

## Frequency of Food Intake and Estimated Nutrient Intake among Men and Women: The JACC Study.

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**BACKGROUND:** The aim of this study was to determine the frequency of food intake and estimated nutrient intake in the JACC study cohort.

**METHODS:** The subjects were 46,465 men and 64,327 women aged 40-79 years who responded to the self-administered food frequency questionnaire. We calculated the dietary intake of major nutrients by multiplying the frequency of consumption of each food with each portion size, estimated from a validation study.

**RESULTS:** Women reported to more likely consume vegetables, seaweed, fruits, sweets, oolong-tea, western-style-breakfast, and less likely to consume rice and miso-soup than men. Women reported less preference of salty foods and fatty foods than men. Compared with men, women had higher mean intakes of carotene and vitamin C, and lower intake of total energy, carbohydrate and sodium. The frequency of consumption of beef, chicken, dairy products, fresh fish, fish products, rice, and miso-soup increased with age in men, and that of vegetables, seaweed, beans, tofu, fruits, sweets, and green-tea increased with age in both sexes. Men aged 40-49 years had the lowest mean intake levels of crude fiber, calcium, iron, retinol, carotene, and vitamins A, C, and E. Women aged 40-49 years had the lowest mean intake levels of crude fiber, iron, and vitamins C. Women aged 70-79 years had the lowest mean intake levels of calcium, retinol, and vitamins A.

**CONCLUSIONS:** Women had a more westernized dietary pattern than men. Elderly men had a mixture of unhealthy and healthy dietary patterns while elderly women generally had a healthier dietary pattern compared with younger persons.

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**Key words:** food intake, nutrition, Japanese

We provided a baseline food frequency questionnaire of 39 foods to the participants in the Japan Collaborative Cohort Study (JACC Study) for Evaluation of Cancer Risk sponsored by the Ministry of Education, Science, Sports and Culture of Japan (Monbusho). Approximately, 110,000 participants provided valid responses, which enabled us to examine the relationships between food and nutrient intake with risk of mortality from various diseases.

Elucidation of the frequency of food intake and estimation of nutrient intake at baseline would be of value for the hypothesis development and interpretation of the diet-mortality associations. In the present study, we examined the frequency of food and nutrient intake among 110,792 Japanese men and women.

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## METHODS

The JACC Study began in 1988-1990 when 110,792 individuals (46,465 men and 64,327 women) aged 40-79 years living in 45 communities across Japan participated in municipal health screening examinations and completed self-administered questionnaires about their lifestyles and medical histories of cardiovascular disease and cancer.

Each participant was asked about the frequency of intake of 35 foods, and five responses were possible for each food item, ranging from "rarely", "1-2 days/month", "1-2 days/week", "3-4 days/week", and "almost every day". We calculated the consumption of each food by multiplying the frequency score of consumption of each food (0, 1.5, 3.5, and 7, respectively) with each portion size, estimated from the validation study conducted in 8 men and 77 women from the baseline participants. The average daily intake of nutrients was calculated by multiplying the frequency of consumption of each item by its nutrient content per serving and totaling the nutrient intake for all food items. We obtained the nutrient data for 24,386 men and 37,493 women aged 40-79 years. For each food, the valid number of variables varied due to missing data. The reproducibility and validity of this dietary questionnaire was reported elsewhere.<sup>1</sup> Statistical analyses were not conducted because of the large sample size in each sex and age category.

We examined the frequency of food intake and the mean intakes of major nutrients according to sex and age groups, geographical areas (Hokkaido, Tohoku, Kanto, Chubu, Kinki, Chugoku and Kyushu), and community features (seaside, plains, and mountains/basins). Seaside communities were 9 sites that faced the sea. Plain communities were 20 sites that did not face the sea and did have any mountains or basins. Mountains/basins communities were 16 sites that were not regarded seaside or plain communities.

Our entire study design was approved in 2000 by the Ethical Board at Nagoya University School of Medicine, where the central secretariat of the JACC study is located.

## RESULTS

Table 1 shows the frequency of food intake according to sex and age groups.

### *Meat and liver*

For both men and women, the percentage of individuals reporting intake of 3+ times/week was about 5 to 15% for beef, 15 to 25% for pork (excluding ham and sausages), 15 to 20% for ham and chicken and 5% for liver. Only in men the percentage reporting intake 3+ times/week for beef and chicken increased with age while in both sexes the percentage decreased with age for pork and ham. The percentage of high intake was similar among age groups for liver in men and women and for beef and chicken in women.

### *Eggs and dairy products*

The percentage of individuals with intake 3+ times/week was about 70% for eggs, 50 to 60% for milk, 5 to 15% for yogurt, 5 to 10% for cheese, and 10% for butter, 15 to 30% for margarine. Women reported the highest frequency of margarine than men, but the frequency was similar in both sexes for other foods. The percentage of intake 3+ times/week increased with age for milk, yogurt, cheese, butter and margarine in men while the percentage decreased with age for margarine in women. The percentage of high intake was similar among the age groups for eggs in men and women and for milk, yogurt, cheese and butter in women. Egg intake at 5+ times/week was reported by 35 to 50% of individuals, and the frequency increased with age in men but not in women.

### *Deep-fried foods, and fried vegetables*

The percentage of individuals with intake 3+ times/week was about 20 to 25% for deep-fried foods or tempura, and 25 to 40% for fried vegetables, in both men and women. In general, vegetable oils were used for frying. The percentage of individuals with intake 3+ times/week increased with age for fried vegetables while it did not change with age for deep-fried foods in both sexes.

### *Raw fish and fish products*

The percentage of individuals reporting intake 3+ times/week was about 55 to 65% for raw fish, 10 to 15% for Kamaboko (fish paste), and 25 to 30% for Himono (dried fish or salted fish). A higher frequency of fresh fish intake was reported by women than men, but the frequency was similar for fish products. The percentage of individuals with intake 5+ times/week increased with age for fish products but not for fresh fish. The percentage of raw fish intake 5+ times/week was 20 to 30%, and increased with age in men but not in women. Only 10% of men and women had raw fish intake less than 1 time/week.

### *Vegetables, fungi, seaweed and beans*

The percentage of individuals with intake 5+ times/week (almost every day) was about 20 to 40% for Spinach or garland chrysanthemum, 10 to 25% for carrot or pumpkin, 5 to 20% for tomatoes, 20 to 30% for cabbage or head lettuce, 10 to 20% for Chinese cabbage, 5% for Sansai (edible wild plants), 5 to 10% for fungi (enokidake, shiitake, mushroom), 10 to 25% for potatoes, 20 to 40% for seaweed (algae), 55 to 65% for pickles, 5 to 10% for Tukudani (Preserved foods concocted with soy sauce), 3 to 10% for boiled beans, and 20 to 35% for Tofu (soybean curd). Women reported a higher frequency of these food intakes than men. The percentage of individuals with intake 5+ times/week increased with age for all of these food items.

### *Fruits*

The percentage of individuals with intake 5+ times/week (almost

every day) was about 20 to 50% for citrus fruits, 10 to 20% for fresh fruit juice, 25 to 45% for other fruits (excluding citrus fruit). The frequency of intakes of fruits was higher in women than men. The percentage of individuals with intake 5+ times/week increased with age for citrus fruits in men and women, and for other fruits in men. The percentage of the higher intake was similar among the age groups for fresh fruit juice in men and women and for other fruits in women.

#### ***Sweets and beverages***

The percentage of individuals with intake 5+ times/week (almost every day) was about 10 to 20% for sweets, 20 to 50% for coffee, 1 to 3% for black tea, 55-70% for green tea, 3 to 10% for oolong tea. The frequency of intake of sweets and oolong tea was high in women than men, but the frequency was similar in both sexes for coffee, black tea and green tea. The percentage of individuals with intake 5+ times/week increased with age for sweets, green tea, and decreased with age for coffee and oolong tea in both sexes.

#### ***Type of breakfast***

The percentage of individuals who reported having Japanese style breakfast was 80%, western style breakfast 10 to 20%, Chagayu (Tea gruel) 5%, other types 2% and no breakfast less than 5%. Having western style breakfast was highest in women but the frequency was similar in both sexes for Japanese style, Chagayu, other styles or no breakfast.

