Guideline Nutrition Data from baseline and 1st re-examination

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This guideline explains the background of the dietary data collected, describes how variables were derived, and provides the corresponding references. It also includes important information on the correct use of the data in analyses and on the interpretation of the results.

The NAKO Health Study collects data on dietary behavior as an important factor influencing health. Due to the time-consuming nature of the entire study program, a strict time limit was imposed on the dietary survey; for this reason, two different instruments have been used since the baseline survey.

1) **24-Hour Food List (24h-FL)**: This efficient instrument records food consumption from the **previous day** without specifying quantities. The goal is for participants to complete this list online a total of **four times** at three-month intervals.

2) **Food Frequency Questionnaire (FFQ)**: This validated questionnaire captures dietary patterns over the **past twelve months**. Participants select the frequency of consumption for fixed portion sizes from predefined categories (ranging from “never” to “several times a day”). Participants complete this instrument online only **once**.

The raw data thus includes, on the one hand, repeated binary variables for individual foods (consumption yes/no via the 24-hour food list) and, on the other hand, information on consumption frequency for foods in fixed portion sizes (FFQ).

Derived variables: Usual intake

Reference: Wawro et al. (2026) Usual dietary intake estimation in the German National Cohort (NAKO) [*submitted*]

Usual food intake refers to the average amount of a food consumed or the intake of a nutrient over an extended period of time. Since usual intake cannot be measured directly due to daily variations in food choices and quantities, it is estimated using two dietary survey instruments.

Usual food intake is modeled using the adapted Multiple Source Method (MSM). The basic principle of this method is to define usual intake as the product of the **probability of consumption** and **the amount consumed** (on the days the food is consumed).

The **probability of consumption** is estimated based on repeated 24-hour food list data (consumption yes/no), taking into account the frequency data from the FFQ. Thus, both dietary assessment tools are used for the estimation. Since only about 22,000 participants in the **baseline** survey had completed the 24-hour food list four times, participants were asked to **complete their data during the first follow-up** survey, 4-5 years after the baseline survey. All available 24-hour food lists from both survey waves were used to estimate the probability of consumption.

Since neither of the two instruments used in the NAKO survey measures **consumption amounts**, these were modeled using an external data source: Based on the amounts estimated in the German National Nutrition Survey II (NVS II), consumption amounts for NAKO participants were estimated, taking into account age, sex, educational status, smoking status, and BMI (see Freese J, Pricop-Jeckstadt M, Heuer T, et al. Determinants of consumption-day amounts applicable for

the estimation of usual dietary intake with a short 24-h food list. *Journal of Nutritional Science*. 2016;5:e35. doi:10.1017/jns.2016.26).

Usual food intake was thus estimated for all participants who had at least one 24-hour food list (24h-FL) and one Food Frequency Questionnaire (FFQ) available. For participants who reported **no food consumption** in all 24h-FLs and also selected "I **never eat this**" in the FFQ, usual intake was set to zero (**non-consumers**).

To derive **usual nutrient intake**, the food items were linked to the German food composition database (Bundeslebensmittelschlüssel BLS) Version 3.02, and the nutrient contents were multiplied by the estimated usual intake amounts. The sum of all consumed foods yields the usual nutrient intake.

Data on usual food intake are not provided for individual food items, but rather for **major food groups and subgroups according to the EPIC-Soft classification** (a standardized system for food grouping), which was calculated by summing the corresponding food items.

The complete questionnaires can be viewed at the following links:

24h-FL: https://sms.dife.de/tool/sv24/en

FFQ: https://sms.dife.de/tool/ffq2/en

The pages can be accessed by using the tabs on the right side of the questionnaire.

Notes on the use of the nutrition data

The data on usual dietary intake provide the closest possible approximation of the study participants' actual usual dietary intakes. They are suitable for analyses examining the association between diet and clinical outcomes (e.g., occurrence of a disease) or for consideration as confounders.

Based on the derivation described above, it can be assumed for the entire cohort that the usual dietary intake over a period of 4–5 years is reflected.

At the Berlin-South and Freiburg study centres, dietary intake was recorded almost in full at both the baseline and the follow-up examination, using an FFQ and four 24-hour food records respectively. Analyses of data from these two study centres revealed that estimates of usual intake of energy, macronutrients and most food groups showed a high degree of consistency between the baseline survey and the first follow-up (Wawro et al., under review). Although changes were observed in two specific food groups, the total intake of macronutrients and energy remained stable over the five-year period. These findings suggest that, where dietary data at baseline are incomplete, data from both survey waves can be used to estimate a person's usual dietary intake.

