Table S1. Food groups used in this study [a]

| Food groups | Food items used in the National Health and Nutrition Survey, Japan [food number] |
|---|---|
| Rice | Rice [1], rice products [2] |
| Bread | Bread [4] |
| Noodles | Japanese wheat noodles and Chinese noodles [6], instant noodles [7], pasta [8], buckwheat noodles [10] |
| Other grains | Wheat flour [3], wheat products [9], corn products [11], other grains [12] |
| Potatoes | Sweet potatoes [13], potatoes [14], other potatoes [15], processed starch [16] |
| Sugar | Sugars and sweeteners [17], jam [44] |
| Pulses | Soybeans [18], tofu [19], fried tofu [20], natto (fermented soybeans) [21], other soybean products [22], other beans [23] |
| Nuts | Nuts [24] |
| Green and yellow vegetables | Tomatoes [25], carrots [26], spinach [27], green peppers [28], other green and yellow vegetables [29] |
| Other vegetables | Cabbage [30], cucumbers [31], radishes [32], onions [33], Chinese cabbage [34], other vegetables [35] |
| Vegetable and fruit juice | Vegetable juice [36], fruit juice [45] |
| Pickled vegetables | Pickled leafy vegetables [37], other picked vegetables [38] |
| Fruit | Strawberries [39], citrus fruits [40], bananas [41], apples [42], other fruits [43] |
| Mushrooms | Mushrooms [46] |
| Seaweeds | Seaweeds [47] |
| Fish | Mackerel and sardine [48], salmon and trout [49], sea bream and flat fish [50], tuna and swordfish [51], other fish [52] |
| Shellfish | Shellfish [53], squid and octopus [54], prawn and crab [55] |
| Sea products | Processed fish and shellfish [56], canned fish and shellfish [57], boiled fish and shellfish in soy sauce [58], fish paste [59], fish products [60] |
| Red meat | Beef [61], port [62], other red meat [64], offal [67], whale [68], boiled meat in soy sauce [69] |
| Processed meat | Ham and sausage [63] |
| Chicken | Chicken [65], other poultry [66] |
| Eggs | Eggs [70] |
| Dairy products | Milk [71], cheese [72], yogurt [73], other dairy products [74], other milks [75] |
| Animal fat | Butter [76], animal fats [79] |
| Vegetable oil | Margarine [77], vegetable oils [78], other oils [80], mayonnaise [95] |
| Confectioneries | Bread with a sweet filling [5], Japanese confectioneries [81], cakes and pastries [82], biscuits [83], candies [84], other confectioneries [85] |
| Alcoholic beverages | Sake [86], beer [87], wine and other alcoholic beverages [88] |
| Tea | Green tea, oolong tea, and black tea [89] |
| Coffee | Coffee and cocoa [90] |
| Soft drinks | Sugar-sweetened beverages and other beverages [91] |
| Salt-based seasonings | Sauce [92], soy sauce [93], salt [94], miso [96] |

[a] In total, 96 of 98 food items used in the National Health and Nutrition Survey, Japan were categorized into 31 food groups as shown above, while the 2 remaining items (other seasonings [97] and spices [98]) were not used in this analysis.

Table S2. Characteristics of the participants included in the analysis and those excluded from the analysis [a]

| | Participants included in the analysis ($n$ = 88,527) | Participants excluded from the analysis ($n$ = 23,255)[b] | $P$[c] |
|---|---|---|---|
| Year, *n* (%) | | | <0.0001 |
| 2003 | 7062 (8.0) | 1785 (7.7) | |
| 2004 | 5675 (6.4) | 1291 (5.6) | |
| 2005 | 5469 (6.2) | 1720 (7.4) | |
| 2006 | 6062 (6.9) | 1443 (6.2) | |
| 2007 | 5954 (6.7) | 1149 (4.9) | |
| 2008 | 6198 (7.0) | 1375 (5.9) | |
| 2009 | 6047 (6.8) | 1238 (5.3) | |
| 2010 | 5581 (6.3) | 1555 (6.7) | |
| 2011 | 5197 (5.9) | 1468 (6.3) | |
| 2012 | 19,717 (22.3) | 6644 (28.6) | |
| 2013 | 5393 (6.1) | 1017 (4.4) | |
| 2014 | 5298 (6.0) | 1355 (5.8) | |
| 2015 | 4874 (5.5) | 1215 (5.2) | |
| Sex, *n* (%) | | | <0.0001 |
| Male | 39,557 (44.7) | 12,515 (53.8) | |
| Female | 48,970 (55.3) | 10,740 (46.2) | |
| Age, years | 56.4 ± 16.8 | 50.9 ± 19.9 | <0.0001 |
| Age category, *n* (%) | | | <0.0001 |
| 20-34 years | 10,983 (12.4) | 5827 (25.1) | |
| 35-49 years | 19,727 (22.3) | 5686 (24.5) | |
| 50-64 years | 25,732 (29.1) | 5409 (23.3) | |
| ≥65 years | 32,085 (36.2) | 6333 (27.2) | |
| Occupation, *n* (%) | | | <0.0001 |
| Professional/manager | 13,082 (14.8) | 3591 (16.8) | |
| Sales/service/clerical | 21,555 (24.4) | 5876 (27.5) | |
| Security/transportation/labor | 16,957 (19.2) | 4698 (22.0) | |
| Nonworker | 36,933 (41.7) | 7228 (33.8) | |
| Body mass index, kg/m$^2$ | 23.0 ± 3.5 | 21.9 ± 3.5 | <0.0001 |
| Weight status, *n* (%)[d] | | | <0.0001 |
| Underweight | 6743 (7.6) | 275 (13.2) | |
| Normal weight | 59,611 (67.3) | 1457 (70.1) | |
| Overweight | 22,173 (25.1) | 346 (16.7) | |
| Current smoking, *n* (%) | | | <0.0001 |
| No | 69,788 (78.8) | 15,561 (73.0) | |
| Yes | 18,739 (21.2) | 5751 (27.0) | |

[a] Values are means ± standard deviations unless otherwise indicated.

[b] $n$ = 21,393 for occupation, $n$ = 2078 for body mass index (BMI) and weight status, and $n$ = 21,312 for current smoking (because of missing information).

[c] $P$ values for difference between participants included in the analysis and those excluded from the analysis were based on the chi-square test for categorical variables and independent $t$-test for continuous variables.

[d] Defined based on BMI (kg/m$^2$): <18.5 for underweight, ≥18.5 to <25 for normal weight, and ≥25 for overweight (including obese).

Table S3. Food group intake (g/day) among the participants included in the analysis and those excluded from the analysis [a]

| | Participants included in the analysis ($n$ = 88,527) | Participants excluded from the analysis ($n$ = 23,255) | $P$[b] |
|---|---|---|---|
| Rice | 341.8 ± 186.0 | 351.6 ± 191.4 | <0.0001 |
| Bread | 31.6 ± 43.9 | 28.9 ± 44.6 | <0.0001 |
| Noodles | 62.2 ± 101.6 | 62.9 ± 103.5 | 0.36 |
| Other grains | 10.6 ± 32.3 | 10.6 ± 32.1 | 0.87 |
| Potatoes | 57.2 ± 70.6 | 53.8 ± 69.0 | <0.0001 |
| Sugar | 8.5 ± 10.6 | 7.1 ± 9.6 | <0.0001 |
| Pulses | 63.4 ± 77.4 | 55.1 ± 71.2 | <0.0001 |
| Nuts | 2.3 ± 8.6 | 1.5 ± 6.4 | <0.0001 |
| Green and yellow vegetables | 97.8 ± 88.6 | 84.8 ± 79.1 | <0.0001 |
| Other vegetables | 172.8 ± 123.1 | 160.3 ± 117.6 | <0.0001 |
| Vegetable and fruit juice | 17.8 ± 66.3 | 18.4 ± 71.0 | 0.23 |
| Pickled vegetables | 15.2 ± 29.3 | 12.8 ± 25.4 | <0.0001 |
| Fruit | 110.9 ± 135.2 | 81.1 ± 119.3 | <0.0001 |
| Mushrooms | 17.3 ± 28.8 | 15.3 ± 26.9 | <0.0001 |
| Seaweeds | 12.1 ± 23.9 | 10.4 ± 22.7 | <0.0001 |
| Fish | 38.3 ± 55.5 | 35.8 ± 53.9 | <0.0001 |
| Shellfish | 14.1 ± 33.1 | 14.3 ± 32.5 | 0.36 |
| Sea products | 31.4 ± 45.4 | 28.6 ± 43.1 | <0.0001 |
| Red meat | 46.3 ± 56.3 | 51.1 ± 60.8 | <0.0001 |
| Processed meat | 11.5 ± 21.4 | 12.2 ± 21.8 | <0.0001 |
| Chicken | 20.9 ± 42.4 | 23.5 ± 45.4 | <0.0001 |
| Eggs | 34.6 ± 34.2 | 35.4 ± 36.4 | 0.0007 |
| Dairy products | 100.7 ± 130.6 | 82.6 ± 126.7 | <0.0001 |
| Animal fat | 1.0 ± 3.0 | 1.1 ± 3.2 | <0.0001 |
| Vegetable oil | 12.0 ± 11.4 | 12.5 ± 11.8 | <0.0001 |
| Confectioneries | 29.4 ± 50.9 | 25.4 ± 49.6 | <0.0001 |
| Alcoholic beverages | 122.9 ± 290.3 | 112.6 ± 278.6 | <0.0001 |
| Tea | 341.3 ± 372.2 | 262.8 ± 328.4 | <0.0001 |
| Coffee | 157.5 ± 208.0 | 125.7 ± 190.3 | <0.0001 |
| Soft drinks | 93.6 ± 224.6 | 87.5 ± 227.6 | 0.0003 |
| Salt-based seasonings | 31.9 ± 20.9 | 30.4 ± 20.5 | <0.0001 |

[a] Values are means ± standard deviations.

[b] $P$ values for difference between participants included in the analysis and those excluded from the analysis were based on an independent $t$-test.