#### ***Rice***

The percentage of individuals who reported eating rice at 3+ bowls/day was 65 to 80% at present and 80 to 90% at age of 30 years. More men reported eating rice than women. The percentage of individuals who reported eating rice at a frequency of 6+ bowls/day was 5 to 20% at present and 10 to 60% at age of 30 years. The percentage of rice intake 3+ bowls/day at present decreased with age in men and women while that at age of 30 years increased with age in both sexes.

#### ***Miso soup***

The percentage of individuals who reported consuming miso soup (soy bean soup) every day was 65 to 80% at present with a higher frequency of men than women. The percentage of individuals who consumed 3+ bowls of miso soup/day was 20 to 40% at present and 25 to 60% at age of 30 years with higher frequency of men than women. The percentage of individuals who consumed 6+ bowls miso soup/day at present was less than 2% of men and women while that at age of 30 years was 3 to 10% of men and 1 to 5% of women. The proportion of individuals reporting consuming miso soup increased with age in both sexes.

#### ***Taste for salty and fatty foods***

Thirty to 50% of individuals reported preference of salty foods, with a higher frequency among men than women. This percentage

decreased with age in both sexes. On the other hand, 30 to 75% of individuals reported preference of low-salt food, with a higher frequency among women than men. This percentage increased substantially with age in both sexes.

Preference of fatty food was reported by 10 to 35% of individuals with a higher frequency among men than women. This percentage decreased with age in both sexes. On the other hand, the percentage of individuals preferring low-fat food was 35 to 70% with a higher frequency among women than men. This percentage increased substantially with age in both sexes.

#### ***Modification for salt, sugar, energy and fat***

Twenty-five to 55% of individuals reported desire for modification of food with respect to salt, 15 to 30% to sugar, 5 to 15% to energy, and 15 to 30% to fat in both men and women. These percentages increased with age in both sexes.

#### ***Estimated nutrient and food intake***

Table 2 shows the estimated major nutrient intake according to sex and age. The mean total energy was about 1500 to 1700 kcal/day in men and 1250 to 1300 kcal/day in women. The mean total energy was highest in ages 50-59 and lowest in ages 70-79 for both sexes.

The mean values of intake of animal and vegetable proteins were approximately 25 g/day in men and women of all age groups. The mean values of intake of animal and vegetable fats were about 12 to 15 g/day in men and women. The mean animal fat intake was lower in ages 70-79 than in other age groups for women, but the mean vegetable fat intake was not among the different age groups.

The mean carbohydrate intake was 190 to 200 g/day in men and women with higher intake by men than women. The mean carbohydrate intake was highest in ages 50-59 and lowest in ages 70-79 for both sexes.

The mean crude fiber intake was about 3 g/day for both sexes, and it was lower in ages of 40-49 than in other age groups. The mean calcium intake was around 450 mg/day, and it was lower in men aged 40-49 and women aged 70-79. The mean phosphate intake was about 700 to 800 mg/day in men and women. The mean phosphate intake was highest in ages 50-59 than in other age groups.

The mean iron intake was about 7.5 to 8.5 g/day for both sexes, and it was lower in ages of 40-49 than in other age groups. The mean sodium intake was around 2,000 mg/day with a higher intake in men than in women. The mean sodium intake was higher in ages 50-69 than in other age groups. The mean potassium intake was 1,800 to 2,000 mg/day with a higher intake in women than men for all age groups except for ages 70-79. The mean potassium intake was higher in ages 50-69 than in other age groups.

The mean retinol intake was about 500 to 600 mg/day with a higher intake in men than in women. The mean retinol intake was lower in men aged 40-49 and in women aged 70-79 than in other

sex and age groups. The mean carotene intake was 1,700 to 2,000 mg/day in men and 1,900 to 2,200 mg/day in women, and it increased with age in both sexes except for women aged 70-79. The mean vitamin A intake was 2,700 to 3,200 U/day in both men and women, and it increased with age except for women aged 70-79.

The mean values of vitamins B<sub>1</sub>, B<sub>2</sub> and niacin intake were similar between men and women, and among age groups. The mean vitamin C intake was about 90 to 100 mg/day in men and 100 to 110 mg/day in women. The intake was lower in ages of 40-49 than in other age groups in men and women.

The mean cholesterol intake was 230 to 250 mg/day in both men and women, and it was lower in men aged 40-49 and women aged 70-79 than in other sex and age groups. The mean values of intake of alpha to gamma-tocopherol and vitamin E were similar between the sexes, and it was lowest in ages of 40-49 for both sexes.

The mean saturated fat intake was about 9 g/day and mean monounsaturated fat was 9 to 10 g/day in both men and women, and they were lower in men aged 70-79 and women aged 60-79 than other sex and age groups. The mean polyunsaturated fat intake was about 8 g/day in both sexes, and it was lowest in men aged 40-49 than men of other age groups. The mean intake of n<sub>3</sub> fatty acids was about 2 g/day and the mean intake of n<sub>6</sub> fatty acids was about 6 g/day in both sexes of all age groups.

#### *Analyses of food and nutrient intake according to sex and geographical parameters*

Table 3 shows the frequency of food intake according to sex by geographical area. The percentages of men and women who consumed more meats, eggs, deep-fried foods, fried vegetables, and fresh fish were generally higher in Tohoku and Kyushu than in other areas. The percentages of men and women who consumed more milk and dairy products were higher in Hokkaido and Chubu than in other areas. The percentage of individuals who consumed more vegetables was higher in Tohoku and Chubu and lower in Kinki and Chugoku. The percentage of individuals who consumed more green tea was lower in Hokkaido. The percentage of individuals who consumed more rice was higher in Hokkaido, Tohoku and Kinki, and lower in Chugoku. The percentage of individuals who consumed more miso soup was higher in Hokkaido and Tohoku and lower in Kinki and Kyushu. The percentage of individuals who preferred salty foods was lower in Hokkaido and Kyushu than in other areas. The percentage of individuals who preferred fatty foods was lower in Kyushu than in other areas.

Table 4 shows the frequency of food intake according to sex by geographical feature. For both men and women, the percentage of individuals who consumed high amounts of milk and dairy products was lower in plain areas than in seaside and mountainous areas. The percentage of individuals who consumed high amounts of fish was lower in mountainous areas. The percentage of individuals who consumed vegetables was generally lower in seaside

areas. The percentage of individuals who consumed high amounts of coffee was higher in seaside areas while the percentage of those who consumed more green tea was highest in mountains/basin areas. The percentages of individuals who consumed more rice and miso soup were lower in seaside areas.

Table 5 shows the frequency of estimated major nutrient intake according to sex groups by geographical area. For both men and women, the intake values of mean total energy and other major nutrient except animal fat were higher in Tohoku, and generally lower in Chugoku.

Table 6 shows the frequency of estimated major nutrient intake according to sex groups by geographical feature. For both men and women, the mean intake values of total energy and other major nutrient except for animal fat were lowest in seaside areas while the mean animal fat intake was highest in mountainous areas. The mean intake levels of retinol, carotene and vitamin A were highest in plain areas, and mean vitamin C intake was higher in mountainous areas.

## DISCUSSION

We found the consumption of certain foods and nutrients varied according to age and sex in the JACC Study cohort. Compared with men, women were more likely to consume vegetables, seaweed, fruits, sweets, oolong tea, western-style breakfast, but less likely to have rice and miso soup. These sex differences suggest that women has more westernized dietary pattern than men. Women also reported less preference of salty foods and fatty foods than men, indicating that women attempt to have healthier diet than men.<sup>2</sup> Women had higher mean intakes of carotene and vitamin C, and lower intake of total energy, carbohydrate and sodium than men. These sex difference were compatible with the findings of the National Nutrition Surveys.<sup>2</sup>

The frequency of consumption of beef, chicken, dairy products, fresh fish, fish products, rice, miso soup increased with age in men, and that of vegetables, seaweed, beans, tofu, fruits, sweets, green tea increased with age in both men and women. These age-related changes in food consumption suggest that older men had a mixture of unhealthy and healthy dietary pattern while older women generally had a healthier dietary pattern compared with younger persons. The exception was that women aged 70-79 years had low mean intakes of calcium, retinol, and vitamins A. As for potential problems related to major nutrient intake, men aged 40-49 years had the lowest mean intake values of crude fiber, calcium, iron, retinol, carotene, vitamins A, C and E than men of other age groups. Likewise, women of the same age group also had the lowest mean intake values of crude fiber and iron than women of other age groups. These potential problems had not been highlighted in previous nutrition surveys, and should be confirmed by additional analysis of the National Nutrition Surveys or other studies.