Limitation: The data **should not be used to estimate the distribution** of dietary variables at the population level. Due to the statistical modeling, outliers (very low and very high values) cannot be reliably represented.

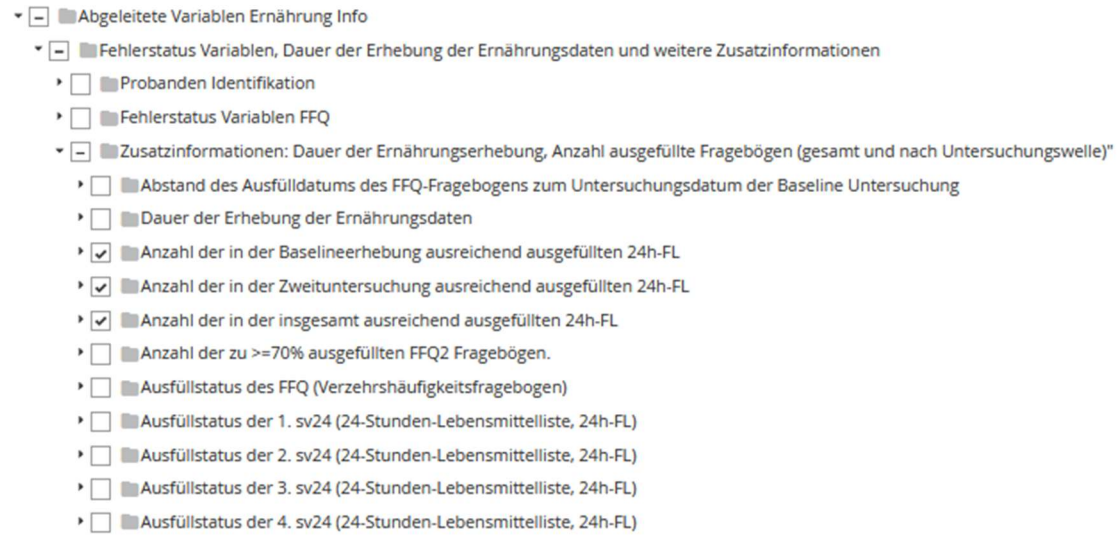
The Expert Group Nutrition recommends conducting the following **sensitivity analyses**:

- Stratification by the number of available 24-hour food lists (24h-FL): in particular, the sensitivity to the exclusion of participants for whom only one 24h-FL is available should be examined.

- Consideration of the survey time point (survey wave): e.g., by restricting the analyses to individuals whose dietary estimates are based exclusively on data from the baseline survey.

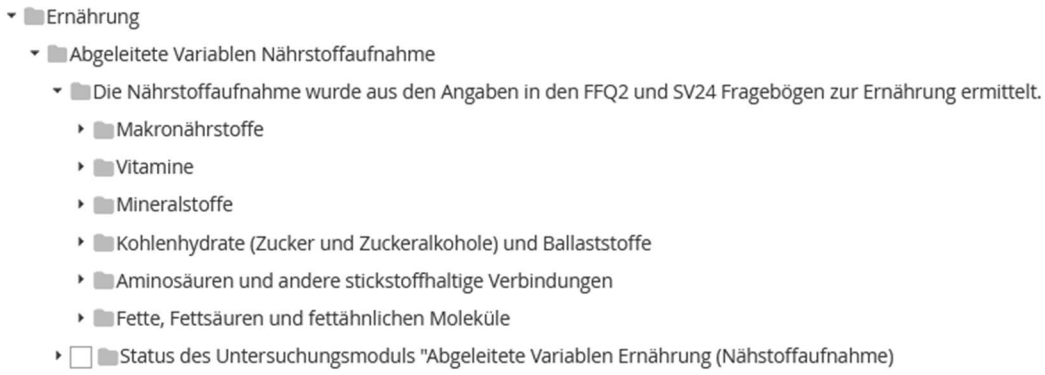
The variables required for the sensitivity analyses can be found on the **Transferhub** at http://trasnfer.nako.de under

Sonstige Fragebögen > Ernährung > Abgeleitete Variablen Lebensmittelverzehr



Data on usual nutrient and food intake can be found on the Transferhub under the following sections:

