



Supplementary Fig. 1: Geographic distribution of data-driven dietary patterns

In each district, the sum of the percentages over the four maps (including the one presented in the main manuscript) always results in 100%. Dietary data were aggregated at district level. The menuCH weighting strategy was not applied to descriptive maps.

Supplementary Table S1: Consumption of different food groups and macronutrients overall and by hypothesis- and data-driven dietary patterns ($n = 2,057$)^a

| | Overall mean | AHEI | | | | | Dietary patterns | | | |
|--------------------------------------|--------------|-------|-------|-------|-------|-------|------------------|-------------------|---------------------|-----------------|
| | | Q1 | Q2 | Q3 | Q4 | Q5 | Prudent | Swiss traditional | Western-soft drinks | Western-alcohol |
| Food groups | | | | | | | | | | |
| Non-alcoholic beverages ^b | 293.0 | 640.6 | 350.6 | 241.3 | 142.0 | 69.7 | 164.2 | 220.2 | 674.2 | 207.0 |
| Alcoholic beverages | 198.2 | 286.1 | 235.9 | 200.9 | 134.0 | 127.9 | 149.1 | 100.1 | 198.1 | 407.9 |
| Cereals & Starchy | 287.2 | 343.2 | 284.8 | 293.2 | 268.8 | 243.1 | 244.1 | 286.3 | 282.1 | 340.5 |
| Red & processed meat | 78.8 | 135.9 | 96.9 | 73.0 | 60.1 | 25.8 | 45.8 | 55.2 | 132.0 | 104.7 |
| White meat | 25.1 | 24.5 | 20.1 | 31.0 | 24.7 | 24.9 | 37.9 | 21.5 | 21.3 | 20.1 |
| Fish | 21.0 | 7.9 | 13.8 | 19.4 | 22.4 | 41.6 | 41.1 | 10.8 | 18.4 | 17.7 |
| Fruits & Nuts | 178.6 | 80.4 | 115.8 | 166.5 | 224.5 | 309.2 | 265.8 | 194.4 | 116.3 | 114.2 |
| Vegetables & Legumes | 178.1 | 127.2 | 139.6 | 169.3 | 203.1 | 253.0 | 240.5 | 155.7 | 141.3 | 178.6 |
| Soups ^c | 46.5 | 32.6 | 45.1 | 35.1 | 58.7 | 62.2 | 60.5 | 50.4 | 43.4 | 27.8 |
| Fats & oils | 19.9 | 19.8 | 16.3 | 20.2 | 21.1 | 22.1 | 28.0 | 17.5 | 15.2 | 19.1 |
| Eggs | 13.0 | 12.6 | 13.0 | 12.5 | 12.0 | 14.8 | 12.5 | 13.1 | 15.0 | 11.5 |
| Milk & dairy ^d | 242.3 | 253.9 | 238.2 | 234.7 | 257.5 | 228.1 | 175.5 | 353.2 | 219.6 | 159.4 |
| Chocolate ^e | 36.1 | 47.3 | 36.4 | 34.5 | 30.6 | 30.7 | 28.9 | 47.7 | 34.5 | 26.9 |
| Cakes | 37.4 | 47.0 | 39.4 | 34.3 | 35.0 | 31.2 | 24.7 | 43.2 | 54.2 | 27.2 |
| Savoury snacks | 9.8 | 16.3 | 7.6 | 9.3 | 9.2 | 6.2 | 5.4 | 8.6 | 21.0 | 6.4 |
| Sauces & seasoning | 49.3 | 56.1 | 52.4 | 53.6 | 42.3 | 41.4 | 33.0 | 45.9 | 51.7 | 70.3 |
| Others ^f | 12.3 | 2.6 | 6.9 | 10.1 | 11.5 | 30.5 | 21.6 | 9.2 | 9.2 | 9.9 |
| Macronutrients | | | | | | | | | | |
| Proteins | 84.6 | 99.2 | 84.0 | 82.8 | 79.5 | 76.5 | 77.9 | 81.2 | 96.3 | 86.8 |
| Carbohydrates | 233.0 | 287.4 | 228.3 | 222.9 | 215.1 | 207.8 | 197.8 | 246.4 | 265.1 | 221.2 |
| Fats | 90.8 | 104.4 | 86.7 | 88.1 | 87.7 | 86.2 | 82.1 | 93.2 | 102.3 | 86.1 |

AHEI, Alternate Healthy Eating Index; Q, quintile

^aConsumption is given as weighted mean (g), weighted for sex, age, marital status, major regions of Switzerland (NUTS-2), nationality, household size, season, weekday; weighting factors were applied according to the menuCH weighting strategy

^bIncludes all caloric non-alcoholic beverages, i.e. sweetened soft drinks, energy drinks, fizzy drinks, ice tea, diluted syrup, fruit and vegetable juices, smoothies

^cIncludes vegetable soups, vegetable or meat broth, miso soups, mushroom soups

^dIncludes milk, branded fermented milk and milk drinks, yogurt and yogurt drinks, kefir, fresh cheese, spread cheese, processed/melted cheese, soft cheese, hard cheese