Table S4. Thirteen-year trends (2003-2015) in food group intake (g/day): National Health and Nutrition Survey, Japan [a]

| | Year | | | | | | | | | | | | | *P* for | Per-year change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | trend[b] | β ± SE[c] |
| Sample size | 7062 | 5675 | 5469 | 6062 | 5954 | 6198 | 6047 | 5581 | 5197 | 19,717 | 5393 | 5298 | 4874 | | |
| Rice | 363.9 ± 2.0 | 354.7 ± 2.3 | 351.5 ± 2.3 | 351.5 ± 2.2 | 343.9 ± 2.2 | 346.9 ± 2.2 | 341.9 ± 2.2 | 335.9 ± 2.3 | 327.8 ± 2.4 | 343.4 ± 1.2 | 324.2 ± 2.3 | 324.9 ± 2.3 | 316.1 ± 2.4 | <0.0001 | -2.94 ± 0.16 |
| Bread | 28.2 ± 0.5 | 29.7 ± 0.6 | 30.4 ± 0.6 | 29.7 ± 0.6 | 30.7 ± 0.6 | 31.4 ± 0.6 | 33.2± 0.6 | 32.3 ± 0.6 | 32.3 ± 0.6 | 30.9 ± 0.3 | 35.3 ± 0.6 | 34.1 ± 0.6 | 36.2 ± 0.6 | <0.0001 | 0.45 ± 0.04 |
| Noodles | 61.4 ± 1.2 | 60.1 ± 1.3 | 62.4 ± 1.4 | 60.0 ± 1.3 | 60.5 ± 1.3 | 62.0 ± 1.3 | 63.4 ± 1.3 | 61.5 ± 1.4 | 65.3 ± 1.4 | 61.6 ± 0.7 | 65.6 ± 1.4 | 64.6 ± 1.4 | 63.2 ± 1.4 | 0.005 | 0.27 ± 0.09 |
| Other grains | 11.0 ± 0.4 | 9.4 ± 0.4 | 10.8 ± 0.4 | 11.4 ± 0.4 | 10.4 ± 0.4 | 11.0 ± 0.4 | 10.0 ± 0.4 | 10.5 ± 0.4 | 9.5 ± 0.4 | 10.5 ± 0.2 | 10.3 ± 0.4 | 11.6 ± 0.4 | 11.7 ± 0.5 | 0.37 | 0.03 ± 0.03 |
| Potatoes | 61.3 ± 0.8 | 60.7 ± 0.9 | 59.9 ± 0.9 | 64.1 ± 0.9 | 58.3 ± 0.9 | 58.2 ± 0.9 | 55.4 ± 0.9 | 54.3 ± 0.9 | 55.3 ± 1.0 | 56.9 ± 0.5 | 52.6 ± 1.0 | 53.3 ± 1.0 | 51.3 ± 1.0 | <0.0001 | -0.78 ± 0.07 |
| Sugar | 9.1 ± 0.1 | 9.0 ± 0.1 | 9.1 ± 0.1 | 9.0 ± 0.1 | 8.5 ± 0.1 | 8.4 ± 0.1 | 8.4 ± 0.1 | 8.5 ± 0.1 | 8.3 ± 0.1 | 8.2 ± 0.1 | 8.2 ± 0.1 | 8.1 ± 0.1 | 8.4 ± 0.2 | <0.0001 | -0.09 ± 0.01 |
| Pulses | 65.6 ± 0.9 | 67.6 ± 1.0 | 64.4 ± 1.0 | 62.5 ± 1.0 | 62.4 ± 1.0 | 60.7 ± 1.0 | 61.6 ± 1.0 | 61.8 ± 1.0 | 56.5 ± 1.0 | 64.7 ± 0.5 | 65.3 ± 1.0 | 62.3 ± 1.1 | 65.3 ± 1.1 | 0.15 | -0.10 ± 0.07 |
| Nuts | 2.5 ± 0.1 | 2.4 ± 0.1 | 2.2 ± 0.1 | 2.4 ± 0.1 | 2.3 ± 0.1 | 2.0 ± 0.1 | 2.1 ± 0.1 | 2.4 ± 0.1 | 2.3 ± 0.1 | 2.5 ± 0.1 | 2.1 ± 0.1 | 2.2 ± 0.1 | 2.6 ± 0.1 | 0.79 | -0.002 ± 0.008 |
| Green and yellow vegetables | 106.6 ± 1.0 | 92.8 ± 1.2 | 103.0 ± 1.2 | 106.4 ± 1.1 | 101.4 ± 1.1 | 99.9 ± 1.1 | 102.9 ± 1.1 | 95.9 ± 1.2 | 93.8 ± 1.2 | 93.5 ± 0.6 | 87.7 ± 1.2 | 93.3 ± 1.2 | 100.2 ± 1.2 | <0.0001 | -0.97 ± 0.08 |
| Other vegetables | 172.3 ± 1.5 | 154.4 ± 1.6 | 172.7 ± 1.6 | 177.4 ± 1.6 | 170.2 ± 1.6 | 174.9 ± 1.5 | 174.9 ± 1.6 | 168.7 ± 1.6 | 165.8 ± 1.7 | 177.6 ± 0.9 | 173.9 ± 1.7 | 178.0 ± 1.7 | 173.7 ± 1.7 | <0.0001 | 0.74 ± 0.11 |
| Vegetable and fruit juice | 13.4 ± 0.8 | 16.1 ± 0.9 | 16.1 ± 0.9 | 17.7 ± 0.9 | 17.3 ± 0.8 | 19.5 ± 0.9 | 16.3 ± 0.8 | 16.6 ± 0.9 | 17.5 ± 0.9 | 18.2 ± 0.9 | 20.2 ± 0.9 | 19.0 ± 0.9 | 21.0 ± 0.9 | <0.0001 | 0.40 ± 0.06 |
| Pickled vegetables | 21.6 ± 0.3 | 19.9 ± 0.4 | 19.1 ± 0.4 | 17.7 ± 0.4 | 16.4 ± 0.4 | 17.1 ± 0.4 | 15.7 ± 0.4 | 13.6 ± 0.4 | 14.1 ± 0.4 | 13.2 ± 0.2 | 11.0 ± 0.4 | 10.6 ± 0.4 | 10.2 ± 0.4 | <0.0001 | -0.92 ± 0.03 |
| Fruit | 118.1 ± 1.5 | 120.8 ± 1.7 | 127.5 ± 1.7 | 110.9 ± 1.6 | 114.1 ± 1.6 | 117.9 ± 1.6 | 112.6 ± 1.6 | 100.6 ± 1.7 | 105.9 ± 1.8 | 106.4 ± 0.9 | 108.5 ± 1.7 | 100.8 ± 1.7 | 104.8 ± 1.8 | <0.0001 | -1.64 ± 0.12 |
| Mushrooms | 17.0 ± 0.3 | 16.9 ± 0.4 | 17.8 ± 0.4 | 16.4 ± 0.4 | 17.4 ± 0.4 | 16.6 ± 0.4 | 17.0 ± 0.4 | 18.1 ± 0.4 | 16.0 ± 0.4 | 18.1 ± 0.2 | 17.7 ± 0.4 | 16.5 ± 0.4 | 17.0 ± 0.4 | 0.08 | 0.05 ± 0.03 |
| Seaweeds | 14.6 ± 0.3 | 14.3 ± 0.3 | 16.2 ± 0.3 | 14.0 ± 0.3 | 12.7 ± 0.3 | 10.8 ± 0.3 | 11.1 ± 0.3 | 12.1 ± 0.3 | 11.2 ± 0.3 | 10.8 ± 0.2 | 10.8 ± 0.3 | 10.1 ± 0.3 | 11.0 ± 0.3 | <0.0001 | -0.42 ± 0.02 |
| Fish | 44.4 ± 0.7 | 43.6 ± 0.7 | 43.3 ± 0.7 | 42.2 ± 0.7 | 40.6 ± 0.7 | 36.7 ± 0.7 | 37.0 ± 0.7 | 35.4 ± 0.7 | 36.6 ± 0.8 | 36.5 ± 0.4 | 35.9 ± 0.7 | 33.8 ± 0.8 | 34.3 ± 0.8 | <0.0001 | -0.89 ± 0.05 |
| Shellfish | 17.1 ± 0.4 | 17.1 ± 0.4 | 16.3 ± 0.4 | 15.5 ± 0.4 | 15.2 ± 0.4 | 15.0 ± 0.4 | 14.1 ± 0.4 | 12.8 ± 0.4 | 13.6 ± 0.5 | 12.5 ± 0.2 | 12.4 ± 0.4 | 12.3 ± 0.5 | 11.2 ± 0.5 | <0.0001 | -0.49 ± 0.03 |
| Sea products | 34.8 ± 0.5 | 32.8 ± 0.6 | 33.1 ± 0.6 | 30.1 ± 0.6 | 32.0 ± 0.6 | 32.8 ± 0.6 | 30.5 ± 0.6 | 31.4 ± 0.6 | 31.1 ± 0.6 | 30.7 ± 0.3 | 31.6 ± 0.6 | 28.0 ± 0.6 | 29.1 ± 0.6 | <0.0001 | -0.36 ± 0.04 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Red meat | 41.5 ± 0.7 | 44.7 ± 0.7 | 46.1 ± 0.7 | 43.5 ± 0.7 | 47.0 ± 0.7 | 46.0 ± 0.7 | 46.0 ± 0.7 | 46.0 ± 0.7 | 44.2 ± 0.8 | 47.1 ± 0.4 | 50.4 ± 0.7 | 48.6 ± 0.8 | 50.8 ± 0.8 | <0.0001 | 0.52 ± 0.05 |
| Processed meat | 10.4 ± 0.3 | 10.4 ± 0.3 | 10.9 ± 0.3 | 11.0 ± 0.3 | 10.8 ± 0.3 | 10.2 ± 0.3 | 11.9 ± 0.3 | 11.4 ± 0.3 | 12.1 ± 0.3 | 12.1 ± 0.2 | 12.4 ± 0.3 | 13.3 ± 0.3 | 12.3 ± 0.3 | <0.0001 | 0.21 ± 0.02 |
| Chicken | 18.6 ± 0.5 | 17.6 ± 0.6 | 17.8 ± 0.6 | 18.6 ± 0.5 | 18.9 ± 0.5 | 18.0 ± 0.5 | 20.2 ± 0.5 | 21.1 ± 0.6 | 21.6 ± 0.6 | 22.6 ± 0.3 | 24.2 ± 0.6 | 25.8 ± 0.6 | 24.4 ± 0.6 | <0.0001 | 0.65 ± 0.04 |
| Eggs | 35.5 ± 0.4 | 33.4 ± 0.5 | 34.2 ± 0.5 | 35.7 ± 0.4 | 35.1 ± 0.4 | 32.4 ± 0.4 | 34.3 ± 0.4 | 35.0 ± 0.5 | 34.2 ± 0.5 | 34.7 ± 0.2 | 34.2 ± 0.5 | 34.9 ± 0.5 | 35.3 ± 0.5 | 0.67 | 0.01 ± 0.03 |
| Dairy products | 103.9 ± 1.5 | 104.9 ± 1.7 | 102.4 ± 1.7 | 99.8 ± 1.7 | 100.9 ± 1.7 | 91.9 ± 1.6 | 93.8 ± 1.7 | 95.4 ± 1.7 | 99.2 ± 1.8 | 100.2 ± 0.9 | 103.1 ± 1.8 | 104.3 ± 1.8 | 112.4 ± 1.8 | 0.17 | 0.17 ± 0.12 |
| Animal fat | 1.0 ± 0.04 | 1.0 ± 0.04 | 1.0 ± 0.04 | 1.0 ± 0.04 | 1.1 ± 0.04 | 1.0 ± 0.04 | 1.0 ± 0.04 | 1.0 ± 0.04 | 1.0 ± 0.04 | 0.9 ± 0.02 | 1.1 ± 0.04 | 1.1 ± 0.04 | 1.2 ± 0.04 | 0.87 | 0.0005 ± 0.003 |
| Vegetable oil | 12.0 ± 0.1 | 12.0 ± 0.1 | 11.8 ± 0.1 | 11.8 ± 0.1 | 12.1 ± 0.1 | 11.1 ± 0.1 | 12.0 ± 0.1 | 12.1 ± 0.1 | 11.8 ± 0.2 | 11.8 ± 0.1 | 12.0 ± 0.2 | 12.9 ± 0.2 | 12.9 ± 0.2 | 0.0001 | 0.04 ± 0.01 |
| Confectioneries | 30.2 ± 0.6 | 28.7 ± 0.7 | 29.0 ± 0.7 | 29.6 ± 0.7 | 29.2 ± 0.7 | 31.9 ± 0.6 | 27.7 ± 0.7 | 28.6 ± 0.7 | 28.7 ± 0.7 | 28.8 ± 0.4 | 30.9 ± 0.7 | 30.6 ± 0.7 | 30.0 ± 0.7 | 0.84 | 0.01 ± 0.05 |
| Alcoholic beverages | 117.2 ± 3.3 | 122.6 ± 3.6 | 113.2 ± 3.7 | 121.3 ± 3.5 | 123.7 ± 3.6 | 118.3 ± 3.5 | 120.5 ± 3.5 | 118.2 ± 3.7 | 130.6 ± 3.8 | 123.8 ± 2.0 | 126.2 ± 3.7 | 131.6 ± 3.8 | 133.3 ± 3.9 | <0.0001 | 1.05 ± 0.26 |
| Tea | 370.6 ± 4.3 | 378.2 ± 4.8 | 378.0 ± 4.9 | 378.8 ± 4.7 | 364.8 ± 4.7 | 345.8 ± 4.6 | 365.6 ± 4.7 | 331.7 ± 4.9 | 353.0 ± 5.1 | 309.6 ± 2.6 | 300.4 ± 5.0 | 296.3 ± 5.0 | 323.6 ± 5.2 | <0.0001 | -7.30 ± 0.34 |
| Coffee | 142.3 ± 2.4 | 149.5 ± 2.7 | 161.3 ± 2.7 | 145.3 ± 2.6 | 154.4 ± 2.6 | 146.3 ± 2.6 | 155.9 ± 2.6 | 158.3 ± 2.7 | 155.4 ± 2.8 | 160.6 ± 1.4 | 170.6 ± 2.7 | 166.5 ± 2.8 | 183.4 ± 2.9 | <0.0001 | 2.21 ± 0.19 |
| Soft drinks | 55.4 ± 2.6 | 68.3 ± 2.9 | 64.6 ± 3.0 | 79.4 ± 2.8 | 85.4 ± 2.8 | 67.8 ± 2.8 | 87.2 ± 2.8 | 89.4 ± 2.9 | 102.3 ± 3.0 | 98.5 ± 1.6 | 92.3 ± 3.0 | 86.1 ± 3.0 | 264.0 ± 3.1 | <0.0001 | 7.42 ± 0.21[d] |
| Salt-based seasonings | 37.6 ± 0.2 | 35.4 ± 0.3 | 36.7 ± 0.3 | 36.2 ± 0.3 | 33.3 ± 0.3 | 32.6 ± 0.3 | 31.6 ± 0.3 | 31.3 ± 0.3 | 29.6 ± 0.3 | 29.7 ± 0.1 | 28.2 ± 0.3 | 27.6 ± 0.3 | 26.7 ± 0.3 | <0.0001 | -0.91 ± 0.02 |