Sonstige Fragebögen > Ernährung > Abgeleitete Variablen Nährstoffaufnahme



and

Sonstige Fragebögen > Ernährung > Abgeleitete Variablen Lebensmittelverzehr

Derived variables: Dietary patterns

Hypothesis-based dietary patterns were derived based on EPICSoft-food groups and newly derived food groups using raw data from the 24-FL. The dietary patterns that already derived and that are available for analyses comprise:

- Modified Mediterranean Diet Score (MMDS),

- Dietary Approaches to Stop Hypertension (DASH),

- Mediterranean-Dietary Approach to Systolic Hypertension (DASH) diet intervention for neurodegenerative delay (MIND),

- Healthy Nordic Food Index (HNFI) and

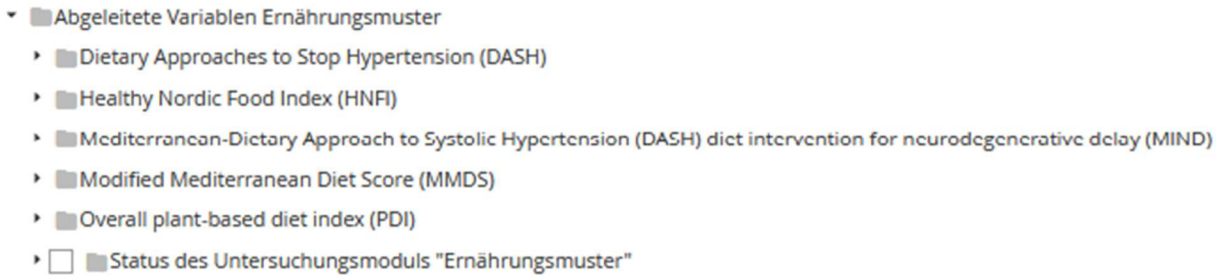
- Plant-based diet index (PDI) in its three variations: overall PDI, healthful PDI (hPDI), and unhealthful PDI (uPDI).

All dietary pattern scores were derived to correspond as closely as possible to the original score. As an exception, the food group „wine“ was excluded from the MIND diet due to safety concerns of alcohol (https://nutritionsource.hsph.harvard.edu/healthy-weight/diet-reviews/mind-diet). The corresponding references for each dietary pattern score are listed in the headings of tables 1 to 5, which describe the food groups comprising the dietary pattern scores in more detail.

The dietary patterns were derived using data from all participants with data on usual dietary intake (as detailed above). Hence, the dietary pattern scores are based on the total study population and are not derived for specific subpopulations for individual research projects.

The dietary pattern scores can be found in the transferhub under the following sections:

Sonstige Fragebögen > Ernährung > Abgeleitete Variablen Ernährungsmuster



Following the total pattern score of each dietary pattern score, each contributing food group is also provided in the transferhub under the sections:

Sonstige Fragebögen > Ernährung > Abgeleitete Variablen Ernährungsmuster > [Name des Ernährungsmusters]

