6$ $39.7 \pm 33.6$ $0.0025 < 0.001$ $15.5 \pm 15.5$ $16.6 \pm 16.1$ $20.8 \pm 19.6$ $20.1 \pm 18.0$ $0.003$	Pork	$31.4 \pm 28.9$	$33.9 \pm 32.6$	+1	+1	0.1231	0.2934	$20.7 \pm 17.1$	$22.7 \pm 19.2$	$20.1 \pm 18.3$	$22.6 \pm 20.9$	0.2829	0.6638		
$16.6 \pm 20.0  16.9 \pm 17.9  16.6 \pm 21.5  12.8 \pm 17.2  0.345  0.2085  18.3 \pm 17.4  15.1 \pm 15.5  14.3 \pm 17.1  9.7 \pm 10.5  0.003  24.8 \pm 25.5  31.4 \pm 34.0  33.4 \pm 33.6  39.7 \pm 33.6  0.0025  <0.001  15.5 \pm 15.5  16.6 \pm 16.1  20.8 \pm 19.6  20.1 \pm 18.0  0.0039  = 10.6  10.1  10.$	$16.6 \pm 20.0  16.9 \pm 17.9  16.6 \pm 21.5  12.8 \pm 17.2  0.345  0.2085  18.3 \pm 17.4  15.1 \pm 15.5  14.3 \pm 17.1  9.7 \pm 10.5  0.003  24.8 \pm 25.5  31.4 \pm 34.0  33.4 \pm 33.6  39.7 \pm 33.6  0.0025  <0.001  15.5 \pm 15.5  16.6 \pm 16.1  20.8 \pm 19.6  20.1 \pm 18.0  0.003  0.$	Poultry, game	$40.1 \pm 42.2$	$38.3 \pm 46.3$	+1	+1	0.8683	0.6918	$29.0 \pm 31.1$	$26.1 \pm 27.8$	$22.9 \pm 25.1$	$21.6 \pm 19.1$	0.2781	0.1142		
$24.8 \pm 25.5  31.4 \pm 34.0  33.4 \pm 33.6  39.7 \pm 33.6  0.0025 < 0.001  15.5 \pm 15.5  16.6 \pm 16.1  20.8 \pm 19.6  20.1 \pm 18.0  0.0039 $	$24.8 \pm 25.5$ $31.4 \pm 34.0$ $33.4 \pm 33.6$ $39.7 \pm 33.6$ $0.0025 < 0.001$ $15.5 \pm 15.5$ $16.6 \pm 16.1$ $20.8 \pm 19.6$ $20.1 \pm 18.0$ $0.003$	Foos	16.6 + 20.0	+	+	+	0.345	0.2085	18.3 + 17.4	15.1 + 15.5	+	9.7 + 10.5	0.003	0.0008		
		Deli meat	748 + 755	+	+	+	0.0075	<0.001	+	166 + 161	+	20.1 + 18.0	0.0039	0.003		
			L	L	L	L	C700.0	100.02	L	L	L.	0.01 - 1.07	10000	000.0		

APPENDIX A (Continued)

		N	Men					Wo	Women			
Food group and food family High $(n = 98)$ I+ $(n = 297)$ I-	High $(n = 98)$	I+ $(n = 297)$		$(n = 275)$ Low $(n = 106)$ $P^2$	$P^2$	$T^{3}$	High $(n = 172)$	I+ $(n = 395)$	I- $(n = 386)$	High $(n = 172)$ I+ $(n = 395)$ I- $(n = 386)$ Low $(n = 189)$ $P^2$	$P^2$	$T^{3}$
Drinks												
Alcohol drinks	$242.2 \pm 263.0$	$259.3 \pm 276.7$	$282.5 \pm 325.0$	$242.2 \pm 263.0 \ 259.3 \pm 276.7 \ 282.5 \pm 325.0 \ 187.5 \pm 243.1$	0.0415		$0.2188  60.5 \pm 75.8$		$66.7 \pm 90.0$	$57.0 \pm 90.8$ $66.7 \pm 90.0$ $71.5 \pm 119.4$	0.4868	0.2656
Unsugared hot drinks	$401.4 \pm 359.6$	$379.7 \pm 311.8$	$401.4 \pm 359.6 \ 379.7 \pm 311.8 \ 323.7 \pm 286.2 \ 317.7 \pm 304.3$	$317.7 \pm 304.3$	0.074	0.0578	$0.0578 \ 490.7 \pm 454.9$		$405.1 \pm 294.1 \ 368.4 \pm 310.9$	$412.8 \pm 372.3$	0.102	0.1039