[a] Values are means ± standard errors unless otherwise indicated. Adjustment was made for sex, age category, occupation, weight status, and current smoking.

[b] A linear trend test was used with the survey year as a continuous variable in linear regression.

[c] *P* values for regression coefficients are theoretically identical to *P* values for trend.

[d] The analysis was repeated after excluding the 2015 data because of the extremely high mean value, but a significant result remained: 3.59 ± 0.21 (*P* <0.0001).

Table S5. Thirteen-year trends (2003-2015) in the "plant food and fish" dietary pattern score (factor 1): National Health and Nutrition Survey, Japan [a]

| | | Year | | | | | | | | | | | | | *P* for | Per-year change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | trend [b] | β ± SE [c] |
| All | 88,527 | 0.25 ± 0.01 | 0.13 ± 0.01 | 0.20 ± 0.01 | 0.17 ± 0.01 | 0.06 ± 0.01 | 0.03 ± 0.01 | 0.00 ± 0.01 | -0.07 ± 0.01 | -0.12 ± 0.01 | -0.07 ± 0.01 | -0.16 ± 0.01 | -0.18 ± 0.01 | -0.20 ± 0.01 | <0.0001 | -0.036 ± 0.001 |
| Sex (*P* for interaction = 0.85)[d] | | | | | | | | | | | | | | | | |
| Male | 39,557 | 0.35 ± 0.02 | 0.21 ± 0.02 | 0.28 ± 0.02 | 0.26 ± 0.02 | 0.14 ± 0.02 | 0.13 ± 0.02 | 0.08 ± 0.02 | 0.02 ± 0.02 | -0.04 ± 0.02 | 0.02 ± 0.01 | -0.06 ± 0.02 | -0.09 ± 0.02 | -0.14 ± 0.02 | <0.0001 | -0.037 ± 0.001 |
| Female | 48,970 | 0.16 ± 0.01 | 0.06 ± 0.02 | 0.14 ± 0.02 | 0.09 ± 0.02 | -0.01 ± 0.02 | -0.05 ± 0.02 | -0.07 ± 0.02 | -0.14 ± 0.02 | -0.17 ± 0.02 | -0.14 ± 0.01 | -0.24 ± 0.02 | -0.26 ± 0.02 | -0.24 ± 0.02 | <0.0001 | -0.036 ± 0.001 |
| Age category (*P* for interaction = 0.06)[d] | | | | | | | | | | | | | | | | |
| 20-34 years | 10,983 | -0.31 ± 0.02 | -0.34 ± 0.03 | -0.33 ± 0.03 | -0.40 ± 0.03 | -0.44 ± 0.03 | -0.49 ± 0.03 | -0.48 ± 0.03 | -0.52 ± 0.03 | -0.60 ± 0.03 | -0.53 ± 0.02 | -0.58 ± 0.03 | -0.63 ± 0.04 | -0.59 ± 0.04 | <0.0001 | -0.026 ± 0.002 |
| 35-49 years | 19,727 | -0.15 ± 0.02 | -0.30 ± 0.02 | -0.22 ± 0.02 | -0.23 ± 0.02 | -0.40 ± 0.02 | -0.41 ± 0.02 | -0.40 ± 0.02 | -0.50 ± 0.02 | -0.51 ± 0.02 | -0.47 ± 0.01 | -0.57 ± 0.02 | -0.55 ± 0.03 | -0.56 ± 0.02 | <0.0001 | -0.033 ± 0.002 |
| 50-64 years | 25,732 | 0.41 ± 0.02 | 0.30 ± 0.02 | 0.36 ± 0.02 | 0.28 ± 0.02 | 0.23 ± 0.02 | 0.17 ± 0.02 | 0.09 ± 0.02 | 0.04 ± 0.02 | -0.03 ± 0.02 | -0.01 ± 0.01 | -0.12 ± 0.03 | -0.12 ± 0.03 | -0.21 ± 0.03 | <0.0001 | -0.049 ± 0.002 |
| ≥65 years | 32,085 | 0.55 ± 0.02 | 0.40 ± 0.02 | 0.52 ± 0.02 | 0.52 ± 0.02 | 0.39 ± 0.02 | 0.35 ± 0.02 | 0.33 ± 0.02 | 0.27 ± 0.02 | 0.23 ± 0.02 | 0.28 ± 0.01 | 0.20 ± 0.02 | 0.15 ± 0.02 | 0.17 ± 0.02 | <0.0001 | -0.032 ± 0.002 |
| Occupation (*P* for interaction = 0.53)[d] | | | | | | | | | | | | | | | | |
| Professional/manager | 13,082 | 0.13 ± 0.03 | 0.03 ± 0.03 | 0.09 ± 0.03 | 0.05 ± 0.03 | -0.07 ± 0.03 | -0.12 ± 0.03 | -0.07 ± 0.03 | -0.12 ± 0.03 | -0.21 ± 0.03 | -0.15 ± 0.02 | -0.28 ± 0.03 | -0.24 ± 0.03 | -0.28 ± 0.03 | <0.0001 | -0.033 ± 0.002 |
| Sales/service/clerical | 21,555 | 0.01 ± 0.02 | -0.07 ± 0.02 | -0.05 ± 0.02 | -0.06 ± 0.02 | -0.16 ± 0.02 | -0.18 ± 0.02 | -0.24 ± 0.02 | -0.29 ± 0.02 | -0.36 ± 0.02 | -0.30 ± 0.01 | -0.40 ± 0.02 | -0.39 ± 0.02 | -0.42 ± 0.03 | <0.0001 | -0.036 ± 0.002 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Security/transportation/ labor | 16,957 | 0.41 ± 0.02 | 0.27 ± 0.03 | 0.32 ± 0.03 | 0.30 ± 0.03 | 0.18 ± 0.03 | 0.20 ± 0.03 | 0.13 ± 0.03 | 0.02 ± 0.03 | 0.00 ± 0.03 | 0.03 ± 0.02 | -0.09 ± 0.03 | -0.11 ± 0.03 | -0.20 ± 0.04 | <0.0001 | -0.044 ± 0.002 |
| Non-worker | 36,933 | 0.34 ± 0.02 | 0.22 ± 0.02 | 0.33 ± 0.02 | 0.28 ± 0.02 | 0.19 ± 0.02 | 0.12 ± 0.02 | 0.10 ± 0.02 | 0.04 ± 0.02 | 0.01 ± 0.02 | 0.05 ± 0.01 | -0.01 ± 0.02 | -0.08 ± 0.02 | -0.05 ± 0.02 | <0.0001 | -0.034 ± 0.001 |
| Weight status (*P* for interaction = 0.0001)[d,e] | | | | | | | | | | | | | | | | |
| Underweight | 6743 | -0.05 ± 0.04 | -0.20 ± 0.04 | -0.06 ± 0.04 | -0.03 ± 0.04 | -0.17 ± 0.04 | -0.23 ± 0.04 | -0.25 ± 0.04 | -0.29 ± 0.04 | -0.32 ± 0.04 | -0.26 ± 0.02 | -0.38 ± 0.04 | -0.34 ± 0.04 | -0.39 ± 0.04 | <0.0001 | -0.026 ± 0.003 |
| Normal weight | 59,611 | 0.24 ± 0.01 | 0.13 ± 0.01 | 0.21 ± 0.01 | 0.17 ± 0.01 | 0.04 ± 0.01 | 0.03 ± 0.01 | 0.00 ± 0.01 | -0.06 ± 0.01 | -0.13 ± 0.02 | -0.08 ± 0.01 | -0.16 ± 0.02 | -0.18 ± 0.02 | -0.20 ± 0.02 | <0.0001 | -0.037 ± 0.001 |
| Overweight | 22,173 | 0.35 ± 0.02 | 0.22 ± 0.03 | 0.26 ± 0.03 | 0.23 ± 0.02 | 0.17 ± 0.03 | 0.12 ± 0.03 | 0.08 ± 0.02 | -0.03 ± 0.03 | -0.03 ± 0.03 | 0.02 ± 0.01 | -0.08 ± 0.03 | -0.15 ± 0.03 | -0.14 ± 0.03 | <0.0001 | -0.039 ± 0.002 |
| Current smoking (*P* for interaction = 0.46)[d] | | | | | | | | | | | | | | | | |
| No | 69,788 | 0.33 ± 0.01 | 0.19 ± 0.01 | 0.28 ± 0.01 | 0.23 ± 0.01 | 0.12 ± 0.01 | 0.10 ± 0.01 | 0.07 ± 0.01 | 0.00 ± 0.01 | -0.04 ± 0.01 | -0.01 ± 0.01 | -0.08 ± 0.01 | -0.12 ± 0.01 | -0.13 ± 0.01 | <0.0001 | -0.037 ± 0.001 |
| Yes | 18,739 | -0.06 ± 0.02 | -0.10 ± 0.02 | -0.09 ± 0.03 | -0.07 ± 0.02 | -0.17 ± 0.02 | -0.22 ± 0.02 | -0.26 ± 0.02 | -0.31 ± 0.03 | -0.38 ± 0.03 | -0.30 ± 0.02 | -0.47 ± 0.03 | -0.42 ± 0.03 | -0.47 ± 0.03 | <0.0001 | -0.035 ± 0.002 |