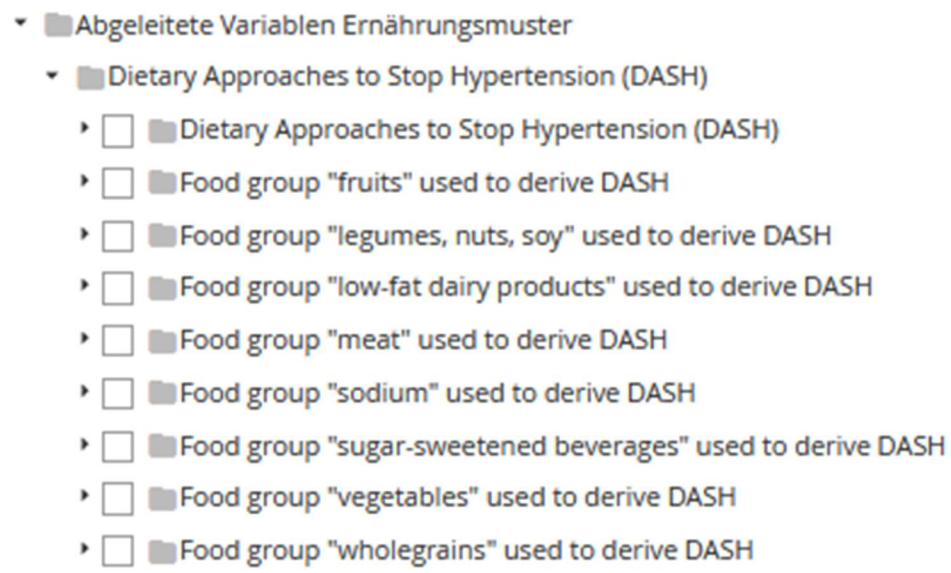

Abgeleitete Variablen Ernährungsmuster
Dietary Approaches to Stop Hypertension (DASH)
Dietary Approaches to Stop Hypertension (DASH)
Food group "fruits" used to derive DASH
Food group "legumes, nuts, soy" used to derive DASH
Food group "low-fat dairy products" used to derive DASH
Food group "meat" used to derive DASH
Food group "sodium" used to derive DASH
Food group "sugar-sweetened beverages" used to derive DASH
Food group "vegetables" used to derive DASH
Food group "wholegrains" used to derive DASH

Table 1: Modified Mediterranean Diet Score (MMDS)
(Variable name in the transferhub: "a_dp_mmds")
According to Trichopoulou *et al.* (1995) *BMJ*, DOI: 10.1136/bmj.311.7018.1457, Trichopoulou *et al.* (2003) *N Engl J Med*, DOI: 10.1056/nejmoa025039, and Trichopoulou *et al.* (2005) *BMJ*, DOI: 10.1136/bmj.38415.644155.8f

Sex-specific medians were used as cut points. 1 point was assigned to intake ≥ median for beneficial food groups (green) and 0 points to intake < median. Food groups considered detrimental (red) were scored reversely. For alcohol, an intake of 5–25 g/d for women and of 10–50 g/d for men was assigned 1 point, whereas for higher or lower consumption 0 points were assigned.

Food group	Variable name	Food items from MSM (combined sv24 and FFQ; EPICSOFT groups)	Food items from newly derived groups based on raw data (sv24)
Fruits, nuts, seeds	a_dp_mmds_fruit_nut	• a_ui_f0400: Fruits unclassified • a_ui_f0401: Fruits • a_ui_f0402: Nuts, seeds, nutbutters • a_ui_f0403: Mixed fruits	
Vegetables	a_dp_mmds_veg	• a_ui_m02: Main group vegetables	
Legumes	a_dp_mmds_legume	• a_ui_m03: Main group legumes • a_ui_f1701: soy products	
Cereals	a_dp_mmds_cereal	• a_ui_m06: Main group cereals, cereal products	
Fish	a_dp_mmds_fish	• a_ui_m08: Main group fish, crustacean	
Ratio: Unsatured fats / saturated fats	a_dp_mmds_fat_ratio	• a_nu_fu: Polyunsaturated fatty acids • a_nu_fp: Monounsaturated fatty acids • a_nu_fs: Saturated fatty acids	
Dairy products	a_dp_mmds_dairy	• a_ui_m05: Main group dairy products	
Meat	a_dp_mmds_meat	• a_ui_m07: Main group meat, meat products	
Alcohol	a_dp_mmds_alcohol	• a_nu_za: Alcohol (ethanol)	

Green = positive contribution to the pattern, red = negative contribution to the pattern, purple = special rules for contribution to the pattern

Table 2: Dietary Approaches to Stop Hypertension (DASH)
(Variable name in the transferhub: "a_dp_dash")
According to Fung *et al.* (2008) *Arch Intern Med*, DOI: 10.1001/archinte.168.7.713

Sex-specific quintiles were used as cut points. Beneficial food groups (green) were scored positively (quintile 5 = 5 points) and food groups considered detrimental (red) were scored reversely (quintile 5 = 1 point).

Food group	Variable name	Food items from MSM (combined sv24 and FFQ; EPICSOFT groups)	Food items from newly derived groups based on raw data (sv24)
Fruits	a_dp_dash_fruit	• a_ui_f0400: Fruits unclassified • a_ui_f0401: Fruits • a_ui_f0403: Mixed fruits	
Vegetables	a_dp_dash_veg	• a_ui_m02: Main group vegetables	
Legumes, nuts, soy	a_dp_dash_legume_nut	• a_ui_m03: Main group legumes • a_ui_f0402: nuts, seeds, nutbutters • a_ui_f1701: soy products	
Low fat dairy products	a_dp_dash_lf_dairy		• d_sv24_L2_10_2: Milk (without fat, skimmed, low fat) • d_sv24_L2_10_3: Plain yogurt (without fat, skimmed, low fat) • d_sv24_L2_10_5: Yogurt with fruits or other flavors (without fat, skimmed, low fat) • d_sv24_L3_1_2: Cream cheese, cottage cheese (low fat) • d_sv24_L3_1_1 and d_sv24_L3_1_3: Curd/Quark, Curd/Quark with herbs (low fat) • d_sv24_L3_1_4: Soft cheese (low fat) • d_sv24_L3_1_5: Sliced cheese, hard cheese (low fat)