Light drinks	$9.0 \pm 50.7$	$9.0 \pm 50.7$ $8.7 \pm 39.6$ $14.5$	$14.5 \pm 88.1$	$34.2 \pm 116.7$	0.2103	0.1134	$0.1134  9.9 \pm 33.0$		$5.4 \pm 21.0$ $15.1 \pm 56.9$	$22.0 \pm 88.0$	0.0132	0.0756
Mineral water	$593.4 \pm 758.9$	$432.7 \pm 571.6$	$593.4 \pm 758.9 \ 432.7 \pm 571.6 \ 347.8 \pm 531.8 \ 395.3 \pm 536.7$	$395.3 \pm 536.7$	0.0067	0.0076	$0.0076 556.6 \pm 494.6$	$466.7 \pm 468.8$	$466.7 \pm 468.8 \ 412.9 \pm 459.0 \ 394.8 \pm 432.1$	$394.8 \pm 432.1$	0.0181	0.0017
Tap water	$298.6 \pm 431.0$	$330.5 \pm 520.9$	$422.5 \pm 515.3$	$298.6 \pm 431.0 \ 330.5 \pm 520.9 \ 422.5 \pm 515.3 \ 263.8 \pm 376.5$	0.0041		$375.6 \pm 608.1$	$384.0 \pm 478.7$	$345.0 \pm 446.6$	$0.9403 \ \ 375.6 \pm \ 608.1 \ \ 384.0 \pm \ 478.7 \ \ 345.0 \pm \ 446.6 \ \ 301.0 \pm \ 385.5$	0.4867	0.2994
<sup><math>1</math></sup> All values are means $\pm$ SDs. A high-nutritional-quality diet was defined as compliance with 3 properties: mean adequacy ratio (mean daily percentage of recommended intakes for 20 essential nutrients) above the median; mean excess ratio (mean daily percentage of the maximum recommended values nutrients for which the intake should be limited) below the median; and energy below the median.	SDs. A high-nutriti ss ratio (mean daily	ional-quality div	et was defined as the maximum rec	compliance with 5 commended values	3 properties s nutrients	: mean ac for which	lequacy ratio (me the intake shoul	ean daily percent d be limited) bel	age of recommer ow the median;	nded intakes for 20 and energy density	below the	nutrients) median.
Diets complying with 2, 1, or 0 properties were allocated to nutritional-quality categories of 1+, 1-, and Low, respectively. I, intermediate; INCA2, Individual and National Survey on Food Consumption.	r 0 properties were	allocated to nu	tritional-quality c	l-quality categories of $1+$ , $1-$ , and Low, respectively. I, intermediate; IN	-, and Lov	v, respect	ively. I, intermed	liate; INCA2, Inc	dividual and Nat	ional Survey on F	ood Consu	mption.

<sup>2</sup> P values were derived from a linear regression analysis used to compare (crude) means between the 4 classes, for each sex separately. <sup>3</sup> T values were derived from a test for linear trend (calculated only when the general P value was <0.05).