[a] Values are mean ± standard error scores unless otherwise indicated. The dietary pattern score represents standardized variables with mean 0 and standard deviation 1. Negative scores indicate low adherence to the dietary pattern, whereas positive scores indicate high adherence. Adjustment was made for sex, age category, occupation, weight status, and current smoking. The number of participants in each category is shown in Table 1.

[b] A linear trend test was used with the survey year as a continuous variable in linear regression.

[c] *P* values for regression coefficients are theoretically identical to *P* values for trend.

[d] To calculate *P* values for interaction, the product term of the time and variable of stratification was added into the linear regression model.

[e] Defined based on body mass index (kg/m$^2$): <18.5 for underweight, ≥18.5 to <25 for normal weight, and ≥25 for overweight (including obese).

Table S6. Thirteen-year trends (2003-2015) in the "bread and dairy" dietary pattern score (factor 2): National Health and Nutrition Survey, Japan [a]

| | | Year | | | | | | | | | | | | | *P* for | Per-year change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | trend[b] | β ± SE[c] |
| All | 88,527 | -0.08 ± 0.01 | -0.05 ± 0.01 | -0.01 ± 0.01 | -0.04 ± 0.01 | 0.00 ± 0.01 | -0.05 ± 0.01 | -0.01 ± 0.01 | 0.00 ± 0.01 | 0.02 ± 0.01 | -0.02 ± 0.01 | 0.08 ± 0.01 | 0.08 ± 0.01 | 0.17 ± 0.01 | <0.0001 | 0.012 ± 0.001 |
| Sex (*P* for interaction = 0.009)[d] | | | | | | | | | | | | | | | | |
| Male | 39,557 | -0.34 ± 0.02 | -0.31 ± 0.02 | -0.28 ± 0.02 | -0.29 ± 0.02 | -0.26 ± 0.02 | -0.30 ± 0.02 | -0.27 ± 0.02 | -0.27 ± 0.02 | -0.26 ± 0.02 | -0.29 ± 0.01 | -0.19 ± 0.02 | -0.18 ± 0.02 | -0.09 ± 0.02 | <0.0001 | 0.011 ± 0.001 |
| Female | 48,970 | 0.14 ± 0.01 | 0.17 ± 0.02 | 0.22 ± 0.02 | 0.16 ± 0.02 | 0.21 ± 0.02 | 0.16 ± 0.02 | 0.20 ± 0.02 | 0.21 ± 0.02 | 0.24 ± 0.02 | 0.20 ± 0.01 | 0.30 ± 0.02 | 0.28 ± 0.02 | 0.37 ± 0.02 | <0.0001 | 0.012 ± 0.001 |
| Age category (*P* for interaction <0.0001)[d] | | | | | | | | | | | | | | | | |
| 20-34 years | 10,983 | -0.15 ± 0.03 | -0.16 ± 0.03 | -0.12 ± 0.03 | -0.07 ± 0.03 | -0.13 ± 0.03 | -0.19 ± 0.03 | -0.17 ± 0.03 | -0.15 ± 0.04 | -0.11 ± 0.04 | -0.21 ± 0.02 | -0.18 ± 0.04 | -0.09 ± 0.04 | -0.13 ± 0.04 | 0.19 | -0.003 ± 0.002 |
| 35-49 years | 19,727 | -0.13 ± 0.02 | -0.10 ± 0.03 | -0.09 ± 0.03 | -0.10 ± 0.03 | -0.09 ± 0.02 | -0.13 ± 0.03 | -0.07 ± 0.02 | -0.06 ± 0.03 | -0.09 ± 0.03 | -0.13 ± 0.01 | -0.09 ± 0.03 | -0.07 ± 0.03 | -0.02 ± 0.03 | 0.11 | 0.003 ± 0.002 |
| 50-64 years | 25,732 | -0.02 ± 0.02 | -0.03 ± 0.02 | 0.07 ± 0.02 | -0.02 ± 0.02 | 0.09 ± 0.02 | 0.00 ± 0.02 | 0.04 ± 0.02 | 0.00 ± 0.02 | 0.05 ± 0.03 | 0.02 ± 0.01 | 0.10 ± 0.03 | 0.10 ± 0.03 | 0.22 ± 0.03 | <0.0001 | 0.009 ± 0.002 |
| ≥65 years | 32,085 | -0.08 ± 0.02 | 0.01 ± 0.02 | 0.02 ± 0.02 | -0.03 ± 0.02 | 0.02 ± 0.02 | 0.02 ± 0.02 | 0.02 ± 0.02 | 0.08 ± 0.02 | 0.11 ± 0.02 | 0.08 ± 0.01 | 0.24 ± 0.02 | 0.19 ± 0.02 | 0.32 ± 0.02 | <0.0001 | 0.024 ± 0.002 |
| Occupation (*P* for interaction <0.0001)[d] | | | | | | | | | | | | | | | | |
| Professional/manager | 13,082 | -0.03 ± 0.03 | -0.01 ± 0.03 | 0.00 ± 0.03 | -0.07 ± 0.03 | 0.01 ± 0.03 | -0.07 ± 0.03 | -0.02 ± 0.03 | -0.01 ± 0.03 | -0.03 ± 0.03 | -0.06 ± 0.02 | -0.01 ± 0.03 | 0.02 ± 0.04 | 0.04 ± 0.03 | 0.63 | 0.001 ± 0.002 |
| Sales/service/clerical | 21,555 | -0.02 ± 0.02 | -0.03 ± 0.03 | 0.04 ± 0.03 | 0.02 ± 0.02 | 0.02 ± 0.02 | -0.04 ± 0.03 | 0.00 ± 0.02 | -0.01 ± 0.03 | -0.02 ± 0.03 | -0.02 ± 0.01 | 0.03 ± 0.03 | 0.03 ± 0.03 | 0.15 ± 0.03 | 0.01 | 0.004 ± 0.002 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Security/transportation/ Labor | 16,957 | -0.50 ± 0.02 | -0.50 ± 0.03 | -0.48 ± 0.03 | -0.47 ± 0.03 | -0.42 ± 0.03 | -0.46 ± 0.03 | -0.42 ± 0.03 | -0.43 ± 0.03 | -0.43 ± 0.03 | -0.42 ± 0.02 | -0.35 ± 0.03 | -0.34 ± 0.03 | -0.23 ± 0.04 | <0.0001 | 0.014 ± 0.002 |
| Non-worker | 36,933 | 0.08 ± 0.02 | 0.14 ± 0.02 | 0.18 ± 0.02 | 0.13 ± 0.02 | 0.18 ± 0.02 | 0.15 ± 0.02 | 0.16 ± 0.02 | 0.20 ± 0.02 | 0.26 ± 0.02 | 0.18 ± 0.01 | 0.33 ± 0.02 | 0.31 ± 0.02 | 0.41 ± 0.02 | <0.0001 | 0.018 ± 0.001 |
| Weight status (*P* for interaction = 0.14)[d,e] | | | | | | | | | | | | | | | | |
| Underweight | 6743 | 0.05 ± 0.04 | 0.14 ± 0.04 | 0.12 ± 0.05 | 0.12 ± 0.04 | 0.11 ± 0.04 | 0.06 ± 0.04 | 0.12 ± 0.04 | 0.13 ± 0.04 | 0.08 ± 0.05 | 0.09 ± 0.02 | 0.16 ± 0.04 | 0.17 ± 0.05 | 0.29 ± 0.05 | 0.02 | 0.007 ± 0.003 |
| Normal weight | 59,611 | -0.05 ± 0.01 | -0.01 ± 0.02 | 0.02 ± 0.02 | -0.01 ± 0.01 | 0.03 ± 0.02 | -0.02 ± 0.01 | 0.01 ± 0.02 | 0.02 ± 0.02 | 0.04 ± 0.02 | 0.01 ± 0.01 | 0.10 ± 0.02 | 0.09 ± 0.02 | 0.20 ± 0.02 | <0.0001 | 0.011 ± 0.001 |
| Overweight | 22,173 | -0.17 ± 0.02 | -0.19 ± 0.03 | -0.12 ± 0.03 | -0.18 ± 0.03 | -0.12 ± 0.03 | -0.14 ± 0.03 | -0.13 ± 0.03 | -0.10 ± 0.03 | -0.05 ± 0.03 | -0.13 ± 0.01 | 0.02 ± 0.03 | 0.01 ± 0.03 | 0.06 ± 0.03 | <0.0001 | 0.015 ± 0.002 |
| Current smoking (*P* for interaction = 0.87)[d] | | | | | | | | | | | | | | | | |
| No | 69,788 | 0.00 ± 0.01 | 0.04 ± 0.01 | 0.07 ± 0.01 | 0.04 ± 0.01 | 0.08 ± 0.01 | 0.03 ± 0.01 | 0.06 ± 0.01 | 0.08 ± 0.01 | 0.10 ± 0.01 | 0.07 ± 0.01 | 0.17 ± 0.01 | 0.17 ± 0.01 | 0.25 ± 0.01 | <0.0001 | 0.012 ± 0.001 |
| Yes | 18,739 | -0.37 ± 0.02 | -0.38 ± 0.03 | -0.29 ± 0.03 | -0.34 ± 0.03 | -0.31 ± 0.03 | -0.33 ± 0.03 | -0.29 ± 0.03 | -0.30 ± 0.03 | -0.28 ± 0.03 | -0.32 ± 0.02 | -0.27 ± 0.03 | -0.27 ± 0.03 | -0.13 ± 0.03 | <0.0001 | 0.010 ± 0.002 |