			• d_sv24_L3_1_8: Sour milk cheese
Wholegrains	a_dp_dash_wholegrain	• a_ui_f0607: Wholegrain products (pasta, breakfast cereal, bread, toast)	
Meat	a_dp_dash_meat	• a_ui_f0700: Meat, meat products (unclassified) • a_ui_f070100: Fresh meat unclassified • a_ui_f070101: Beef • a_ui_f070103: Pork • a_ui_f0704: Meat products • a_ui_f0705: Offal	
Sugar-sweetened beverages	a_dp_dash_ssb		• d_sv24_L12_01_2: Lemonade • d_sv24_L12_01_22: Cola
Sodium	a_dp_dash_sodium	• a_nu_mna: Sodium	

Green = positive contribution to the pattern, red = negative contribution to the pattern

Table 3a: Mediterranean-Dietary Approach to Systolic Hypertension (DASH) diet intervention for neurodegenerative delay (MIND)
(Variable name in the transferhub: "a_dp_mind")
According to Morris *et al.* (2015) Alzheimers Dement., DOI: 10.1016/j.jalz.2015.04.011
Using food group sizes from the 2024 FBDG of the DGE (https://www.dge.de/gesunde-ernaehrung/gut-essen-und-trinken/dge-ernaehrungskreis/) and data from Salesse et al. (2024) Front Nutr, DOI: 10.3389/fnut.2024.1476771 (only for leafy vegetables).

0, 0.5 and 1 points were assigned based on the number of servings of food groups per specified time interval (see Table 3b).

Food group	Variable name	Food items from MSM (combined sv24 and FFQ; EPICSOFT groups)	Food items from newly derived groups based on raw data (sv24)
Berries	a_dp_mind_berries		• d_sv24_L4_1_6: Strawberries • d_sv24_L4_1_20: Gooseberries • d_sv24_L4_1_19. Raspberries • d_sv24_L4_1_7: Blueberries
Green leafy vegetables	a_dp_mind_leafy_veg	• a_ui_f0201: Leafy vegetables (no cabbage)	
Other vegetables	a_dp_mind_other_veg	• a_ui_f0200: Vegetables unclassified • a_ui_f0202: Fruiting vegetables • a_ui_f0203: Root vegetables • a_ui_f0204: Cabbage • a_ui_f0205: Mushrooms • a_ui_f0207: Onions, garlic • a_ui_f0208: Stalked vegetables, sprouts • a_ui_f0209: Mixed salads, mixed vegetables	• d_sv24_L7_1_1: Potatoes • d_sv24_L7_1_100: Other, potato products • d_sv24_L7_1_2: Mashed potatoes • d_sv24_L7_1_3: Potato dumplings • d_sv24_L7_1_4: Fried potatoes • d_sv24_L7_1_6: Potato pancakes • d_sv24_L7_1_7: Potato salad • d_sv24_L7_1_8: Stuffed potato pockets → equals a_ui_m01 without french fries
Nuts	a_dp_mind_nut	• a_ui_f0402: nuts, seeds, nutbutters	

Legumes	a_dp_mind_legume	• a_ui_m03: Main group legumes • a_ui_f1701: soy products	
Wholegrains	a_dp_mind_wholegrain	• a_ui_f0607: Wholegrain products (pasta, breakfast cereal, bread, toast)	
Fish	a_dp_mind_fish	• a_ui_m08: Main group fish, crustacean	
Poultry	a_dp_mind_poultry	• a_ui_f070200: Poultry	
Olive oil as primary oil (compared to other vegetable oils)	a_dp_mind_olive_oil a_dp_mind_plant_oil		• d_sv24_L5_2_2_1, d_sv24_L14_2_4, d_sv24_L14_11_4, d_sv24_L14_12_4: olive oil for salad/vegetables/meat/fish • d_sv24_L5_2_2_2, d_sv24_L14_2_20, d_sv24_L14_11_20, d_sv24_L14_12_20: linseed for salad/vegetables/meat/fish • d_sv24_L5_2_2_20, d_sv24_L14_2_5, d_sv24_L14_11_5, d_sv24_L14_12_5: rape seed oil for salad/vegetables/meat/fish • d_sv24_L5_2_2_21, d_sv24_L14_2_21, d_sv24_L14_11_21, d_sv24_L14_12_21: sunflower oil for salad/vegetables/meat/fish • d_sv24_L5_2_2_22, d_sv24_L14_2_22, d_sv24_L14_11_22, d_sv24_L14_12_22: Safflower for salad/vegetables/meat/fish • d_sv24_L5_2_2_23, d_sv24_L14_2_23, d_sv24_L14_11_23, d_sv24_L14_12_23: Wheat germ oil for salad/vegetables/meat/fish