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APPENDIX B GHGEs in each food family in adults participating in INCA2 according to the nutritional quality of their diets<sup>/</sup>

Food group and food family Hi Fruit and vegetables 237 Fruit Veeetables 220											,	
	High $(n = 98)$	I+ $(n = 297)$	I- $(n = 275)$	Low $(n = 106)$	$P^2$	$T^3$ ]	High $(n = 172)$	I+ $(n = 395)$	I - (n = 386)	Low $(n = 189)$	$P^2$	$T^3$
		g CO <sub>2</sub> e/d	)2e/d					8 CO	$CO_2e/d$			
ables												
	$237.6 \pm 215.2$	$204.8 \pm 282.2$	$96.9 \pm 134.9$	$49.7 \pm 90.7$	< 0.001	<0.001	$288.3 \pm 277.3$	$196.5 \pm 226.2$	$136.4 \pm 181.1$	75.1 ± 87.9	<0.001 <	< 0.001
		$198.4 \pm 148.2$	+1	$98.2 \pm 96.9$	< 0.001	<0.001	$246.2 \pm 146.3$	$194.4 \pm 102.2$	$164.2 \pm 103.9$	$104.8 \pm 68.4$	<0.001 <	< 0.001
	$43.5 \pm 71.0$	$50.6 \pm 94.0$	$67.1 \pm 115.5$	$43.6 \pm 67.0$	0.011	0.5096	$57.2 \pm 69.7$		$59.5 \pm 76.1$	$49.8 \pm 69.8$	0.0561	0.7465
Nuts	$1.7 \pm 4.1$	$2.8 \pm 10.1$	$2.4 \pm 8.2$	$1.6 \pm 6.0$	0.1646	0.7228	$2.4 \pm 7.9$	$1.2 \pm 3.9$	$1.4 \pm 6.0$	$0.8 \pm 4.7$	0.0206	0.0088
Starches												
Refined starches 249	$9.8 \pm 136.1$	$243.8 \pm 139.5$	268.5	$196.4 \pm 119.5$	< 0.001	0.0171	$130.2 \pm 75.1$	+1	+1	$144.9 \pm 75.3$	0.001	0.0287
Unrefined starches 113	$113.5 \pm 104.1$	$99.3 \pm 99.5$	$84.0 \pm$	$85.9 \pm 68.1$	0.0519	0.0097	+1	+1	$74.3 \pm 55.4$	$61.4 \pm 45.3$	0.0294	0.0048
Dairy products												
Cheese 197	$7.9 \pm 169.5$		$232.3 \pm 204.4$	$191.8 \pm 169.2$	0.2901	0.9662	$127.3 \pm 89.3$	$129.6 \pm 108.1$	$148.6 \pm 120.4$	$147.1 \pm 119.5$	0.1583	0.0973
Milk 11 <sup>2</sup>	$4.3 \pm 174.8$		$143.7 \pm 295.7$	$109.7 \pm 198.1$	0.3236	0.724		$88.8 \pm 132.4$	$117.6 \pm 149.5$		0.0739	0.3443
Fresh dairy products 216	$5.4 \pm 255.4$	$216.4 \pm 255.4  167.0 \pm 205.4$	$99.6 \pm 141.6$	$113.8 \pm 140.1$	< 0.001		$268.8 \pm 179.0$	$209.7 \pm 138.7$	$132.4 \pm 122.8$	± 100.9	•	< 0.001
nimal fats	$50.3 \pm 62.3$	$92.3 \pm 105.7$	$94.7 \pm 101.3$	$113.4 \pm 131.8$	< 0.001	< 0.001	$52.7 \pm 52.1$	$75.4 \pm 63.4$	$90.3 \pm 76.6$	86.8 ± 72.1	<0.001 <	< 0.001
tts	$57.4 \pm 41.1$	$44.7 \pm 42.1$		+1		< 0.001	+1	$43.4 \pm 28.3$		$\pm 25.6$	5	0.0001
d snacks												
	$14.4 \pm 34.9$	$19.5 \pm 50.8$	$55.6 \pm 109.1$	$113.1 \pm 181.0$	< 0.001	< 0.001	$12.6 \pm 30.0$	$7.7 \pm 26.7$	$27.2 \pm 48.1$	77.1 ± 148.0	<0.001	< 0.001
	$47.7 \pm 60.9$	$44.8 \pm 57.5$	+1	+1		< 0.001	+1	+	+1	$\pm 54.1$		< 0.001
snacks	$6.4 \pm 12.4$	$6.5 \pm 14.3$		+1	_	0.05	+1	+1	+1	± 18.1	ŝ	0.0067