Our analysis showed substantial differences in the frequency of food intake and mean major nutrient intake by geographical area

and feature. Similar differences were observed in a previous nutrition study based on 24-hour dietary recall. Residents in seaside areas of Akita and Kochi prefecture had higher intake of fish and shellfish than residents in Osaka prefecture.<sup>3</sup> These differences were attributable mostly to the accessibility to foods and local culture, some of which may contribute to regional differences in mortality from certain causes. Previous ecological analyses of the data of the National Nutrition Surveys in Japan and mortality statistics indicated that miso, pickled vegetables, soy products and fish (traditional Japanese diets) were positively associated with mortality due to cerebrovascular disease, while intakes of beef, eggs, butter, margarine and wheat (western-style diets) were inversely associated with mortality.<sup>4</sup>

Our findings are potentially useful for the development of hypothesis and interpretation of the relationships between food types and nutrient and the risk of mortality from various diseases.

#### MEMBER LIST OF THE JACC STUDY GROUP

The present investigators involved, with the co-authorship of this paper, in the JACC Study and their affiliations are as follows: Dr. Akiko Tamakoshi (present chairman of the study group), Nagoya University Graduate School of Medicine; Dr. Mitsuru Mori, Sapporo Medical University School of Medicine; Dr. Yutaka Motohashi, Akita University School of Medicine; Dr. Ichiro Tsuji, Tohoku University Graduate School of Medicine; Dr. Yosikazu Nakamura, Jichi Medical School; Dr. Hiroyasu Iso, Institute of Community Medicine, University of Tsukuba; Dr. Haruo Mikami, Chiba Cancer Center; Dr. Yutaka Inaba, Juntendo University School of Medicine; Dr. Yoshiharu Hoshiyama, University of Human Arts and Sciences; Dr. Hiroshi Suzuki, Niigata University School of Medicine; Dr. Hiroyuki Shimizu, Gifu University School of Medicine; Dr. Hideaki Toyoshima, Nagoya University Graduate School of Medicine; Dr. Kenji Wakai, Aichi Cancer Center Research Institute; Dr. Shinkan Tokudome, Nagoya City University Graduate School of Medical Sciences; Dr. Yoshinori Ito, Fujita Health University School of Health Sciences; Dr. Shuji Hashimoto, Fujita Health University School of Medicine; Dr. Shogo Kikuchi, Aichi Medical University School of Medicine; Dr. Akio Koizumi, Graduate School of Medicine and Faculty of Medicine, Kyoto University; Dr. Takashi Kawamura, Kyoto University Center for Student Health; Dr. Yoshiyuki Watanabe, Kyoto Prefectural University of Medicine Graduate School of Medical Science; Dr. Tsuneharu Miki, Graduate School of Medical Science, Kyoto Prefectural University of Medicine; Dr. Chigusa Date, Faculty of Human

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#### REFERENCES

1. Date C, Fukui M, Yamamoto A, Wakai K, Ozeki A, Motohachi Y, et al. Reproducibility and validity of a self-administered food frequency questionnaire used in JACC Study. *J Epidemiol* 2005; 15: S9-S23.
2. Research groups on health and nutrition. The National Nutrition Survey in Japan 2002. Tokyo, Daiichi Press Inc. 2000.
3. Ueshima H, Iida M, Shimamoto T, Konishi M, Tanigaki M, Doi M, et al. Dietary intake and serum total cholesterol level: their relationship to different lifestyles in several Japanese populations. *Circulation* 1982; 66: 519-26.
4. Omura T, Hisamatsu S, Takizawa Y, Minowa M, Yanagawa H, Shigematsu I. Geographical distribution of cerebrovascular disease mortality and food intakes in Japan. *Soc Sci Med* 1987; 24: 401-7.

**Table 1.** Frequency of food intake according to sex and age groups.

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Beef</b>								
No of subjects	8,514	9,867	9,635	4,330	11,358	14,297	13,695	5,837
Rare, %	24.5	24.5	23.2	24.3	27.7	27.6	27.7	32.4
1-2/m, %	38.7	37.5	37.0	33.1	30.6	32.5	32.5	30.0
1-2/w, %	29.1	28.5	30.4	31.9	31.0	29.6	30.0	27.9
3-4/w, %	6.6	8.0	7.9	8.9	9.4	9.1	8.7	8.4
5+/w, %	1.1	1.4	1.5	1.8	1.2	1.3	1.1	1.3
<b>Pork (excluding ham and sausages)</b>								
No of subjects	9,008	10,504	10,414	4,588	12,133	15,535	14,492	6,070
Rare, %	5.9	10.0	10.9	13.9	7.4	11.8	14.9	21.4
1-2/m, %	21.5	24.4	25.5	24.0	14.7	20.8	23.7	23.1
1-2/w, %	49.3	44.4	43.6	43.3	49.4	46.4	43.3	39.2
3-4/w, %	19.6	17.2	16.5	15.3	23.7	17.5	15.2	14.1
5+/w, %	3.7	4.0	3.5	3.5	4.8	3.4	2.9	2.3
<b>Ham</b>								
No of subjects	10,519	11,691	10,991	4,805	13,845	16,846	15,163	6,522
Rare, %	14.2	23.8	25.0	30.3	15.4	24.4	29.9	37.2
1-2/m, %	26.8	25.3	27.1	24.1	23.1	25.0	24.7	22.7
1-2/w, %	40.0	33.5	32.1	30.0	40.7	34.0	30.7	26.9
3-4/w, %	15.4	13.8	12.5	12.5	17.0	13.5	11.8	10.7
5+/w, %	3.6	3.6	3.3	3.2	3.8	3.1	2.8	2.5
<b>Chicken</b>								
No of subjects	9,707	11,162	11,081	5,119	12,875	16,308	15,661	6,914
Rare, %	10.5	9.9	9.4	9.5	7.4	8.6	9.5	11.0
1-2/m, %	28.7	27.9	28.2	26.9	19.4	22.7	24.8	24.2
1-2/w, %	45.1	43.5	43.3	43.2	50.7	46.9	44.9	43.5
3-4/w, %	13.8	16.0	16.5	17.0	19.9	19.2	18.2	18.4
5+/w, %	1.8	2.6	2.6	3.4	2.7	2.7	2.7	3.0
<b>Liver</b>								
No of subjects	9,463	10,462	9,499	4,093	12,581	15,067	13,525	5,696
Rare, %	42.8	43.3	43.8	45.2	49.1	50.2	50.7	54.9
1-2/m, %	39.6	36.3	36.7	33.5	34.2	31.9	32.4	27.4
1-2/w, %	14.2	15.5	14.8	15.2	12.9	13.4	12.3	12.8
3-4/w, %	3.0	4.2	3.9	4.9	3.4	3.7	3.7	3.9
5+/w, %	0.4	0.7	0.9	1.3	0.4	0.7	0.8	1.0
<b>Eggs</b>								
No of subjects	11,251	13,198	12,994	6,167	14,747	18,824	18,228	8,292
Rare, %	1.9	2.0	2.1	2.7	1.8	2.5	2.8	3.6
1-2/m, %	5.2	4.0	4.8	5.5	3.5	3.9	5.3	5.5
1-2/w, %	24.5	20.0	21.0	21.8	20.6	21.4	23.8	24.2
3-4/w, %	30.4	26.8	25.9	24.8	31.6	28.7	27.4	25.8
5+/w, %	38.1	47.2	46.3	45.3	42.5	43.4	40.7	40.9