^eIncludes chocolate chips, chocolate tablets, chocolate powder, chocolate icing, sugar, syrup, jams, honey

^fIncludes meat substitutes (e.g. Quorn, tofu, vegetarian sausages), milk substitutes, dietetic products rich in protein (e.g. meal replacements, protein shakes)

Supplementary Table S2: Association of hypothesis- and data-driven dietary patterns with chronic disease mortality, with cause-specific mortality events including causes of death from all four categories reported in the death certificate ($n = 2,057$)^{a,b,c}

| | CVD | | IHD | | Stroke | | All-cancer | | CRC | | Diabetes | |
|-------------------------------|-------------------|--------------------|-------------------|--------------------|--------------|--------------------|-------------|--------------------|--------------|--------------------|-------------------|--------------------|
| | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI |
| AHEI ^d | | | | | | | | | | | | |
| Q1 (13.6-34.5) | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Q2 (34.5-41.6) | 0.97 | 0.95 - 0.99 | 0.94 | 0.91 - 0.97 | 0.97 | 0.95 - 0.99 | 1.00 | 0.98 - 1.01 | 0.99 | 0.97 - 1.01 | 0.96 | 0.93 - 0.98 |
| Q3 (41.6-48.2) | 0.99 | 0.97 - 1.01 | 0.96 | 0.93 - 0.99 | 0.98 | 0.97 - 1.00 | 1.00 | 0.99 - 1.01 | 0.99 | 0.98 - 1.01 | 0.98 | 0.94 - 1.02 |
| Q4 (48.2-55.7) | 0.97 | 0.95 - 0.99 | 0.96 | 0.93 - 0.99 | 0.98 | 0.97 - 1.00 | 0.99 | 0.98 - 1.00 | 0.99 | 0.97 - 1.01 | 0.96 | 0.92 - 1.00 |
| Q5 (55.7-91.4) | 0.95 | 0.93 - 0.97 | 0.92 | 0.89 - 0.95 | 0.96 | 0.95 - 0.98 | 0.99 | 0.98 - 1.00 | 0.97 | 0.95 - 0.99 | 0.93 | 0.90 - 0.97 |
| p-value for trend | < 0.001 | | < 0.001 | | 0.005 | | 0.01 | | 0.001 | | < 0.001 | |
| Dietary patterns ^e | | | | | | | | | | | | |
| Prudent | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Swiss traditional | 1.04 | 1.02 - 1.06 | 1.08 | 1.05 - 1.11 | 1.03 | 1.02 - 1.05 | 1.01 | 1.00 - 1.01 | 1.01 | 1.00 - 1.03 | 1.03 | 1.01 - 1.05 |
| Western-soft drinks | 1.04 | 1.01 - 1.06 | 1.05 | 1.02 - 1.09 | 1.01 | 1.00 - 1.03 | 1.01 | 1.00 - 1.02 | 1.02 | 1.00 - 1.04 | 1.03 | 1.01 - 1.05 |
| Western-alcohol | 1.02 | 1.01 - 1.04 | 1.04 | 1.01 - 1.07 | 1.02 | 1.00 - 1.04 | 1.01 | 1.00 - 1.02 | 1.01 | 0.99 - 1.02 | 1.02 | 1.00 - 1.04 |

CVD, cardiovascular disease; IHD, ischemic heart disease; CRC, colorectal cancer; SMR, standardised mortality ratio; CI, confidence interval; AHEI, Alternate Healthy Eating Index; Q, quintile

^aResults derived from Quasipoisson regression models and weighted for sex, age, marital status, major regions of Switzerland (NUTS-2), nationality, household size, season, weekday; weighting factors were applied according to the menuCH weighting strategy

^bBold values represent statistically significant results (p-value < 0.05)

^cSMR were calculated at district level using indirect standardisation based on age-, sex- and year-specific mortality rates

^dAdjusted for sex, age, education, body mass index, physical activity, smoking status, energy intake

^eAdjusted for sex, age, education, body mass index, physical activity, smoking status

Supplementary Table S3: Association of hypothesis- and data-driven dietary patterns with chronic disease mortality by sex ($n = 2,057$)^{a,b,c}