[a] Values are mean ± standard error scores unless otherwise indicated. The dietary pattern score represents standardized variables with mean 0 and standard deviation 1. Negative scores indicate low adherence to the dietary pattern, whereas positive scores indicate high adherence. Adjustment was made for sex, age category, occupation, weight status, and current smoking. The number of participants in each category is shown in Table 1.

[b] A linear trend test was used with the survey year as a continuous variable in linear regression.

[c] *P* values for regression coefficients are theoretically identical to *P* values for trend.

[d] To calculate *P* values for interaction, the product term of the time and variable of stratification was added into the linear regression model.

[e] Defined based on body mass index (kg/m$^2$): <18.5 for underweight, ≥18.5 to <25 for normal weight, and ≥25 for overweight (including obese).

Table S7. Thirteen-year trends (2003-2015) in the "animal food and oil" dietary pattern score (factor 3): National Health and Nutrition Survey, Japan[a]

| | | Year | | | | | | | | | | | | | *P* for | Per-year change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | trend[b] | β ± SE[c] |
| All | 88,527 | -0.07 ± 0.01 | -0.11 ± 0.01 | -0.06 ± 0.01 | -0.02 ± 0.01 | -0.01 ± 0.01 | -0.09 ± 0.01 | -0.01 ± 0.01 | 0.01 ± 0.01 | -0.03 ± 0.01 | 0.03 ± 0.01 | 0.05 ± 0.01 | 0.11 ± 0.01 | 0.20 ± 0.01 | <0.0001 | 0.017 ± 0.001 |
| Sex (*P* for interaction = 0.77)[d] | | | | | | | | | | | | | | | | |
| Male | 39,557 | 0.19 ± 0.02 | 0.15 ± 0.02 | 0.21 ± 0.02 | 0.24 ± 0.02 | 0.28 ± 0.02 | 0.17 ± 0.02 | 0.26 ± 0.02 | 0.27 ± 0.02 | 0.25 ± 0.02 | 0.30 ± 0.01 | 0.37 ± 0.02 | 0.42 ± 0.02 | 0.50 ± 0.02 | <0.0001 | 0.020 ± 0.001 |
| Female | 48,970 | -0.28 ± 0.01 | -0.32 ± 0.01 | -0.28 ± 0.01 | -0.23 ± 0.01 | -0.25 ± 0.01 | -0.29 ± 0.01 | -0.23 ± 0.01 | -0.20 ± 0.01 | -0.25 ± 0.02 | -0.20 ± 0.01 | -0.21 ± 0.02 | -0.13 ± 0.02 | -0.05 ± 0.02 | <0.0001 | 0.014 ± 0.001 |
| Age category (*P* for interaction <0.0001)[d] | | | | | | | | | | | | | | | | |
| 20-34 years | 10,983 | 0.37 ± 0.03 | 0.33 ± 0.03 | 0.34 ± 0.04 | 0.38 ± 0.03 | 0.33 ± 0.04 | 0.27 ± 0.04 | 0.29 ± 0.04 | 0.33 ± 0.04 | 0.31 ± 0.04 | 0.33 ± 0.02 | 0.28 ± 0.04 | 0.32 ± 0.04 | 0.46 ± 0.05 | 0.68 | -0.001 ± 0.003 |
| 35-49 years | 19,727 | 0.32 ± 0.02 | 0.25 ± 0.03 | 0.29 ± 0.03 | 0.33 ± 0.03 | 0.40 ± 0.02 | 0.19 ± 0.03 | 0.40 ± 0.03 | 0.34 ± 0.03 | 0.30 ± 0.03 | 0.34 ± 0.01 | 0.30 ± 0.03 | 0.44 ± 0.03 | 0.44 ± 0.03 | <0.0001 | 0.008 ± 0.002 |
| 50-64 years | 25,732 | -0.05 ± 0.02 | -0.05 ± 0.02 | 0.03 ± 0.02 | 0.06 ± 0.02 | 0.02 ± 0.02 | 0.01 ± 0.02 | 0.09 ± 0.02 | 0.07 ± 0.02 | 0.08 ± 0.02 | 0.13 ± 0.01 | 0.16 ± 0.02 | 0.20 ± 0.02 | 0.33 ± 0.03 | <0.0001 | 0.023 ± 0.002 |
| ≥65 years | 32,085 | -0.50 ± 0.02 | -0.53 ± 0.02 | -0.48 ± 0.02 | -0.44 ± 0.02 | -0.42 ± 0.02 | -0.46 ± 0.02 | -0.46 ± 0.02 | -0.36 ± 0.02 | -0.44 ± 0.02 | -0.35 ± 0.01 | -0.29 ± 0.02 | -0.25 ± 0.02 | -0.16 ± 0.02 | <0.0001 | 0.024 ± 0.001 |
| Occupation (*P* for interaction = 0.01)[d] | | | | | | | | | | | | | | | | |
| Professional/manager | 13,082 | 0.27 ± 0.03 | 0.20 ± 0.03 | 0.27 ± 0.03 | 0.28 ± 0.03 | 0.27 ± 0.03 | 0.15 ± 0.03 | 0.35 ± 0.03 | 0.29 ± 0.03 | 0.30 ± 0.03 | 0.33 ± 0.02 | 0.34 ± 0.03 | 0.45 ± 0.04 | 0.44 ± 0.03 | <0.0001 | 0.015 ± 0.002 |
| Sales/service/clerical | 21,555 | 0.12 ± 0.02 | 0.04 ± 0.02 | 0.12 ± 0.02 | 0.11 ± 0.02 | 0.14 ± 0.02 | 0.07 ± 0.02 | 0.14 ± 0.02 | 0.14 ± 0.02 | 0.13 ± 0.02 | 0.17 ± 0.01 | 0.14 ± 0.03 | 0.21 ± 0.03 | 0.36 ± 0.03 | <0.0001 | 0.013 ± 0.002 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Security/transportation/ labor | 16,957 | 0.19 ± 0.03 | 0.16 ± 0.03 | 0.20 ± 0.03 | 0.27 ± 0.03 | 0.30 ± 0.03 | 0.20 ± 0.03 | 0.26 ± 0.03 | 0.29 ± 0.03 | 0.29 ± 0.03 | 0.30 ± 0.02 | 0.30 ± 0.03 | 0.37 ± 0.03 | 0.46 ± 0.04 | <0.0001 | 0.016 ± 0.002 |
| Non-worker | 36,933 | -0.42 ± 0.02 | -0.42 ± 0.02 | -0.41 ± 0.02 | -0.34 ± 0.02 | -0.35 ± 0.02 | -0.40 ± 0.02 | -0.36 ± 0.02 | -0.31 ± 0.02 | -0.38 ± 0.02 | -0.29 ± 0.01 | -0.22 ± 0.02 | -0.19 ± 0.02 | -0.11 ± 0.02 | <0.0001 | 0.021 ± 0.001 |
| Weight status (*P* for interaction = 0.05)[d,e] | | | | | | | | | | | | | | | | |
| Underweight | 6743 | -0.26 ± 0.04 | -0.32 ± 0.04 | -0.19 ± 0.04 | -0.16 ± 0.04 | -0.16 ± 0.04 | -0.24 ± 0.04 | -0.18 ± 0.04 | -0.24 ± 0.04 | -0.17 ± 0.04 | -0.17 ± 0.02 | -0.14 ± 0.04 | -0.13 ± 0.04 | 0.01 ± 0.04 | <0.0001 | 0.014 ± 0.003 |
| Normal weight | 59,611 | -0.09 ± 0.01 | -0.10 ± 0.01 | -0.06 ± 0.01 | -0.02 ± 0.01 | -0.02 ± 0.01 | -0.09 ± 0.01 | -0.02 ± 0.01 | 0.02 ± 0.01 | -0.04 ± 0.02 | 0.03 ± 0.01 | 0.04 ± 0.01 | 0.11 ± 0.01 | 0.20 ± 0.02 | <0.0001 | 0.017 ± 0.001 |
| Overweight | 22,173 | 0.02 ± 0.02 | -0.06 ± 0.03 | -0.01 ± 0.03 | 0.02 ± 0.02 | 0.05 ± 0.02 | -0.04 ± 0.02 | 0.05 ± 0.02 | 0.06 ± 0.03 | 0.04 ± 0.03 | 0.09 ± 0.01 | 0.13 ± 0.03 | 0.19 ± 0.03 | 0.25 ± 0.03 | <0.0001 | 0.018 ± 0.002 |
| Current smoking (*P* for interaction = 0.03)[d] | | | | | | | | | | | | | | | | |
| No | 69,788 | -0.18 ± 0.01 | -0.22 ± 0.01 | -0.16 ± 0.01 | -0.12 ± 0.01 | -0.13 ± 0.01 | -0.17 ± 0.01 | -0.11 ± 0.01 | -0.08 ± 0.01 | -0.15 ± 0.01 | -0.07 ± 0.01 | -0.05 ± 0.01 | 0.02 ± 0.01 | 0.09 ± 0.01 | <0.0001 | 0.018 ± 0.001 |
| Yes | 18,739 | 0.31 ± 0.02 | 0.31 ± 0.03 | 0.32 ± 0.03 | 0.35 ± 0.03 | 0.40 ± 0.03 | 0.22 ± 0.03 | 0.37 ± 0.03 | 0.33 ± 0.03 | 0.44 ± 0.03 | 0.40 ± 0.02 | 0.42 ± 0.03 | 0.46 ± 0.03 | 0.62 ± 0.04 | <0.0001 | 0.015 ± 0.002 |

[a] Values are mean ± standard error scores unless otherwise indicated. The dietary pattern score represents standardized variables with mean 0 and standard deviation 1. Negative scores indicate low adherence to the dietary pattern, whereas positive scores indicate high adherence. Adjustment was made for sex, age category, occupation, weight status, and current smoking. The number of participants in each category is shown in Table 1.