**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Milk</b>								
No of subjects	11,145	12,798	12,297	5,669	14,659	18,422	17,437	7,839
Rare, %	21.1	22.3	21.2	20.6	17.3	18.8	18.6	22.2
1-2/m, %	11.3	8.4	7.7	7.4	7.4	6.4	6.1	6.4
1-2/w, %	18.3	14.3	13.8	11.9	17.2	13.4	12.2	11.2
3-4/w, %	16.4	14.4	12.9	10.8	17.9	14.9	13.1	11.2
5+/w, %	33.0	40.6	44.4	49.3	40.2	46.5	49.9	49.1
<b>Yogurt</b>								
No of subjects	9,114	9,925	9,037	3,853	11,987	14,315	13,010	5,542
Rare, %	67.2	70.5	69.2	64.7	46.0	54.3	55.4	58.7
1-2/m, %	17.3	14.4	13.4	13.4	24.6	19.3	17.2	14.7
1-2/w, %	9.3	7.9	8.5	10.2	18.0	14.1	13.5	12.4
3-4/w, %	3.3	3.1	4.1	4.8	7.3	6.5	7.0	6.0
5+/w, %	2.9	4.0	4.9	7.0	4.1	5.9	6.9	8.2
<b>Cheese</b>								
No of subjects	9,425	10,217	9,438	3,971	12,417	14,928	13,271	5,486
Rare, %	45.9	52.4	54.9	57.3	44.4	54.5	59.7	67.1
1-2/m, %	34.3	27.7	24.9	21.2	32.1	25.2	21.1	15.3
1-2/w, %	14.6	13.4	12.7	12.8	16.6	12.9	11.6	10.2
3-4/w, %	3.8	4.3	4.9	5.1	5.0	5.2	4.8	4.1
5+/w, %	1.3	2.2	2.6	3.6	1.9	2.3	2.9	3.3
<b>Butter</b>								
No of subjects	9,388	10,132	9,351	3,904	12,340	14,786	13,093	5,411
Rare, %	46.7	54.1	54.1	55.4	41.8	51.4	56.1	63.4
1-2/m, %	29.5	24.8	22.8	18.9	27.5	23.3	19.7	14.9
1-2/w, %	16.1	13.4	13.3	13.2	18.8	15.2	13.1	11.3
3-4/w, %	4.9	5.1	5.5	6.8	7.6	6.1	5.9	5.1
5+/w, %	3.0	2.6	4.4	5.7	4.3	4.0	5.2	5.4
<b>Margarin</b>								
No of subjects	9,626	10,481	9,450	3,957	12,701	15,249	13,520	5,683
Rare, %	40.7	51.3	50.7	51.0	26.3	39.3	42.6	52.2
1-2/m, %	23.3	18.7	17.0	14.7	20.4	19.0	15.8	12.7
1-2/w, %	20.8	16.5	15.3	15.1	26.2	20.1	18.0	15.2
3-4/w, %	8.4	7.5	7.4	8.5	14.5	10.7	9.8	7.9
5+/w, %	6.9	6.1	9.5	10.8	12.7	10.9	13.8	12.0
<b>Deep-fried foods or <i>tempura</i></b>								
No of subjects	8,620	9,881	9,854	4,374	11,597	14,846	14,253	6,039
Rare, %	2.6	4.1	3.7	4.8	2.3	3.6	4.4	5.9
1-2/m, %	25.7	24.2	24.6	24.3	24.0	25.8	27.6	27.9
1-2/w, %	49.9	46.8	48.7	48.8	50.6	47.6	47.5	47.0
3-4/w, %	17.7	19.8	18.8	17.6	18.6	18.6	16.9	15.7
5+/w, %	4.1	5.1	4.2	4.5	4.5	4.4	3.6	3.5

**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Fried vegetables</b>								
No of subjects	8,643	10,026	10,059	4,548	11,623	15,082	14,659	6,321
Rare, %	2.9	3.3	3.4	4.4	2.3	2.7	3.7	5.5
1-2/m, %	24.4	17.7	16.3	14.2	18.7	14.7	14.8	16.4
1-2/w, %	47.1	43.1	42.2	39.5	46.9	41.3	40.3	40.0
3-4/w, %	19.4	24.0	24.6	25.2	24.1	27.2	25.8	23.7
5+/w, %	6.2	12.0	13.4	16.7	8.0	14.1	15.5	14.4
<b>Raw fish</b>								
No of subjects	10,324	12,243	12,108	5,654	13,732	17,712	17,067	7,567
Rare, %	1.2	1.6	1.5	2.1	1.2	1.7	2.3	2.9
1-2/m, %	8.3	6.1	7.1	7.8	5.5	5.5	7.0	8.5
1-2/w, %	35.8	29.8	32.0	34.5	33.3	28.5	31.4	33.8
3-4/w, %	34.9	33.5	30.8	31.2	38.2	34.3	32.3	31.5
5+/w, %	19.9	29.1	28.6	24.5	21.8	30.0	27.1	23.3
<b>Kamaboko (fish paste)</b>								
No of subjects	8,956	9,824	9,287	4,167	11,669	14,113	13,270	5,772
Rare, %	23.8	25.3	24.5	22.2	18.0	20.2	21.4	22.8
1-2/m, %	38.2	33.1	32.8	31.8	35.2	32.3	32.1	30.0
1-2/w, %	28.0	27.2	28.5	30.1	33.3	30.9	31.1	31.4
3-4/w, %	8.4	10.9	11.1	13.0	11.1	13.2	12.2	12.2
5+/w, %	1.7	3.5	3.1	3.1	2.4	3.4	3.1	3.6
<b>Himono (Dried fish or salted fish)</b>								
No of subjects	8,958	10,475	10,367	4,598	12,045	15,560	14,561	6,185
Rare, %	7.1	7.7	9.0	10.9	7.0	8.7	11.6	13.1
1-2/m, %	27.8	22.7	23.5	23.2	25.8	23.4	24.3	22.6
1-2/w, %	41.9	38.5	37.7	36.9	41.7	37.1	35.8	36.7
3-4/w, %	16.9	20.0	19.0	19.1	18.3	20.1	17.9	17.9
5+/w, %	6.4	11.2	10.8	10.0	7.3	10.7	10.4	9.8
<b>Spinach or garland chrysanthemum</b>								
No of subjects	9,610	11,095	11,161	5,227	12,636	16,142	15,884	7,021
Rare, %	1.7	1.5	1.5	1.4	1.0	0.9	0.8	1.0
1-2/m, %	12.0	9.4	7.8	6.8	7.4	6.5	5.1	5.9
1-2/w, %	35.7	31.0	28.0	26.4	32.1	26.9	25.0	25.3
3-4/w, %	28.9	28.9	28.9	28.6	32.4	30.6	29.4	29.0
5+/w, %	21.7	29.2	33.9	36.8	27.1	35.1	39.6	38.8
<b>Carrot or pumpkin</b>								
No of subjects	8,901	10,435	10,450	4,756	12,061	15,735	15,261	6,644
Rare, %	6.2	5.2	4.2	3.3	1.7	1.5	1.5	1.5
1-2/m, %	23.2	20.0	18.6	16.0	10.9	10.5	10.5	11.2
1-2/w, %	38.3	36.1	36.3	37.1	36.4	33.1	32.3	33.6
3-4/w, %	22.7	24.4	25.1	26.5	33.0	31.9	31.1	30.3
5+/w, %	9.6	14.3	15.8	17.1	17.9	22.9	24.6	23.5