			• d_sv24_L5_2_2_24, d_sv24_L14_2_24, d_sv24_L14_11_24, d_sv24_L14_12_24: Other vegetable oil for salad/vegetables/meat/fish • d_sv24_L5_2_2_25, d_sv24_L14_2_25, d_sv24_L14_11_25, d_sv24_L14_12_25: Grape seed oil for salad/vegetables/meat/fish
Cheese	a_dp_mind_cheese	• a_ui_f0505: Cheese (including cream cheese)	
Red meat	a_dp_mind_pr_meat a_dp_mind_unpr_meat	• a_ui_f0700: Meat, meat products unclassified • a_ui_f070100: Fresh meat unclassified • a_ui_f070101: Beef • a_ui_f070103: Pork • a_ui_f0704: Meat products	
Butter, margarine	a_dp_mind_but_mar	• a_ui_f1002: Butter • a_ui_f1003: Margarine	
Fast fried food	a_dp_mind_fast_food		Frequency of intake of: d_sv24_L7_1_5: French fries
Pastries and sweets	a_dp_mind_sweets		Frequency of intake of: • d_sv24_L2_10_1: Cocoa drink • d_sv24_L2_10_11: Milkshake, mixed milk drink • d_sv24_L11_51_6: Pudding • d_sv24_L11_1_100: Other, cake (CAVE: variable is empty, therefore not included) • d_sv24_L11_51_5: Waffles • d_sv24_L11_51_8: Pancakes • d_sv24_L1_3_13: Croissants, split rolls • d_sv24_L11_1_1: Fruit cake

			• d_sv24_L11_1_2: Yeast pastries, yeast cake • d_sv24_L11_1_3: Cream cake • d_sv24_L11_1_4: Sponge cake • d_sv24_L11_1_6: Cheesecake • d_sv24_L11_51_2: Tiramisu • d_sv24_L11_51_4: Chocolat mousse • d_sv24_L11_3_1: • Cockies WITH chocolate coating • d_sv24_L11_3_11: • Cockies WITHOUT chocolate coating • d_sv24_L1_13_8: • Nougat spread, chocolate spread • d_sv24_L11_3_2: • Chocolate bar • d_sv24_L11_3_22: • Pralines • d_sv24_L11_3_3: • Other chocolate or confectionery WITH chocolate • d_sv24_L11_3_33: • Other confectionery WITHOUT chocolate • d_sv24_L11_51_1: Ice cream

Green = positive contribution to the pattern, red = negative contribution to the pattern

Note: The food group “wine” has been omitted due to safety reasons (please refer to https://nutritionsource.hsph.harvard.edu/healthy-weight/diet-reviews/mind-diet/)

Tabelle 3b. Scoring system of the MIND score

	0 points	**0.5 points**	**1 point**	**Serving size [g]**
Brain healthy foods				
Berries	< 1 serving/week	≥ 1 & < 2 servings/week	≥ 2 servings/week	110[1]
Green leafy vegetables	≤ 2 servings/week	> 2 & < 6 servings/week	≥ 6 servings/week	80[2]
Other vegetables	< 5 servings/week	≥ 5 & < 7 servings/week	≥ 7 servings/week	110[1]
Nuts	< 1 serving/month	≥ 1 serving/month & < 5 servings/week	≥ 5 servings/week	25[1]