| | CVD | | IHD | | Stroke | | All-cancer | | CRC | | Diabetes | |
|-------------------------------|--------------|--------------------|------------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|--------------|--------------------|
| | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI | SMR | 95% CI |
| MEN | | | | | | | | | | | | |
| AHEI ^d | | | | | | | | | | | | |
| Q1 (13.6-34.5) | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Q2 (34.5-41.6) | 0.95 | 0.92 - 0.98 | 0.90 | 0.86 - 0.94 | 0.95 | 0.93 - 0.99 | 1.01 | 0.99 - 1.03 | 0.99 | 0.96 - 1.02 | 0.97 | 0.91 - 1.04 |
| Q3 (41.6-48.2) | 0.96 | 0.94 - 0.99 | 0.94 | 0.90 - 0.98 | 0.95 | 0.92 - 0.98 | 1.01 | 0.99 - 1.03 | 0.99 | 0.96 - 1.02 | 0.99 | 0.93 - 1.05 |
| Q4 (48.2-55.7) | 0.98 | 0.95 - 1.01 | 0.94 | 0.90 - 0.98 | 0.97 | 0.94 - 1.00 | 1.00 | 0.97 - 1.02 | 0.97 | 0.94 - 1.00 | 0.92 | 0.86 - 0.99 |
| Q5 (55.7-91.4) | 0.94 | 0.91 - 0.97 | 0.90 | 0.86 - 0.94 | 0.96 | 0.93 - 0.99 | 1.00 | 0.98 - 1.02 | 0.97 | 0.94 - 1.00 | 0.91 | 0.85 - 0.98 |
| p-value for trend | 0.002 | | <0.001 | | 0.02 | | 0.41 | | 0.02 | | 0.004 | |
| Dietary patterns ^e | | | | | | | | | | | | |
| Prudent | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Swiss traditional | 1.01 | 0.98 - 1.04 | 1.03 | 0.99 - 1.08 | 1.02 | 0.99 - 1.05 | 0.98 | 0.96 - 1.00 | 1.00 | 0.97 - 1.03 | 1.02 | 0.96 - 1.09 |
| Western-soft drinks | 1.01 | 0.98 - 1.05 | 1.03 | 0.98 - 1.08 | 1.03 | 1.00 - 1.06 | 1.00 | 0.98 - 1.00 | 1.04 | 1.00 - 1.07 | 1.08 | 1.01 - 1.15 |
| Western-alcohol | 0.99 | 0.97 - 1.02 | 1.00 | 0.94 - 1.04 | 1.02 | 0.99 - 1.06 | 0.99 | 0.97 - 1.01 | 1.00 | 0.97 - 1.02 | 0.99 | 0.93 - 1.06 |
| WOMEN | | | | | | | | | | | | |
| AHEI ^d | | | | | | | | | | | | |
| Q1 (13.6-34.5) | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Q2 (34.5-41.6) | 0.98 | 0.94 - 1.02 | 0.97 | 0.90 - 1.04 | 0.98 | 0.95 - 1.02 | 1.00 | 0.99 - 1.02 | 1.01 | 0.98 - 1.04 | 1.01 | 0.94 - 1.08 |
| Q3 (41.6-48.2) | 1.01 | 0.97 - 1.05 | 0.99 | 0.92 - 1.06 | 1.01 | 0.98 - 1.06 | 1.02 | 1.00 - 1.03 | 1.01 | 0.98 - 1.05 | 0.98 | 0.92 - 1.05 |
| Q4 (48.2-55.7) | 0.98 | 0.95 - 1.02 | 0.97 | 0.91 - 1.04 | 1.00 | 0.96 - 1.04 | 1.00 | 0.99 - 1.03 | 1.01 | 0.98 - 1.04 | 0.96 | 0.90 - 1.02 |
| Q5 (55.7-91.4) | 0.96 | 0.92 - 0.99 | 0.93 | 0.87 - 1.00 | 0.99 | 0.96 - 1.03 | 1.00 | 0.98 - 1.01 | 0.99 | 0.96 - 1.02 | 0.96 | 0.90 - 1.02 |
| p-value for trend | 0.01 | | 0.06 | | 0.96 | | 0.21 | | 0.29 | | 0.05 | |
| Dietary patterns ^e | | | | | | | | | | | | |
| Prudent | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Swiss traditional | 1.08 | 1.05 - 1.10 | 1.16 | 1.10 - 1.21 | 1.05 | 1.02 - 1.08 | 1.02 | 1.01 - 1.03 | 1.01 | 0.99 - 1.03 | 1.05 | 1.00 - 1.09 |
| Western-soft drinks | 1.05 | 1.01 - 1.08 | 1.07 | 1.00 - 1.14 | 1.04 | 1.00 - 1.08 | 1.00 | 0.99 - 1.02 | 0.99 | 0.97 - 1.02 | 1.05 | 0.99 - 1.12 |
| Western-alcohol | 1.07 | 1.03 - 1.10 | 1.14 | 1.07 - 1.21 | 1.03 | 1.00 - 1.06 | 1.02 | 1.00 - 1.03 | 1.02 | 1.00 - 1.05 | 1.06 | 1.00 - 1.12 |

CVD, cardiovascular disease; IHD, ischemic heart disease; CRC, colorectal cancer; SMR, standardised mortality ratio; CI, confidence interval; AHEI, Alternate Healthy Eating Index; Q, quintile

^aResults derived from Quasipoisson regression models and weighted for sex, age, marital status, major regions of Switzerland (NUTS-2), nationality, household size, season, weekday; weighting factors were applied according to the menuCH weighting strategy

^bBold values represent statistically significant results (p-value < 0.05)

^cSMR were calculated at district level separately for men and women, using indirect standardisation based on age- and year-specific mortality rates

^dAdjusted for sex, age, education, body mass index, physical activity, smoking status, energy intake

^eAdjusted for sex, age, education, body mass index, physical activity, smoking status