**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Tomatoes</b>								
No of subjects	9,741	11,141	10,924	4,945	12,858	16,302	15,274	6,708
Rare, %	13.3	13.0	13.0	11.1	10.0	10.2	11.9	11.7
1-2/m, %	31.4	27.0	24.5	21.8	23.3	20.6	19.9	21.0
1-2/w, %	33.3	30.6	29.7	31.0	33.7	29.3	28.0	28.5
3-4/w, %	15.3	18.2	19.8	20.5	20.7	22.0	20.9	21.0
5+/w, %	6.7	11.2	13.0	15.6	12.4	18.0	19.3	17.8
<b>Cabbage or head lettuce</b>								
No of subjects	8,898	10,457	10,520	4,780	12,092	15,706	15,266	6,605
Rare, %	1.1	1.8	2.1	2.8	0.8	1.2	1.8	2.4
1-2/m, %	10.0	10.6	11.0	10.2	5.2	6.6	7.4	8.7
1-2/w, %	36.3	34.3	34.4	33.2	28.6	29.6	30.1	31.2
3-4/w, %	31.9	30.4	29.3	29.2	34.8	31.3	30.7	28.9
5+/w, %	20.7	22.9	23.2	24.6	30.6	31.4	30.1	28.8
<b>Chinese cabbage</b>								
No of subjects	8,509	9,715	9,680	4,322	11,268	14,238	13,673	5,881
Rare, %	4.0	4.7	4.3	4.0	5.6	6.0	4.9	5.6
1-2/m, %	18.8	17.2	15.3	13.7	18.2	16.9	14.5	12.8
1-2/w, %	40.2	36.6	35.3	35.1	37.9	34.0	33.5	33.0
3-4/w, %	25.2	25.2	26.0	27.1	24.7	25.0	25.5	25.7
5+/w, %	11.8	16.3	19.1	20.1	13.6	18.1	21.6	22.9
<b>Sansai (Edible wild plants)</b>								
No of subjects	9,625	10,806	10,417	4,495	12,627	15,719	14,420	6,029
Rare, %	40.6	39.0	38.0	39.6	43.9	40.8	40.7	40.9
1-2/m, %	40.2	38.2	37.5	34.1	38.0	36.1	33.9	33.0
1-2/w, %	13.9	14.2	14.0	14.9	11.9	13.6	14.3	15.0
3-4/w, %	4.0	6.1	7.5	7.7	4.6	6.5	7.6	7.0
5+/w, %	1.3	2.6	3.0	3.7	1.6	2.9	3.5	4.1
<b>Fungi (enokidake, shiitake, mushroom)</b>								
No of subjects	8,573	9,870	9,842	4,391	11,525	14,779	14,324	6,061
Rare, %	7.2	6.4	6.8	7.4	4.8	4.3	4.4	6.0
1-2/m, %	36.9	33.3	32.9	30.3	26.0	24.7	24.6	25.0
1-2/w, %	37.8	36.6	35.7	36.0	41.2	38.3	37.9	37.5
3-4/w, %	13.7	16.8	17.5	17.9	20.5	23.1	22.8	21.6
5+/w, %	4.5	6.9	7.1	8.4	7.5	9.6	10.4	9.9
<b>Potatoes</b>								
No of subjects	11,114	12,835	12,504	5,916	14,603	18,542	17,802	8,124
Rare, %	6.8	5.2	3.9	3.3	1.7	1.5	1.5	1.7
1-2/m, %	22.0	18.2	17.4	12.9	11.9	10.9	10.2	10.1
1-2/w, %	38.3	35.7	35.3	33.9	37.8	34.1	33.9	31.8
3-4/w, %	23.0	26.3	26.3	29.8	33.7	33.6	31.8	32.2
5+/w, %	10.0	14.5	17.0	20.1	14.9	20.0	22.6	24.2

**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Seaweed (algae)</b>								
No of subjects	11,179	12,961	12,670	6,004	14,596	18,612	17,943	8,175
Rare, %	2.0	1.9	1.8	2.0	1.2	1.3	1.2	1.6
1-2/m, %	12.9	10.7	10.8	8.7	6.1	6.2	6.7	7.1
1-2/w, %	34.8	30.0	29.4	27.4	27.8	24.7	25.0	25.2
3-4/w, %	30.2	30.1	29.4	29.2	34.5	31.2	29.3	28.9
5+/w, %	20.2	27.2	28.6	32.8	30.4	36.6	37.8	37.2
<b>Pickles</b>								
No of subjects	11,162	12,960	12,628	5,912	14,617	18,532	17,848	8,047
Rare, %	4.5	4.7	5.7	7.8	4.6	5.2	5.4	7.0
1-2/m, %	6.1	4.9	5.7	5.2	4.8	4.7	4.8	4.4
1-2/w, %	14.3	12.3	12.3	12.2	12.3	10.9	11.2	11.2
3-4/w, %	19.5	16.3	15.2	14.1	17.4	14.2	13.4	13.0
5+/w, %	55.6	61.8	61.2	60.7	60.9	65.0	65.3	64.3
<b>Tukudani (Preserved foods concocted with say souce)</b>								
No of subjects	9,723	11,038	10,663	4,742	12,867	16,046	14,820	6,423
Rare, %	21.5	23.2	23.6	22.4	24.2	27.5	27.9	23.6
1-2/m, %	31.3	28.7	27.6	25.1	29.7	27.9	26.3	24.3
1-2/w, %	28.7	27.5	27.9	28.1	26.9	24.0	24.7	26.8
3-4/w, %	12.9	12.9	14.2	15.2	12.8	12.9	13.4	15.1
5+/w, %	5.7	7.8	6.8	9.2	6.5	7.8	7.7	10.2
<b>Boiled beans</b>								
No of subjects	9,520	10,686	10,458	4,802	12,569	15,768	15,152	6,641
Rare, %	28.7	22.8	17.9	14.2	20.5	15.1	12.6	11.8
1-2/m, %	40.1	38.1	37.2	32.5	45.1	41.0	38.2	32.6
1-2/w, %	21.4	23.9	26.1	28.6	22.0	25.0	26.5	28.0
3-4/w, %	7.4	10.5	13.1	16.3	9.1	13.0	14.8	17.5
5+/w, %	2.4	4.6	5.8	8.4	3.3	6.0	7.9	10.1
<b>Tofu (soybean curd)</b>								
No of subjects	10,272	12,158	12,061	5,670	13,685	17,691	17,221	7,697
Rare, %	1.6	1.3	1.0	1.5	1.0	1.1	1.0	1.7
1-2/m, %	8.1	6.0	6.0	6.8	4.2	4.2	4.4	6.2
1-2/w, %	34.0	30.8	29.5	28.0	28.2	25.7	27.2	28.5
3-4/w, %	35.2	35.3	33.3	32.1	38.4	34.8	32.1	33.7
5+/w, %	21.2	26.6	30.1	31.6	28.1	34.2	35.3	30.0
<b>Citrus fruits</b>								
No of subjects	8,830	10,303	10,395	4,698	11,951	15,522	15,203	6,579
Rare, %	8.1	7.7	7.2	6.5	4.2	4.2	3.3	4.3
1-2/m, %	19.9	16.5	14.8	12.5	11.1	9.8	8.1	7.6
1-2/w, %	28.9	26.2	25.6	24.1	23.6	21.2	19.0	18.2
3-4/w, %	21.6	22.9	23.1	23.9	24.1	23.1	22.3	22.0
5+/w, %	21.5	26.7	29.4	33.1	37.1	41.7	47.3	48.0

**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Fresh fruit juice (in summer season)</b>								
No of subjects	8,552	9,732	9,492	4,033	11,419	14,420	13,381	5,503
Rare, %	18.3	22.2	24.5	28.7	19.8	23.0	26.8	31.8
1-2/m, %	21.0	17.5	17.5	18.6	18.3	16.5	16.3	15.1
1-2/w, %	29.1	26.0	24.6	22.4	26.2	22.5	21.3	20.0
3-4/w, %	18.1	18.8	17.8	16.0	18.5	18.0	16.4	15.4
5+/w, %	13.6	15.6	15.6	14.2	17.2	20.0	19.3	17.7
<b>Other fruits (excluded citrus fruits)</b>								
No of subjects	8,768	10,107	9,979	4,454	11,783	14,989	14,196	6,120
Rare, %	4.5	5.2	5.4	5.3	2.2	3.2	3.6	3.9
1-2/m, %	15.0	14.4	14.7	13.4	6.8	8.0	8.3	8.7
1-2/w, %	30.3	28.6	27.8	25.6	20.1	20.7	20.2	20.0
3-4/w, %	24.8	24.7	24.4	25.3	27.3	25.2	24.1	24.7
5+/w, %	25.5	27.2	27.7	30.5	43.6	43.0	43.8	42.8
<b>Sweets</b>								
No of subjects	9,801	11,445	11,323	5,173	13,215	16,999	16,264	7,161
Rare, %	22.5	19.4	15.5	11.2	8.4	8.9	9.8	9.8
1-2/m, %	25.4	23.3	21.3	19.4	18.6	19.0	19.5	17.2
1-2/w, %	27.9	27.2	28.1	26.2	30.1	29.5	30.0	28.6
3-4/w, %	15.6	17.5	19.4	21.8	23.5	22.5	21.5	22.3
5+/w, %	8.7	12.6	15.7	21.4	19.5	20.3	19.3	22.2
<b>Coffee</b>								
No of subjects	11,204	13,235	13,115	6,226	14,746	18,946	18,590	8,544
Rare, %	17.3	28.9	34.0	37.8	16.0	29.5	38.3	46.7
1-2/m, %	6.3	8.6	9.7	8.4	7.4	10.2	9.3	8.0
1-2/w, %	16.4	18.4	18.3	19.1	17.6	18.5	16.7	16.5
3-4/w, %	9.9	10.9	10.4	9.7	9.8	9.7	8.4	7.5
5+/w, %	50.1	33.2	27.6	25.0	49.2	32.1	27.4	21.3
<b>Black tea</b>								
No of subjects	9,676	11,102	10,925	4,924	12,778	16,141	15,596	6,803
Rare, %	70.3	76.9	78.5	76.0	64.4	72.8	74.8	75.2
1-2/m, %	16.6	12.7	11.5	11.1	18.5	14.6	12.5	11.1
1-2/w, %	8.1	6.4	6.0	7.1	10.5	7.6	7.3	7.4
3-4/w, %	3.2	2.7	2.6	3.7	4.3	3.4	3.6	3.7
5+/w, %	1.8	1.2	1.4	2.1	2.3	1.6	1.9	2.6
<b>Green tea</b>								
No of subjects	10,925	12,734	12,659	5,991	14,248	18,128	17,680	8,127
Rare, %	8.5	8.7	7.8	9.0	10.0	9.8	9.7	10.0
1-2/m, %	7.7	6.3	5.7	5.7	9.3	7.2	6.7	6.6
1-2/w, %	8.1	5.9	5.1	4.4	7.9	6.2	5.2	4.3
3-4/w, %	18.5	13.4	12.4	13.5	16.0	11.4	11.0	11.5
5+/w, %	57.2	65.8	68.9	67.4	56.9	65.4	67.4	67.7