Legumes	< 1 serving/week	≥ 1 & ≤ 3 servings/week	> 3 servings/week	125[1,3]
Wholegrains	< 1 serving/day	≥ 1 & < 3 servings/day	≥ 3 servings/day	60[1]
Fish	< 1 serving/month	≥ 1 servings/month & < 1 serving/week	≥ 1 serving/week	120[1]
Poultry	< 1 serving/week	≥ 1 & < 2 servings/week	≥ 2 servings/week	120[1]
Olive oil	intake ≤ intake of other vegetable oils		intake ≤ intake of other vegetable oils	N/A
Brain unhealthy foods				
Butter and margarine	> 2 servings/day	≥ 1 & ≤ 2 servings/day	< 1 serving/day	10[1]
Cheese	≥ 7 servings/week	≥ 1 & < 7 servings/week	< 1 serving/week	30[1]
Red meat	≥ 7 servings/week	≥ 4 & < 7 servings/week	< 4 servings/week	120[4] / 30[5]
Fast fried foods	≥ 4 times/week	≥ 1 & < 4 times/week	< 1 time/week	N/A[6]
Pastries and sweets	≥ 7 times/week	≥ 5 & < 7 times/week	< 5 times/week	N/A[7]

[1] According to the food-based dietary guidelines of the German Nutrition Society ("DGE-Ernährungskreis", https://www.dge.de/gesunde-ernaehrung/gut-essen-und-trinken/dge-ernaehrungskreis/, last accessed on April 27th, 2026)

[2] According to Salesse F, Eldrige AL, Mak, TN et al. (2024) A global analysis of portion size recommendations in food-based dietary guidelines. Front Nutr 11:1476771. https://doi.org/10.3389/fnut.2024.1476771

[3] Ready-to-eat (cooked) serving size

[4] Fresh red meat

[5] Processed red meat

[6] Due to the heterogeneity of foods with different serving sizes comprising this food group, here we used frequency of intake instead

[7] Considered as frequency of intake in accordance with the original score (Morris MC, Tangney CC, Wang Y et al. (2015) MIND diet slows cognitive decline with aging. Alzheimers Dement 11:1015–1022. https://doi.org/10.1016/j.jalz.2015.04.011)

Table 4: Healthy Nordic Food Index (HNFI)
(Variable name in the transferhub: "a_dp_hnfi")
According to Olsen *et al.* (2011) *J Nutr*, DOI: https://doi.org/10.3945/jn.110.131375

Sex-specific medians were used as cut points. Intake ≥ median was assigned 1 point, intake < median was assigned 0 points.

Food group	Variable name	Food items from MSM (combined sv24 and FFQ; EPICSOFT groups)	Food items from newly derived groups based on raw data (sv24)
Apples and pears	a_dp_hnfi_apple_pear		• d_sv24_L4_1_1: Apple • d_sv24_L4_1_13: Pear
Cabbage	a_dp_hnfi_cabbage	• a_ui_f0204: Cabbage	
Root vegetables	a_dp_hnfi_root_veg	• a_ui_f0203: Root vegetables	
Rye bread	a_dp_hnfi_rye_bread		• d_sv24_L1_3_6: Rye bread, rye rolls
Oats and cereals	a_dp_hnfi_oat_cereal		• d_sv24_L1_21_2: Grain flakes • d_sv24_L1_21_1: Muesli
Fish	a_dp_hnfi_fish	• a_ui_m08: Main group fish, crustacean	

Green = positive contribution to the pattern

Table 5a: Plant-based diet index (PDI) with the overall PDI, the healthful PDI (hPDI), and the unhealthful PDI (uPDI)
(Variable names in the transferhub: "a_dp_pdi", "a_dp_pdi_hpdi", "a_dp_pdi_updi")
According to Satija *et al.* (2016) PLoS Med, DOI: 10.1371/journal.pmed.1002039

Sex-specific quintiles were used as cut-points. Animal-based foods were scored reversely (quintile 5 = 1 point) for all PDIs. For the hPDI, healthy plant-based foods (see Tabelle 5b) were scored positively (quintile 5 = 5 points) and unhealthy plant-based foods were scored reversely. For the uPDI, healthy plant-based foods were scored reversely and unhealthy plant-based foods were scored positively.