[b] A linear trend test was used with the survey year as a continuous variable in linear regression.

[c] *P* values for regression coefficients are theoretically identical to *P* values for trend.

[d] To calculate *P* values for interaction, the product term of the time and variable of stratification was added into the linear regression model.

[e] Defined based on body mass index (kg/m$^2$): <18.5 for underweight, ≥18.5 to <25 for normal weight, and ≥25 for overweight (including obese).

Table S8. Factor loadings for dietary patterns identified among the 68,810 participants of the National Health and Nutrition Survey, Japan 2003-2011 and 2013-2015 (excluding 2012 data)[a]

| | Factor 1 "Plant food and fish" pattern | Factor 2 "Bread and dairy" pattern | Factor 3 "Animal food and oil" pattern |
|---|---|---|---|
| Rice | **0.34** | **-0.55** | 0.14 |
| Bread | -0.19 | **0.63** | 0.17 |
| Noodles | -0.21 | 0.04 | 0.02 |
| Other grains | 0.01 | 0.05 | 0.25 |
| Potatoes | **0.36** | -0.02 | 0.17 |
| Sugar | **0.33** | **0.33** | 0.10 |
| Pulses | **0.41** | -0.04 | -0.06 |
| Nuts | 0.19 | 0.17 | -0.03 |
| Green and yellow vegetables | **0.51** | 0.18 | 0.07 |
| Other vegetables | **0.48** | -0.01 | **0.34** |
| Vegetable and fruit juice | -0.03 | 0.14 | 0.04 |
| Pickled vegetables | 0.29 | -0.14 | -0.09 |
| Fruit | **0.43** | **0.40** | -0.21 |
| Mushrooms | **0.30** | 0.04 | 0.08 |
| Seaweeds | **0.32** | -0.02 | -0.04 |
| Fish | **0.30** | -0.04 | -0.16 |
| Shellfish | 0.08 | -0.06 | 0.16 |
| Sea products | 0.27 | -0.12 | -0.03 |
| Red meat | 0.01 | -0.11 | **0.48** |
| Processed meat | -0.10 | 0.13 | **0.37** |
| Chicken | 0.00 | -0.05 | 0.24 |
| Eggs | 0.12 | -0.03 | **0.40** |
| Dairy products | 0.15 | **0.55** | -0.06 |
| Animal fat | -0.09 | 0.28 | 0.25 |
| Vegetable oil | 0.00 | 0.10 | **0.64** |
| Confectioneries | -0.01 | 0.23 | -0.08 |
| Alcoholic beverages | -0.04 | -0.24 | 0.28 |
| Tea | **0.34** | 0.06 | -0.21 |
| Coffee | -0.13 | 0.21 | 0.29 |
| Soft drinks | -0.13 | 0.00 | 0.20 |
| Salt-based seasonings | **0.60** | -0.24 | 0.16 |
| Variability explained (%) | 7.49 | 5.62 | 5.60 |

[a] Dietary patterns were identified using principal component analysis based on intakes of the 31 food groups (g/day). Absolute factor loading values ≥0.30 are presented in bold. Total variability explained was 18.70%.

Table S9. Secular trends in the "plant food and fish" dietary pattern score (factor 1): National Health and Nutrition Survey, Japan 2003-2011 and 2013-2015 (excluding 2012 data)[a]

| | | Year | | | | | | | | | | | | *P* for | Per-year change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2013 | 2014 | 2015 | trend [b] | β ± SE [c] |
| All | 68,810 | 0.22 ± 0.01 | 0.11 ± 0.01 | 0.18 ± 0.01 | 0.14 ± 0.01 | 0.04 ± 0.01 | 0.01 ± 0.01 | -0.02 ± 0.01 | -0.08 ± 0.01 | -0.13 ± 0.01 | -0.18 ± 0.01 | -0.20 ± 0.01 | -0.22 ± 0.01 | <0.0001 | -0.038 ± 0.001 |
| Sex (*P* for interaction = 0.71)[d] | | | | | | | | | | | | | | | |
| Male | 30,845 | 0.32 ± 0.02 | 0.18 ± 0.02 | 0.26 ± 0.02 | 0.23 ± 0.02 | 0.12 ± 0.02 | 0.10 ± 0.02 | 0.05 ± 0.02 | 0.00 ± 0.02 | -0.07 ± 0.02 | -0.09 ± 0.02 | -0.12 ± 0.02 | -0.16 ± 0.02 | <0.0001 | -0.040 ± 0.001 |
| Female | 37,965 | 0.14 ± 0.01 | 0.05 ± 0.02 | 0.12 ± 0.02 | 0.07 ± 0.02 | -0.02 ± 0.02 | -0.07 ± 0.02 | -0.08 ± 0.02 | -0.15 ± 0.02 | -0.18 ± 0.02 | -0.25 ± 0.02 | -0.27 ± 0.02 | -0.26 ± 0.02 | <0.0001 | -0.037 ± 0.001 |
| Age category (*P* for interaction = 0.06)[d] | | | | | | | | | | | | | | | |
| 20-34 years | 8872 | -0.33 ± 0.02 | -0.36 ± 0.03 | -0.35 ± 0.03 | -0.42 ± 0.03 | -0.46 ± 0.03 | -0.50 ± 0.03 | -0.48 ± 0.03 | -0.53 ± 0.03 | -0.62 ± 0.03 | -0.59 ± 0.03 | -0.65 ± 0.04 | -0.61 ± 0.04 | <0.0001 | -0.028 ± 0.002 |
| 35-49 years | 15,386 | -0.16 ± 0.02 | -0.31 ± 0.02 | -0.23 ± 0.02 | -0.25 ± 0.02 | -0.41 ± 0.02 | -0.42 ± 0.02 | -0.41 ± 0.02 | -0.51 ± 0.02 | -0.42 ± 0.02 | -0.58 ± 0.02 | -0.56 ± 0.02 | -0.57 ± 0.02 | <0.0001 | -0.035 ± 0.002 |
| 50-64 years | 20,047 | 0.39 ± 0.02 | 0.28 ± 0.02 | 0.34 ± 0.02 | 0.26 ± 0.02 | 0.20 ± 0.02 | 0.15 ± 0.02 | 0.08 ± 0.02 | 0.03 ± 0.02 | -0.05 ± 0.02 | -0.13 ± 0.03 | -0.13 ± 0.03 | -0.22 ± 0.03 | <0.0001 | -0.050 ± 0.002 |
| ≥65 years | 24,505 | 0.53 ± 0.02 | 0.38 ± 0.02 | 0.50 ± 0.02 | 0.50 ± 0.02 | 0.37 ± 0.02 | 0.34 ± 0.02 | 0.32 ± 0.02 | 0.25 ± 0.02 | 0.22 ± 0.02 | 0.19 ± 0.02 | 0.14 ± 0.02 | 0.15 ± 0.02 | <0.0001 | -0.033 ± 0.002 |
| Occupation (*P* for interaction = 0.66)[d] | | | | | | | | | | | | | | | |
| Professional/manager | 10,337 | 0.12 ± 0.03 | 0.01 ± 0.03 | 0.08 ± 0.03 | 0.03 ± 0.03 | -0.09 ± 0.03 | -0.14 ± 0.03 | -0.09 ± 0.03 | -0.14 ± 0.03 | -0.23 ± 0.03 | -0.30 ± 0.03 | -0.26 ± 0.03 | -0.29 ± 0.03 | <0.0001 | -0.035 ± 0.002 |
| Sales/service/clerical | 16,717 | -0.01 ± 0.02 | -0.09 ± 0.02 | -0.07 ± 0.02 | -0.08 ± 0.02 | -0.18 ± 0.02 | -0.20 ± 0.02 | -0.25 ± 0.02 | -0.30 ± 0.02 | -0.38 ± 0.02 | -0.41 ± 0.02 | -0.40 ± 0.02 | -0.43 ± 0.03 | <0.0001 | -0.038 ± 0.002 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Security/transportation/labor | 13,113 | 0.37 ± 0.02 | 0.23 ± 0.03 | 0.28 ± 0.03 | 0.26 ± 0.03 | 0.1153 ± 0.03 | 0.16 ± 0.03 | 0.10 ± 0.03 | -0.01 ± 0.03 | -0.03 ± 0.03 | -0.12 ± 0.03 | -0.14 ± 0.03 | -0.23 ± 0.04 | <0.0001 | -0.047 ± 0.002 |
| Non-worker | 28,643 | 0.32 ± 0.02 | 0.20 ± 0.02 | 0.32 ± 0.02 | 0.26 ± 0.02 | 0.17 ± 0.02 | 0.11 ± 0.02 | 0.09 ± 0.02 | 0.03 ± 0.02 | 0.00 ± 0.02 | -0.02 ± 0.02 | -0.09 ± 0.02 | -0.06 ± 0.02 | <0.0001 | -0.035 ± 0.001 |
| Weight status (*P* for interaction <0.0001) [d, e] | | | | | | | | | | | | | | | |
| Underweight | 5245 | -0.07 ± 0.04 | -0.21 ± 0.04 | -0.08 ± 0.04 | -0.05 ± 0.04 | -0.18 ± 0.04 | -0.24 ± 0.04 | -0.26 ± 0.04 | -0.30 ± 0.04 | -0.33 ± 0.04 | -0.39 ± 0.04 | -0.35 ± 0.04 | -0.39 ± 0.04 | <0.0001 | -0.028 ± 0.003 |
| Normal weight | 46,361 | 0.22 ± 0.01 | 0.11 ± 0.01 | 0.19 ± 0.01 | 0.14 ± 0.01 | 0.02 ± 0.01 | 0.01 ± 0.01 | -0.02 ± 0.01 | -0.08 ± 0.01 | -0.14 ± 0.02 | -0.18 ± 0.02 | -0.20 ± 0.02 | -0.22 ± 0.02 | <0.0001 | -0.038 ± 0.001 |
| Overweight | 17,204 | 0.33 ± 0.02 | 0.20 ± 0.03 | 0.24 ± 0.03 | 0.21 ± 0.02 | 0.15 ± 0.03 | 0.09 ± 0.02 | 0.06 ± 0.02 | -0.04 ± 0.03 | -0.05 ± 0.03 | -0.10 ± 0.03 | -0.16 ± 0.03 | -0.16 ± 0.03 | <0.0001 | -0.041 ± 0.002 |
| Current smoking (*P* for interaction = 0.98)[d] | | | | | | | | | | | | | | | |
| No | 53,653 | 0.31 ± 0.01 | 0.17 ± 0.01 | 0.26 ± 0.01 | 0.21 ± 0.01 | 0.10 ± 0.01 | 0.08 ± 0.01 | 0.06 ± 0.01 | -0.01 ± 0.01 | -0.06 ± 0.01 | -0.09 ± 0.01 | -0.13 ± 0.01 | -0.14 ± 0.01 | <0.0001 | -0.038 ± 0.001 |
| Yes | 15,157 | -0.08 ± 0.02 | -0.13 ± 0.02 | -0.11 ± 0.03 | -0.09 ± 0.02 | -0.19 ± 0.02 | -0.24 ± 0.02 | -0.28 ± 0.02 | -0.33 ± 0.03 | -0.40 ± 0.03 | -0.49 ± 0.03 | -0.44 ± 0.03 | -0.49 ± 0.03 | <0.0001 | -0.038 ± 0.002 |