**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Oolong tea</b>								
No of subjects	9,190	10,415	10,128	4,503	12,068	15,004	14,346	6,218
Rare, %	67.9	74.9	80.5	83.9	66.1	71.1	75.8	82.2
1-2/m, %	12.2	9.3	6.9	5.0	10.2	8.5	6.9	5.0
1-2/w, %	8.0	5.9	4.6	3.7	7.0	5.9	4.9	3.4
3-4/w, %	5.7	4.4	3.7	3.6	6.4	5.9	4.6	3.2
5+/w, %	6.3	5.5	4.2	3.9	10.3	8.6	7.8	6.2
<b>Japanese style breakfast</b>								
No of subjects	9,724	11,343	11,604	5,566	12,701	16,418	16,612	7,653
Yes, %	81.9	87.3	84.7	82.1	80.3	83.6	80.2	78.9
No, %	18.1	12.8	15.3	17.9	19.7	16.4	19.8	21.1
<b>Westen style breakfast</b>								
No of subjects	9,721	11,343	11,602	5,567	12,702	16,416	16,608	7,653
Yes, %	14.6	10.2	14.0	17.2	21.4	17.1	21.7	21.0
No, %	85.4	89.8	86.1	82.8	78.6	82.9	78.3	79.0
<b>Chagayu (Tea gruel) at breakfast</b>								
No of subjects	9,390	10,876	10,995	5,253	12,206	15,533	15,828	7,249
Yes, %	1.7	3.8	4.5	6.0	2.1	3.3	4.5	6.0
No, %	98.3	96.2	95.5	94.0	97.9	96.7	95.5	94.0
<b>Other style breakfast</b>								
No of subjects	8,624	10,211	10,515	4,986	11,461	15,034	15,282	6,961
Yes, %	1.4	1.7	2.2	2.7	1.3	1.4	2.0	2.1
No, %	98.7	98.3	97.8	97.3	98.8	98.6	98.0	97.9
<b>Non breakfast</b>								
No of subjects	9,725	11,345	11,604	5,567	12,704	16,419	16,614	7,653
Yes, %	6.5	2.8	1.5	1.0	4.4	2.3	1.0	0.8
No, %	93.5	97.3	98.5	99.0	95.7	97.7	99.0	99.2
<b>Bowles of rice (at present)</b>								
No of subjects	11,338	13,354	13,283	6,371	14,819	19,079	18,751	8,723
0/day, %	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1
1/day, %	7.1	5.9	8.8	13.2	11.4	8.7	10.8	13.0
2/day, %	18.6	14.4	16.4	18.0	22.7	19.3	21.4	22.2
3/day, %	27.5	28.2	35.0	44.7	44.4	47.4	50.9	53.4
4/day, %	17.3	14.9	12.3	8.5	9.9	10.7	7.3	5.1
5/day, %	15.3	16.5	12.8	7.6	7.3	8.1	5.2	3.3
6/day, %	12.0	16.7	12.6	6.8	3.8	5.3	4.0	2.7
7 and more/day, %	2.2	3.4	2.1	1.1	0.5	0.4	0.4	0.3

**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Bowles of rice (at 30 years old)</b>								
No of subjects	9,442	11,154	11,532	5,371	12,301	16,333	16,170	7,058
0/day, %	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
1/day, %	3.8	1.2	0.9	1.3	7.3	2.5	1.7	1.9
2/day, %	14.8	8.3	9.3	10.7	18.2	11.3	11.7	13.2
3/day, %	21.2	13.8	12.7	15.2	37.1	23.3	17.3	19.3
4/day, %	15.9	8.9	6.4	6.2	13.0	12.7	10.1	8.2
5/day, %	17.4	14.5	11.7	9.9	12.3	17.3	15.1	11.5
6/day, %	19.2	30.7	32.2	31.5	10.3	27.0	35.0	35.2
7 and more/day, %	7.6	22.6	26.7	25.3	1.8	6.0	9.1	10.6
<b>Frequency of miso soup</b>								
No of subjects	10,946	12,927	12,885	6,211	14,284	18,318	18,127	8,460
almost everyday	71.0	74.8	77.8	77.7	64.7	71.0	72.4	71.2
1/two day, %	16.3	13.0	10.0	8.4	19.1	14.1	11.6	11.3
a few/w, %	9.0	8.5	8.2	8.8	10.1	9.1	9.9	10.0
Rare, %	3.7	3.8	4.1	5.0	6.1	5.8	6.1	7.5
<b>Bowles of miso soup (at present)</b>								
No of subjects	6,848	8,601	9,104	4,278	8,267	11,822	11,957	5,196
1/day, %	27.8	25.5	28.5	34.5	40.0	36.5	39.1	39.8
2/day, %	38.1	36.7	33.6	31.0	39.2	37.3	35.9	33.8
3/day, %	26.9	29.7	32.2	31.2	18.6	23.6	23.0	24.8
4/day, %	3.5	3.7	2.5	1.2	1.3	1.4	1.0	0.7
5/day, %	2.2	2.3	1.8	1.1	0.6	0.7	0.5	0.5
6/day, %	1.4	2.1	1.4	0.9	0.3	0.5	0.5	0.4
7 and more/day, %	0.1	0.2	0.0	0.1	0.1	0.0	0.0	0.0
<b>Bowles of miso soup (at 30 years old)</b>								
No of subjects	6,831	8,579	9,201	4,350	8,376	12,216	12,423	5,285
1/day, %	27.4	19.9	18.8	21.8	38.0	28.2	25.5	25.4
2/day, %	34.8	29.0	24.9	24.0	35.9	30.3	27.5	25.7
3/day, %	28.0	31.0	30.3	30.6	21.5	30.4	32.8	34.8
4/day, %	4.5	6.9	6.9	5.8	2.4	4.4	4.8	4.6
5/day, %	2.8	5.7	7.9	6.5	1.2	3.5	4.4	3.9
6/day, %	2.1	6.7	10.2	10.3	0.9	3.1	4.7	5.3
7 and more/day, %	0.4	0.8	1.0	1.1	0.1	0.2	0.3	0.3
<b>Taste for salty foods</b>								
No of subjects	9,728	11,314	11,310	5,275	12,793	16,183	15,935	7,066
love, %	14.1	13.1	9.6	8.2	7.3	6.4	5.2	6.5
like, %	34.2	31.5	28.3	25.0	21.6	20.1	19.5	19.6
so-so, %	41.5	43.7	49.0	50.5	54.1	55.2	55.9	52.6
not like, %	8.9	9.9	11.0	13.2	15.2	15.9	16.4	17.0
hate, %	1.3	1.9	2.1	3.1	1.8	2.5	3.0	4.3