Food group	Variable name	Food items from MSM (combined sv24 and FFQ; EPICSOFT groups)	Food items from newly derived groups based on raw data (sv24)
Potatoes	a_dp_pdi_potatoe	• a_ui_m01: Main group potatoes, other tubers	
Fruits	a_dp_pdi_fruit	• a_ui_f0400: Fruits unclassified • a_ui_f0401: Fruits • a_ui_f0403: Mixed fruits	
Vegetables	a_dp_pdi_veg	• a_ui_m02: Main group vegetables	
Nuts	a_dp_pdi_nut	• a_ui_f0402: nuts, seeds, nutbutters	
Legumes	a_dp_pdi_legume	• a_ui_m03: Main group legumes • a_ui_f1701: soy products	
Wholegrains	a_dp_pdi_wholegrain	• a_ui_f0607: Wholegrain products (pasta, breakfast cereal, bread, toast)	
Tea, coffee	a_dp_pdi_tea_coffee	• a_ui_f130301: Coffee • a_ui_f130302: Tea • a_ui_f130303: Herbal tea	
Vegetable oils	a_dp_pdi_veg_oils	• a_ui_f1001: Vegetable oils	
Sweets, desserts	a_dp_pdi_sweets	• a_ui_m11: Main group sugar, sweets • a_ui_f1200: Cakes unclassified • a_ui_f1202: Pastries, cookies	• d_sv24_L11_1_1: Fruit cake • d_sv24_L11_1_2: Yeast pastries, yeast cake (e.g. Bienenstich, Streuselschnecke) • d_sv24_L11_1_3: Cream cake • d_sv24_L11_1_4: Sponge cake (e.g. marble cake, cupcake, muffin)

			• d_sv24_L11_1_6: Cheesecake • d_sv24_L11_51_2: Tiramisu • d_sv24_L11_51_4: Chocolate mousse → equals a_ui_f1201, but without croissants, split rolls
Refined grains	a_dp_pdi_ref_grain		• d_sv24_L1_21_4: Corn flakes • d_sv24_L1_21_5: Rice Crispies, puffed rice • d_sv24_L1_3_10: Flat bread • d_sv24_L1_3_12: Pretzel, lye pastries • d_sv24_L1_3_13: Croissant, splitter roll • d_sv24_L1_3_3: White bread, white bread roll, baguette • d_sv24_L1_3_8: Toast • d_sv24_L7_3_1: Rice • d_sv24_L7_3_2: Pasta
Fruit juices	a_dp_pdi_fruit_juice		• d_sv24_L12_01_4: Apple juice • d_sv24_L12_01_40: Orange juice • d_sv24_L12_01_42: Grape juice • d_sv24_L12_01_43: Grapefruit juice • d_sv24_L12_01_44: Elderberrry juice • d_sv24_L12_01_5: Multivitamin juice • d_sv24_L12_01_6: Other fruit juice
Sugar-sweetened beverages	a_dp_pdi_ssb		• d_sv24_L12_01_2: Lemonade • d_sv24_L12_01_22: Cola
Dairy products	a_dp_pdi_dairy	• a_ui_m05: Main group Dairy products	
Meat	a_dp_pdi_meat	• a_ui_m07: Main group meat, meat products	
Fish	a_dp_pdi_fish	• a_ui_m08: Main group fish, crustacean	
Eggs	a_dp_pdi_egg	• a_ui_m09: Main group eggs, egg products	

Animal fat	a_dp_pdi_animal_fat	• a_ui_f1002: Butter	
Miscellaneous animal foods	a_dp_pdi_misc_animal		• d_sv24_L1_13_11: Egg salad • d_sv24_L1_13_12: Meat salad • d_sv24_L1_13_10: Herring salad • d_sv24_L5_2_2_9: Cocktail dressing • d_sv24_L5_2_2_10: Yogurt dressing • d_sv24_L5_61_2: Meat stew • d_sv24_L10_01_8: Döner • d_sv24_L10_01_9: Lasagna with minced meat • d_sv24_L15_01_3: Mayonnaise, remoulade

Table 5b: Contribution of food groups to the different PDIs

Overall PDI	Healthful PDI	Unhealthful PDI
Potatoes	Potatoes	Potatoes
Fruits	Fruits	Fruits
Vegetables	Vegetables	Vegetables
Nuts	Nuts	Nuts
Legumes	Legumes	Legumes
Wholegrains	Wholegrains	Wholegrains
Tea, coffee	Tea, coffee	Tea, coffee
Vegetable oils	Vegetable oils	Vegetable oils
Sweets, desserts	Sweets, desserts	Sweets, desserts
Refined grains	Refined grains	Refined grains
Fruit juices	Fruit juices	Fruit juices
Sugar-sweetened beverages	Sugar-sweetened beverages	Sugar-sweetened beverages
Dairy products	Dairy products	Dairy products
Meat	Meat	Meat
Fish	Fish	Fish
Eggs	Eggs	Eggs
Animal fat	Animal fat	Animal fat
Miscellaneous animal foods	Miscellaneous animal foods	Miscellaneous animal foods

Green = positive contribution to the pattern, red = negative contribution to the pattern