[a] Values are mean ± standard error scores unless otherwise indicated. The dietary pattern score represents standardized variables with mean 0 and standard deviation 1. Negative scores indicate low adherence to the dietary pattern, whereas positive scores indicate high adherence. Adjustment was made for sex, age category, occupation, weight status, and current smoking. The number of participants in each category is shown in Table 1.

[b] A linear trend test was used with the survey year as a continuous variable in linear regression.

[c] *P* values for regression coefficients are theoretically identical to *P* values for trend.

[d] To calculate *P* values for interaction, the product term of the time and variable of stratification was added into the linear regression model.

[e] Defined based on body mass index (kg/m$^2$): <18.5 for underweight, ≥18.5 to <25 for normal weight, and ≥25 for overweight (including obese).

Table S10. Secular trends in the "bread and dairy" dietary pattern score (factor 2): National Health and Nutrition Survey, Japan 2003-2011 and 2013-2015 (excluding 2012 data)[a]

| | | Year | | | | | | | | | | | | *P* for | Per-year change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2013 | 2014 | 2015 | trend [b] | β ± SE [c] |
| All | 68,810 | -0.08 ± 0.01 | -0.05 ± 0.01 | -0.01 ± 0.01 | -0.05 ± 0.01 | 0.00 ± 0.01 | -0.05 ± 0.01 | -0.02 ± 0.01 | -0.01 ± 0.01 | 0.02 ± 0.01 | 0.08 ± 0.01 | 0.07 ± 0.01 | 0.17 ± 0.01 | <0.0001 | 0.015 ± 0.001 |
| Sex (*P* for interaction = 0.002)[d] | | | | | | | | | | | | | | | |
| Male | 30,845 | -0.35 ± 0.02 | -0.32 ± 0.02 | -0.30 ± 0.02 | -0.30 ± 0.02 | -0.27 ± 0.02 | -0.31 ± 0.02 | -0.29 ± 0.02 | -0.28 ± 0.02 | -0.27 ± 0.02 | -0.20 ± 0.02 | -0.20 ± 0.02 | -0.10 ± 0.02 | <0.0001 | 0.015 ± 0.002 |
| Female | 37,965 | 0.14 ± 0.01 | 0.17 ± 0.02 | 0.22 ± 0.02 | 0.16 ± 0.02 | 0.21 ± 0.02 | 0.16 ± 0.02 | 0.20 ± 0.02 | 0.21 ± 0.02 | 0.25 ± 0.02 | 0.30 ± 0.02 | 0.29 ± 0.02 | 0.38 ± 0.02 | <0.0001 | 0.015 ± 0.001 |
| Age category (*P* for interaction <0.0001)[d] | | | | | | | | | | | | | | | |
| 20-34 years | 8872 | -0.16 ± 0.03 | -0.17 ± 0.03 | -0.13 ± 0.03 | -0.07 ± 0.03 | -0.14 ± 0.03 | -0.19 ± 0.03 | -0.17 ± 0.03 | -0.15 ± 0.04 | -0.12 ± 0.04 | -0.18 ± 0.04 | -0.09 ± 0.04 | -0.13 ± 0.04 | 0.68 | 0.001 ± 0.003 |
| 35-49 years | 15,386 | -0.14 ± 0.02 | -0.11 ± 0.03 | -0.10 ± 0.03 | -0.11 ± 0.03 | -0.10 ± 0.02 | -0.14 ± 0.03 | -0.08 ± 0.02 | -0.07 ± 0.03 | -0.09 ± 0.03 | -0.09 ± 0.03 | -0.08 ± 0.03 | -0.03 ± 0.03 | 0.002 | 0.006 ± 0.002 |
| 50-64 years | 20,047 | -0.03 ± 0.02 | -0.04 ± 0.02 | 0.06 ± 0.02 | -0.03 ± 0.02 | 0.08 ± 0.02 | -0.01 ± 0.02 | 0.03 ± 0.02 | -0.01 ± 0.02 | 0.04 ± 0.03 | 0.09 ± 0.03 | 0.09 ± 0.03 | 0.21 ± 0.03 | <0.0001 | 0.013 ± 0.002 |
| ≥65 years | 24,505 | -0.07 ± 0.02 | 0.02 ± 0.02 | 0.03 ± 0.02 | -0.02 ± 0.02 | 0.03 ± 0.02 | 0.02 ± 0.02 | 0.03 ± 0.02 | 0.09 ± 0.02 | 0.12 ± 0.02 | 0.24 ± 0.02 | 0.19 ± 0.02 | 0.33 ± 0.02 | <0.0001 | 0.027 ± 0.002 |
| Occupation (*P* for interaction <0.0001)[d] | | | | | | | | | | | | | | | |
| Professional/manager | 10,337 | -0.04 ± 0.03 | -0.03 ± 0.03 | -0.02 ± 0.03 | -0.08 ± 0.03 | 0.00 ± 0.03 | -0.08 ± 0.03 | -0.03 ± 0.03 | -0.02 ± 0.03 | -0.04 ± 0.03 | -0.02 ± 0.03 | 0.01 ± 0.04 | 0.03 ± 0.03 | 0.13 | 0.004 ± 0.003 |
| Sales/service/clerical | 16,717 | -0.04 ± 0.02 | -0.04 ± 0.03 | 0.03 ± 0.03 | 0.01 ± 0.02 | 0.01 ± 0.02 | -0.05 ± 0.03 | 0.00 ± 0.02 | -0.02 ± 0.03 | -0.02 ± 0.03 | 0.02 ± 0.03 | 0.02 ± 0.03 | 0.14 ± 0.03 | 0.0001 | 0.007 ± 0.002 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Security/transportation/labor | 13,113 | -0.51 ± 0.02 | -0.51 ± 0.03 | -0.49 ± 0.03 | -0.48 ± 0.03 | -0.43 ± 0.03 | -0.47 ± 0.03 | -0.43 ± 0.03 | -0.44 ± 0.03 | -0.43 ± 0.03 | -0.36 ± 0.03 | -0.35 ± 0.03 | -0.24 ± 0.04 | <0.0001 | 0.017 ± 0.002 |
| Non-worker | 28,643 | 0.08 ± 0.02 | 0.14 ± 0.02 | 0.18 ± 0.02 | 0.13 ± 0.02 | 0.18 ± 0.02 | 0.15 ± 0.02 | 0.16 ± 0.02 | 0.20 ± 0.02 | 0.27 ± 0.02 | 0.33 ± 0.02 | 0.31 ± 0.02 | 0.41 ± 0.02 | <0.0001 | 0.022 ± 0.001 |
| Weight status (*P* for interaction = 0.05)[d,e] | | | | | | | | | | | | | | | |
| Underweight | 5245 | 0.06 ± 0.04 | 0.14 ± 0.04 | 0.12 ± 0.05 | 0.12 ± 0.05 | 0.11 ± 0.04 | 0.06 ± 0.04 | 0.13 ± 0.04 | 0.14 ± 0.04 | 0.09 ± 0.05 | 0.16 ± 0.04 | 0.17 ± 0.05 | 0.29 ± 0.05 | 0.002 | 0.010 ± 0.003 |
| Normal weight | 46,361 | -0.06 ± 0.01 | -0.02 ± 0.02 | 0.02 ± 0.02 | -0.01 ± 0.01 | 0.03 ± 0.02 | -0.03 ± 0.01 | 0.01 ± 0.01 | 0.01 ± 0.02 | 0.04 ± 0.02 | 0.09 ± 0.02 | 0.08 ± 0.02 | 0.19 ± 0.02 | <0.0001 | 0.014 ± 0.001 |
| Overweight | 17,204 | -0.18 ± 0.02 | -0.20 ± 0.03 | -0.13 ± 0.03 | -0.19 ± 0.03 | -0.12 ± 0.03 | -0.15 ± 0.03 | -0.13 ± 0.03 | -0.11 ± 0.03 | -0.06 ± 0.03 | 0.01 ± 0.03 | 0.01 ± 0.03 | 0.06 ± 0.03 | <0.0001 | 0.019 ± 0.002 |
| Current smoking (*P* for interaction = 0.85)[d] | | | | | | | | | | | | | | | |
| No | 53,653 | 0.00 ± 0.01 | 0.05 ± 0.01 | 0.07 ± 0.01 | 0.04 ± 0.01 | 0.08 ± 0.01 | 0.03 ± 0.01 | 0.06 ± 0.01 | 0.08 ± 0.01 | 0.10 ± 0.01 | 0.17 ± 0.01 | 0.17 ± 0.01 | 0.25 ± 0.01 | <0.0001 | 0.016 ± 0.001 |
| Yes | 15,157 | -0.38 ± 0.02 | -0.39 ± 0.03 | -0.31 ± 0.03 | -0.35 ± 0.03 | -0.32 ± 0.03 | -0.34 ± 0.03 | -0.30 ± 0.03 | -0.30 ± 0.03 | -0.28 ± 0.03 | -0.28 ± 0.03 | -0.28 ± 0.03 | -0.14 ± 0.03 | <0.0001 | 0.013 ± 0.002 |

[a] Values are mean ± standard error scores unless otherwise indicated. The dietary pattern score represents standardized variables with mean 0 and standard deviation 1. Negative scores indicate low adherence to the dietary pattern, whereas positive scores indicate high adherence. Adjustment was made for sex, age category, occupation, weight status, and current smoking. The number of participants in each category is shown in Table 1.