**Table 1.** Frequency of food intake according to sex and age groups. (cont.)

	Men				Women			
	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs	40-49 yrs	50-59yrs	60-69 yrs	70-79yrs
<b>Change of taste for salty foods</b>								
No of subjects	9,394	10,938	11,069	5,241	12,289	15,765	15,824	6,987
decreased, %	33.9	54.5	69.0	75.4	39.5	64.8	77.4	77.1
stable, %	64.2	44.2	30.0	23.6	57.9	34.0	21.8	21.8
increased, %	2.0	1.3	1.0	1.1	2.6	1.2	0.9	1.1
<b>Taste for fatty foods</b>								
No of subjects	9,715	11,315	11,424	5,390	12,796	16,293	16,250	7,333
love, %	8.2	7.3	5.6	5.2	3.3	2.4	2.0	1.9
like, %	26.3	22.7	22.5	20.3	16.3	12.0	10.3	9.8
so so, %	45.7	47.6	49.5	50.0	53.8	53.3	51.1	46.4
not like, %	17.7	19.7	19.8	20.9	23.8	28.4	31.8	33.9
hate, %	2.1	2.7	2.6	3.7	2.9	3.8	4.9	8.1
<b>Change of taste for fatty foods</b>								
No of subjects	9,387	10,809	10,928	5,144	12,243	15,566	15,509	6,874
decreased, %	36.0	49.5	59.3	65.0	46.4	62.0	71.0	70.5
stable, %	62.9	49.3	38.7	32.7	52.7	36.8	27.2	27.3
increased, %	1.2	1.3	2.0	2.4	1.0	1.2	1.8	2.2
<b>Modification of salt intake</b>								
No of subjects	9,289	10,897	11,035	5,170	12,020	15,744	15,494	7,030
Yes, %	25.1	36.9	46.1	52.9	28.7	44.0	52.9	51.9
No, %	74.9	63.1	53.9	47.1	71.3	56.0	47.1	48.1
<b>Modification of sugar intake</b>								
No of subjects	9,289	10,894	11,029	5,171	12,017	15,741	15,484	7,024
Yes, %	13.6	18.6	21.5	26.1	18.3	26.3	30.6	28.8
No, %	86.4	81.4	78.5	73.9	81.7	73.7	69.4	71.2
<b>Modification of energy intake</b>								
No of subjects	9,290	10,894	11,024	5,171	12,015	15,738	15,480	7,019
Yes, %	6.0	8.4	9.7	10.9	7.2	10.5	12.2	11.3
No, %	94.0	91.6	90.3	89.1	92.8	89.5	87.8	88.7
<b>Modification of fat intake</b>								
No of subjects	9,288	10,897	11,028	5,171	12,021	15,739	15,479	7,025
Yes, %	14.6	18.1	21.6	25.1	17.8	26.6	31.4	30.3
No, %	85.4	81.9	78.5	74.9	82.2	73.4	68.6	69.7

Table 2. Nutrient intake (mean and standard deviation) according to sex and age.