	~	$159.7 \pm 168.8$	+1	+		_	+1	+1	+1	$\pm 152.8$		< 0.001
e and eniree		30.1 + 50.1	+	+	~		+	41.0 + 159.6	+	- 10 +		100.07
	36.7 + 60.0	746 + 771	) 4   +	78.0 + 88.3		100.00	74.5 + 56.1	+	-01 + 0.91			~0.001
	0.00 - 2.0	I.// - 0. <del>11</del>	-I	·I			·I	·I	·I	- 0 <del>1</del> ./		100.0~
										0		.00.01
	_	$202.4 \pm 252.5$	+1	+1			+1	+1	+1	- 89.0 	•	<0.001
		$23.2 \pm 65.7$	+1	+1		<0.001	+1	+1	+1	± 78.0	0.1138	0.0341
Starch, vegetables, and meat 95		$124.0 \pm 247.7$		$163.6 \pm 246.2$	0.0043	0.0057	$67.4 \pm 122.7$	$62.0 \pm 113.2$	$99.3 \pm 142.3$	103.2 ± 145.7 <	< 0.001	0.0045
1		$166.2 \pm 281.7$	+  _	$\pm 1$	< 0.001	<0.001	$\pm 1$	+1	+1	$\pm 200.0$	•	< 0.001
Meat and vegetables 97		$130.9 \pm 314.0$	+ 9	+1	0.005	0.1768	+1	+1	+1	+1	0.0031	0.6106
Fish 54	$54.4 \pm 148.6$	$48.7 \pm 139.3$	5  +	$29.1 \pm 100.5$	0.1459	0.25	+	+1	+1	+1	0.1068	0.9398
Meat and dairy products 40	$40.0 \pm 87.5$	$54.5 \pm 131.8$		$115.4 \pm 170.8$	< 0.001	< 0.001	$26.1 \pm 63.9$	$36.3 \pm 65.1$	$69.6 \pm 108.7$	89.5 ± 135.9 <	<0.001 <	< 0.001
Fish												
Nonfatty fish 112	$112.8 \pm 164.9$	$81.4 \pm 139.5$	$76.3 \pm 139.1$	$28.7 \pm 63.0$	< 0.0001	<0.0001	$113.1 \pm 129.2$	$101.7 \pm 116.5$	+1	52.7 ± 87.4	<0.001 <	< 0.001
Fatty fish 69	$9.2 \pm 98.7$	$47.0 \pm 79.4$	37.6	$27.9 \pm 77.2$		< 0.001	+1	$39.3 \pm 66.0$	+1	$33.4 \pm 52.3$	<0.001 <	< 0.001
Shellfish 70	$70.5 \pm 133.7$	$47.1 \pm 101.6$	52.5 ±	+1	0.0446	0.0185	$59.6 \pm 97.1$	$49.1 \pm 99.1$	$51.6 \pm 97.7$	+1	0.5637	0.1909
Ruminant meat												
at	$612.6 \pm 561.3$	$689.0 \pm 613.0$	$776.8 \pm 666.0$	$831.9 \pm 703.4$	0.0898	0.0117	$487.8 \pm 402.8$	$507.8 \pm 373.6$	$496.0 \pm 383.7$	$475.9 \pm 386.2$	0.8311	0.7266
Pork, poultry, and eggs												
	$9.4 \pm 170.6$	$179.4 \pm 170.6 \ 192.2 \pm 188.3$	166.3	$156.7 \pm 193.1$	0.1828	0.3055	$114.2 \pm 94.3$	$126.3 \pm 110.8$	$111.6 \pm 102.8$	$127.3 \pm 120.9$	0.2284	0.5546
Poultry and game 337	$337.1 \pm 371.8$	$327.2 \pm 410.1$	$304.8 \pm$	$322.4 \pm 371.6$	0.8048		$240.0 \pm 273.6$	+1	$191.7 \pm 220.2$	$181.1 \pm 162.6$	0.3311	0.131
		$61.8 \pm 65.6$		$47.0 \pm 63.0$	0.346	0.2089	$66.9 \pm 63.9$	$55.2 \pm 56.9$	$52.4 \pm 62.6$	$35.7 \pm 38.5$	0.003	< 0.001
Deli meat 145		$178.0 \pm 200.8$		$220.2 \pm 181.6$	0.0132	0.0016	$87.2 \pm 89.1$	+	+	$117.1 \pm 107.5$	0.0018	0.0014
											ç	

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APPENDIX B (Continued)

		Men	en					Women	nen			