[b] A linear trend test was used with the survey year as a continuous variable in linear regression.

[c] *P* values for regression coefficients are theoretically identical to *P* values for trend.

[d] To calculate *P* values for interaction, the product term of the time and variable of stratification was added into the linear regression model.

[e] Defined based on body mass index (kg/m$^2$): <18.5 for underweight, ≥18.5 to <25 for normal weight, and ≥25 for overweight (including obese).

Table S11. Secular trends in the "animal food and oil" dietary pattern score (factor 3): National Health and Nutrition Survey, Japan 2003-2011 and 2013-2015 (excluding 2012 data)[1]

| | | Year | | | | | | | | | | | | *P* for | Per-year change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2013 | 2014 | 2015 | trend [b] | β ± SE [c] |
| All | 68,810 | -0.06 ± 0.01 | -0.10 ± 0.01 | -0.05 ± 0.01 | -0.02 ± 0.01 | -0.01 ± 0.01 | -0.08 ± 0.01 | 0.00 ± 0.01 | 0.01 ± 0.01 | -0.02 ± 0.01 | 0.06 ± 0.01 | 0.12 ± 0.01 | 0.20 ± 0.01 | <0.0001 | 0.018 ± 0.001 |
| Sex (*P* for interaction = 0.45)[d] | | | | | | | | | | | | | | | |
| Male | 30,845 | 0.19 ± 0.02 | 0.15 ± 0.02 | 0.21 ± 0.02 | 0.24 ± 0.02 | 0.28 ± 0.02 | 0.17 ± 0.02 | 0.26 ± 0.02 | 0.27 ± 0.02 | 0.25 ± 0.02 | 0.38 ± 0.02 | 0.42 ± 0.02 | 0.50 ± 0.02 | <0.0001 | 0.022 ± 0.002 |
| Female | 37,965 | -0.27 ± 0.01 | -0.30 ± 0.01 | -0.26 ± 0.01 | -0.22 ± 0.01 | -0.24 ± 0.01 | -0.28 ± 0.01 | -0.22 ± 0.01 | -0.19 ± 0.01 | -0.24 ± 0.02 | -0.20 ± 0.02 | -0.12 ± 0.02 | -0.04 ± 0.02 | <0.0001 | 0.015 ± 0.001 |
| Age category (*P* for interaction <0.0001)[d] | | | | | | | | | | | | | | | |
| 20-34 years | 8872 | 0.36 ± 0.03 | 0.32 ± 0.03 | 0.33 ± 0.04 | 0.37 ± 0.03 | 0.33 ± 0.04 | 0.26 ± 0.04 | 0.28 ± 0.04 | 0.32 ± 0.04 | 0.30 ± 0.04 | 0.27 ± 0.04 | 0.32 ± 0.04 | 0.45 ± 0.05 | 0.72 | -0.001 ± 0.003 |
| 35-49 years | 15,386 | 0.32 ± 0.02 | 0.25 ± 0.03 | 0.29 ± 0.03 | 0.32 ± 0.03 | 0.39 ± 0.03 | 0.19 ± 0.03 | 0.40 ± 0.03 | 0.34 ± 0.03 | 0.30 ± 0.03 | 0.30 ± 0.03 | 0.44 ± 0.03 | 0.43 ± 0.03 | <0.0001 | 0.009 ± 0.002 |
| 50-64 years | 20,047 | -0.04 ± 0.02 | -0.04 ± 0.02 | 0.04 ± 0.02 | 0.06 ± 0.02 | 0.03 ± 0.02 | 0.01 ± 0.02 | 0.10 ± 0.02 | 0.07 ± 0.02 | 0.09 ± 0.02 | 0.17 ± 0.02 | 0.20 ± 0.02 | 0.33 ± 0.03 | <0.0001 | 0.024 ± 0.002 |
| ≥65 years | 24,505 | -0.49 ± 0.02 | -0.52 ± 0.02 | -0.47 ± 0.02 | -0.43 ± 0.02 | -0.41 ± 0.02 | -0.45 ± 0.02 | -0.45 ± 0.02 | -0.35 ± 0.02 | -0.43 ± 0.02 | -0.27 ± 0.02 | -0.24 ± 0.02 | -0.15 ± 0.02 | <0.0001 | 0.026 ± 0.001 |
| Occupation (*P* for interaction = 0.01)[d] | | | | | | | | | | | | | | | |
| Professional/manager | 10,337 | 0.27 ± 0.03 | 0.20 ± 0.03 | 0.27 ± 0.03 | 0.28 ± 0.03 | 0.27 ± 0.03 | 0.15 ± 0.03 | 0.35 ± 0.03 | 0.29 ± 0.03 | 0.30 ± 0.03 | 0.34 ± 0.03 | 0.45 ± 0.04 | 0.44 ± 0.03 | <0.0001 | 0.016 ± 0.003 |
| Sales/service/clerical | 16,717 | 0.12 ± 0.02 | 0.04 ± 0.02 | 0.13 ± 0.02 | 0.12 ± 0.02 | 0.14 ± 0.02 | 0.08 ± 0.02 | 0.15 ± 0.02 | 0.15 ± 0.02 | 0.13 ± 0.03 | 0.15 ± 0.03 | 0.22 ± 0.03 | 0.37 ± 0.03 | <0.0001 | 0.014 ± 0.002 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Security/transportation/labor | 13,113 | 0.19 ± 0.03 | 0.16 ± 0.03 | 0.21 ± 0.03 | 0.27 ± 0.03 | 0.30 ± 0.03 | 0.21 ± 0.03 | 0.26 ± 0.03 | 0.30 ± 0.03 | 0.29 ± 0.03 | 0.30 ± 0.03 | 0.37 ± 0.03 | 0.46 ± 0.04 | <0.0001 | 0.017 ± 0.002 |
| Non-worker | 28,643 | -0.41 ± 0.02 | -0.41 ± 0.02 | -0.39 ± 0.02 | -0.33 ± 0.02 | -0.34 ± 0.02 | -0.39 ± 0.02 | -0.34 ± 0.02 | -0.29 ± 0.02 | -0.36 ± 0.02 | -0.21 ± 0.02 | -0.17 ± 0.02 | -0.10 ± 0.02 | <0.0001 | 0.022 ± 0.001 |
| Weight status (*P* for interaction = 0.05) [d, e] | | | | | | | | | | | | | | | |
| Underweight | 5245 | -0.25 ± 0.04 | -0.32 ± 0.04 | -0.16 ± 0.04 | -0.16 ± 0.04 | -0.16 ± 0.04 | -0.24 ± 0.04 | -0.18 ± 0.04 | -0.23 ± 0.04 | -0.16 ± 0.04 | -0.14 ± 0.04 | -0.13 ± 0.04 | 0.02 ± 0.05 | <0.0001 | 0.015 ± 0.003 |
| Normal weight | 46,361 | -0.08 ± 0.01 | -0.09 ± 0.01 | -0.05 ± 0.01 | -0.01 ± 0.01 | -0.01 ± 0.01 | -0.08 ± 0.01 | -0.01 ± 0.01 | 0.03 ± 0.01 | -0.03 ± 0.02 | 0.05 ± 0.01 | 0.12 ± 0.01 | 0.20 ± 0.02 | <0.0001 | 0.018 ± 0.001 |
| Overweight | 17,204 | 0.03 ± 0.02 | -0.06 ± 0.03 | -0.01 ± 0.03 | 0.03 ± 0.02 | 0.05 ± 0.02 | -0.03 ± 0.02 | 0.05 ± 0.02 | 0.06 ± 0.03 | 0.04 ± 0.03 | 0.14 ± 0.03 | 0.20 ± 0.03 | 0.26 ± 0.03 | <0.0001 | 0.019 ± 0.002 |
| Current smoking (*P* for interaction = 0.04)[d] | | | | | | | | | | | | | | | |
| No | 53,653 | -0.17 ± 0.01 | -0.22 ± 0.01 | -0.15 ± 0.01 | -0.12 ± 0.01 | -0.12 ± 0.01 | -0.16 ± 0.01 | -0.11 ± 0.01 | -0.08 ± 0.01 | -0.14 ± 0.01 | -0.04 ± 0.01 | 0.02 ± 0.01 | 0.09 ± 0.01 | <0.0001 | 0.019 ± 0.001 |
| Yes | 15,157 | 0.31 ± 0.02 | 0.30 ± 0.03 | 0.31 ± 0.03 | 0.34 ± 0.03 | 0.40 ± 0.03 | 0.22 ± 0.03 | 0.36 ± 0.03 | 0.32 ± 0.03 | 0.43 ± 0.03 | 0.41 ± 0.03 | 0.46 ± 0.03 | 0.61 ± 0.04 | <0.0001 | 0.017 ± 0.002 |

[a] Values are mean ± standard error scores unless otherwise indicated. The dietary pattern score represents standardized variables with mean 0 and standard deviation 1. Negative scores indicate low adherence to the dietary pattern, whereas positive scores indicate high adherence. Adjustment was made for sex, age category, occupation, weight status, and current smoking. The number of participants in each category is shown in Table 1.

[b] A linear trend test was used with the survey year as a continuous variable in linear regression.

[c] *P* values for regression coefficients are theoretically identical to *P* values for trend.

[d] To calculate *P* values for interaction, the product term of the time and variable of stratification was added into the linear regression model.

[e] Defined based on body mass index (kg/m$^2$): <18.5 for underweight, ≥18.5 to <25 for normal weight, and ≥25 for overweight (including obese).