Food group and food family High $(n = 98)$ I+ $(n = 297)$ I- $(n = 275)$ Low $(n = 106)$ $P^2$	High $(n = 98)$	I+ $(n = 297)$	I- $(n = 275)$	Low $(n = 106)$	$P^2$	$T^3$	High $(n = 172)$	I+ $(n = 395)$	I- $(n = 386)$	High $(n = 172)$ I+ $(n = 395)$ I- $(n = 386)$ Low $(n = 189)$ $P^2$	$P^2$	$T^3$
Drinks												
Alcohol drinks	$399.3 \pm 438.9$	$399.3 \pm 438.9 \ \ 430.0 \pm 448.1 \ \ 430.0 \pm 489.2 \ \ 282.1 \pm 373.0$	$430.0 \pm 489.2$		0.0067	0.0527	$0.0527$ 111.4 $\pm$ 144.2 96.4 $\pm$ 158.9 112.5 $\pm$ 157.3 115.7 $\pm$ 178.5	$96.4 \pm 158.9$	$112.5 \pm 157.3$	$115.7 \pm 178.5$	0.506	0.6497
Unsugared hot drinks	$87.2 \pm 267.3$	$87.2 \pm 267.3$ $61.8 \pm 378.1$ $54.7 \pm 129.3$	$54.7 \pm 129.3$	$37.7 \pm 32.9$	0.1564	0.1737	$50.6\pm56.9$	$64.0 \pm 198.5$	$82.9 \pm 440.1$	$82.9 \pm 440.1  64.0 \pm 118.3$	0.5479	0.3311
Light drinks	$2.7 \pm 15.2$	$2.7 \pm 15.2$ $2.6 \pm 11.9$	$4.4 \pm 26.4$	$10.3 \pm 35.0$	0.2099	0.1135	$3.0 \pm 9.9$	$1.6 \pm 6.3$	$4.5~\pm~17.1$	$4.5 \pm 17.1$ $6.6 \pm 26.4$	0.0133	0.0757
Mineral water	$178.0 \pm 227.7$	$78.0 \pm 227.7$ 129.8 $\pm 171.5$ 104.3 $\pm 159.5$ 118.6 $\pm 161.0$	$104.3 \pm 159.5$	$118.6 \pm 161.0$	0.0066	0.0076	$0.0076  167.0 \pm 148.4  140.0 \pm 140.6  123.9 \pm 137.7  118.5 \pm 129.6$	$140.0 \pm 140.6$	$123.9 \pm 137.7$	$118.5 \pm 129.6$	0.0183	0.0017
Tap water	$0.1\pm0.2$	$0.1 \pm 0.2$ $0.2 \pm 0.3$	$0.2 \pm 0.3$	$0.2 \pm 0.3$ $0.1 \pm 0.2$	0.0041	0.9403	$0.9403  0.2 \pm 0.3  0.2 \pm 0.2  0.2 \pm 0.2  0.2 \pm 0.2$	$0.2 \pm 0.2$	$0.2 \pm 0.2$	$0.2 \pm 0.2$	0.4865	0.2995
<sup>1</sup> All values are means ± SDs. A high-nutritional-quality diet was defined as compliance with 3 properties: mean adequacy ratio (mean daily percentage of recommended intakes for 20 essential nutrients)	SDs. A high-nutrit	ional-quality diet	t was defined as (	compliance with 3	properties	mean ad	equacy ratio (mea	in daily percenta	ge of recommen	ded intakes for 20	essential n	utrients)

above the median; mean excess ratio (mean daily percentage of the maximum recommended values for nutrients for which the intake should be limited) below the median; and energy density below the median. Diets complying with 2, 1, or 0 properties were allocated to nutritional-quality categories of I+, I-, and Low, respectively. CO<sub>2</sub>e, carbon dioxide equivalent; GHGEs, greenhouse gas emissions; I, intermediate; INCA2, Individual and National Survey on Food Consumption. <sup>2</sup> P values were derived from a linear regression analysis used to compare (crude) means between the 4 classes, for each sex separately.  ${}^{3}T$  values were derived from a test for linear trend (calculated only when the general P value was <0.05).