	Men						Women					
	Age (years)						Age (year)					
	40-49	50-59	60-69	70-79	40-49	50-59	60-69	70-79	40-49	50-59	60-69	70-79
No. of subjects	7,091	7,652	6,928	2,715	10,387	12,296	10,651	4,159	10,387	12,296	10,651	4,159
Total weight	1692.46 ± 495.18	1791.01 ± 516.32	1738.53 ± 508.35	1629.41 ± 497.2	1658.05 ± 445.57	1696.54 ± 453.93	1645.07 ± 457.18	1567.55 ± 458.2	1658.05 ± 445.57	1696.54 ± 453.93	1645.07 ± 457.18	1567.55 ± 458.2
Total energy	1636.25 ± 464.72	1723.11 ± 474.33	1611 ± 465.16	1462.7 ± 422.6	1329.46 ± 344.6	1359.02 ± 346.95	1309.31 ± 335.31	1242.74 ± 322.55	1329.46 ± 344.6	1359.02 ± 346.95	1309.31 ± 335.31	1242.74 ± 322.55
Water	1375.48 ± 428.46	1450.84 ± 451.77	1414.97 ± 445.47	1328.39 ± 439.0	1361.12 ± 397.99	1390.26 ± 408.22	1348.98 ± 410.78	1285.11 ± 413.62	1361.12 ± 397.99	1390.26 ± 408.22	1348.98 ± 410.78	1285.11 ± 413.62
Animal protein	24.5 ± 9.6	26.4 ± 10.1	26.0 ± 10.1	25.1 ± 10.1	26.5 ± 9.7	26.7 ± 9.9	25.5 ± 10.0	23.8 ± 9.9	26.5 ± 9.7	26.7 ± 9.9	25.5 ± 10.0	23.8 ± 9.9
Vegetable protein	27.5 ± 9.3	29.7 ± 9.6	28.7 ± 9.3	27.1 ± 8.7	25.2 ± 7.5	26.6 ± 7.6	26.3 ± 7.5	25.4 ± 7.4	25.2 ± 7.5	26.6 ± 7.6	26.3 ± 7.5	25.4 ± 7.4
Total protein	51.9 ± 15.9	56.1 ± 16.5	54.7 ± 16.2	52.2 ± 15.7	51.7 ± 14.6	53.4 ± 14.9	51.8 ± 15.0	49.2 ± 14.8	51.7 ± 14.6	53.4 ± 14.9	51.8 ± 15.0	49.2 ± 14.8
Animal fat	13.2 ± 5.7	13.4 ± 5.7	13.2 ± 5.7	13.0 ± 5.8	14.7 ± 6.0	13.8 ± 5.8	13.1 ± 5.8	12.0 ± 5.7	14.7 ± 6.0	13.8 ± 5.8	13.1 ± 5.8	12.0 ± 5.7
Vegetable fat	13.6 ± 5.2	14.4 ± 5.6	14.5 ± 5.4	14.1 ± 5.3	13.8 ± 4.9	14.1 ± 5.1	14.0 ± 5.1	13.2 ± 5.1	13.8 ± 4.9	14.1 ± 5.1	14.0 ± 5.1	13.2 ± 5.1
Total fat	30.1 ± 10.4	31.6 ± 10.8	31.4 ± 10.7	30.6 ± 10.7	31.9 ± 10.4	31.7 ± 10.5	30.8 ± 10.6	28.7 ± 10.5	31.9 ± 10.4	31.7 ± 10.5	30.8 ± 10.6	28.7 ± 10.5
Carbohydrate	220.3 ± 75.5	236.6 ± 77.7	221.6 ± 75.3	202.8 ± 68.2	198.5 ± 58.1	205.7 ± 57.7	198.1 ± 55.0	189.7 ± 52.6	198.5 ± 58.1	205.7 ± 57.7	198.1 ± 55.0	189.7 ± 52.6
Crude fiber	2.8 ± 1.1	3.0 ± 1.1	3.1 ± 1.1	3.0 ± 1.1	2.8 ± 0.9	3.0 ± 1.0	3.1 ± 1.0	3.0 ± 1.0	2.8 ± 0.9	3.0 ± 1.0	3.1 ± 1.0	3.0 ± 1.0
Ash	11.4 ± 4.2	12.2 ± 4.4	12.2 ± 4.2	11.9 ± 4.1	11.4 ± 3.7	11.9 ± 3.9	11.8 ± 4.0	11.4 ± 4.0	11.4 ± 3.7	11.9 ± 3.9	11.8 ± 4.0	11.4 ± 4.0
Calcium	435.2 ± 161.3	462.1 ± 162.9	465.0 ± 158.8	460.0 ± 158.9	459.9 ± 156.9	472.6 ± 155.7	469.5 ± 154.8	444.0 ± 155.9	459.9 ± 156.9	472.6 ± 155.7	469.5 ± 154.8	444.0 ± 155.9
Phosphate	734.1 ± 225.2	788.7 ± 229.6	773.7 ± 226.9	745.4 ± 222.7	743.0 ± 211.1	764.3 ± 213.1	745.8 ± 214.2	708.0 ± 212.4	743.0 ± 211.1	764.3 ± 213.1	745.8 ± 214.2	708.0 ± 212.4
Iron	7.5 ± 2.7	8.2 ± 2.9	8.3 ± 2.9	8.1 ± 2.8	7.5 ± 2.5	8.0 ± 2.6	8.0 ± 2.7	7.8 ± 2.7	7.5 ± 2.5	8.0 ± 2.6	8.0 ± 2.7	7.8 ± 2.7
Sodium	2095 ± 963	2246 ± 1029	2236 ± 974	2157 ± 936	1977 ± 841	2086 ± 885	2069 ± 898	2010 ± 890	1977 ± 841	2086 ± 885	2069 ± 898	2010 ± 890
Potassium	1847 ± 602	1983 ± 629	1990 ± 626	1965 ± 632	1968 ± 565	2050 ± 589	2037 ± 601	1959 ± 616	1968 ± 565	2050 ± 589	2037 ± 601	1959 ± 616
Retinol	536 ± 721	613 ± 873	609 ± 885	609 ± 927	545 ± 805	554 ± 866	542 ± 880	494 ± 875	545 ± 805	554 ± 866	542 ± 880	494 ± 875
Carotin	1686 ± 841	1915 ± 908	2004 ± 916	2050 ± 931	1934 ± 837	2131 ± 886	2197 ± 909	2126 ± 923	1934 ± 837	2131 ± 886	2197 ± 909	2126 ± 923
Vitamin A	2739 ± 2528	3120 ± 3042	3156 ± 3082	3180 ± 3216	2909 ± 2802	3046 ± 3004	3041 ± 3059	2838 ± 3041	2909 ± 2802	3046 ± 3004	3041 ± 3059	2838 ± 3041
Vitamin B1	0.75 ± 0.25	0.80 ± 0.26	0.78 ± 0.25	0.76 ± 0.25	0.77 ± 0.23	0.79 ± 0.23	0.77 ± 0.24	0.73 ± 0.23	0.77 ± 0.23	0.79 ± 0.23	0.77 ± 0.24	0.73 ± 0.23
Vitamin B2	0.98 ± 0.34	1.06 ± 0.36	1.05 ± 0.36	1.03 ± 0.37	1.04 ± 0.35	1.06 ± 0.36	1.04 ± 0.36	0.98 ± 0.36	1.04 ± 0.35	1.06 ± 0.36	1.04 ± 0.36	0.98 ± 0.36
Niacine	10.5 ± 3.5	11.4 ± 3.7	11.1 ± 3.7	10.6 ± 3.7	10.7 ± 3.3	11.1 ± 3.5	10.7 ± 3.6	10.2 ± 3.5	10.7 ± 3.3	11.1 ± 3.5	10.7 ± 3.6	10.2 ± 3.5
Vitamin C	91.5 ± 39.5	100.7 ± 41.1	103.4 ± 40.8	102.8 ± 41.5	105.6 ± 37.6	112.2 ± 39.5	113.3 ± 39.7	109.1 ± 40.9	105.6 ± 37.6	112.2 ± 39.5	113.3 ± 39.7	109.1 ± 40.9
Salt	5.19 ± 2.42	5.57 ± 2.59	5.55 ± 2.45	5.35 ± 2.35	4.89 ± 2.12	5.17 ± 2.22	5.13 ± 2.26	4.98 ± 2.24	4.89 ± 2.12	5.17 ± 2.22	5.13 ± 2.26	4.98 ± 2.24
Cholesterol	226.4 ± 91.6	249.1 ± 95.6	246.6 ± 95.4	239.2 ± 97.1	243.0 ± 91.7	244.7 ± 94.8	235.1 ± 96.5	224.7 ± 95.6	243.0 ± 91.7	244.7 ± 94.8	235.1 ± 96.5	224.7 ± 95.6
-tocopherol	3.70 ± 1.18	4.09 ± 1.22	4.04 ± 1.21	3.89 ± 1.19	3.79 ± 1.06	4.02 ± 1.10	3.97 ± 1.13	3.80 ± 1.12	3.79 ± 1.06	4.02 ± 1.10	3.97 ± 1.13	3.80 ± 1.12
-tocopherol	0.12 ± 0.06	0.13 ± 0.07	0.13 ± 0.06	0.13 ± 0.06	0.12 ± 0.06	0.12 ± 0.06	0.12 ± 0.06	0.12 ± 0.06	0.12 ± 0.06	0.12 ± 0.06	0.12 ± 0.06	0.12 ± 0.06
-tocopherol	3.96 ± 2.14	4.27 ± 2.26	4.31 ± 2.15	4.19 ± 2.08	3.66 ± 1.84	3.96 ± 1.92	3.98 ± 1.94	3.86 ± 1.97	3.66 ± 1.84	3.96 ± 1.92	3.98 ± 1.94	3.86 ± 1.97
-tocopherol	1.59 ± 0.95	1.72 ± 1.00	1.73 ± 0.96	1.68 ± 0.93	1.40 ± 0.81	1.54 ± 0.85	1.56 ± 0.86	1.53 ± 0.87	1.40 ± 0.81	1.54 ± 0.85	1.56 ± 0.86	1.53 ± 0.87
Vitamin E	3.93 ± 1.27	4.33 ± 1.32	4.28 ± 1.30	4.13 ± 1.27	3.99 ± 1.13	4.24 ± 1.18	4.20 ± 1.20	4.02 ± 1.19	3.99 ± 1.13	4.24 ± 1.18	4.20 ± 1.20	4.02 ± 1.19
Total fatty acids	26.0 ± 8.9	27.3 ± 9.2	27.0 ± 9.1	26.3 ± 9.1	27.1 ± 8.8	27.1 ± 8.9	26.2 ± 8.9	24.5 ± 8.8	27.1 ± 8.8	27.1 ± 8.9	26.2 ± 8.9	24.5 ± 8.8
Saturated fatty acids	9.05 ± 3.35	9.29 ± 3.25	9.12 ± 3.26	8.87 ± 3.28	9.62 ± 3.39	9.31 ± 3.25	8.93 ± 3.23	8.21 ± 3.17	9.62 ± 3.39	9.31 ± 3.25	8.93 ± 3.23	8.21 ± 3.17
Monounsaturated fatty acids	9.11 ± 3.31	9.63 ± 3.48	9.54 ± 3.44	9.30 ± 3.47	9.76 ± 3.37	9.69 ± 3.41	9.32 ± 3.44	8.70 ± 3.38	9.76 ± 3.37	9.69 ± 3.41	9.32 ± 3.44	8.70 ± 3.38
Polyunsaturated fatty acids	7.64 ± 2.88	8.31 ± 3.09	8.26 ± 3.00	8.01 ± 2.91	7.59 ± 2.66	7.96 ± 2.79	7.82 ± 2.83	7.49 ± 2.79	7.59 ± 2.66	7.96 ± 2.79	7.82 ± 2.83	7.49 ± 2.79
n3-fatty acids	1.53 ± 0.66	1.70 ± 0.70	1.70 ± 0.70	1.64 ± 0.68	1.58 ± 0.64	1.70 ± 0.67	1.65 ± 0.68	1.57 ± 0.68	1.58 ± 0.64	1.70 ± 0.67	1.65 ± 0.68	1.57 ± 0.68
n6-fatty acids	6.11 ± 2.31	6.61 ± 2.49	6.55 ± 2.41	6.36 ± 2.33	6.01 ± 2.12	6.26 ± 2.22	6.16 ± 2.25	5.91 ± 2.21	6.01 ± 2.12	6.26 ± 2.22	6.16 ± 2.25	5.91 ± 2.21

**Table 3. Sex-specific age-adjusted percentages of higher frequency of foods by geographical area.**

	Hokkaido	Tohoku	Kanto	Chubu	Kinki	Chugoku	Kyusyu
	No. ( % )	No. ( % )	No. ( % )	No. ( % )	No. ( % )	No. ( % )	No. ( % )
Men							
3-4/w and more, %							
Beef	1,030 ( 2.9 )	3,782 ( 5.0 )	4,909 ( 5.6 )	9,252 ( 6.3 )	7,656 ( 15.8 )	4,581 ( 10.7 )	1,136 ( 15.8 )
Pork (excluding ham and sausages)	1,459 ( 25.0 )	5,648 ( 27.2 )	4,987 ( 25.7 )	9,863 ( 28.0 )	7,222 ( 10.9 )	4,218 ( 9.1 )	1,117 ( 13.8 )
Ham	1,448 ( 15.5 )	5,187 ( 17.7 )	7,866 ( 21.3 )	8,909 ( 16.8 )	7,037 ( 10.8 )	3,922 ( 12.0 )	3,637 ( 26.6 )
Chicken	1,453 ( 16.9 )	5,506 ( 23.9 )	7,982 ( 20.1 )	9,409 ( 16.4 )	7,339 ( 18.9 )	4,274 ( 10.0 )	1,106 ( 20.4 )
Liver	1,436 ( 1.8 )	3,725 ( 7.9 )	4,066 ( 3.3 )	8,743 ( 3.8 )	6,356 ( 3.7 )	4,019 ( 2.7 )	5,172 ( 8.0 )
Eggs	1,459 ( 69.7 )	5,875 ( 71.5 )	8,110 ( 70.9 )	10,341 ( 74.2 )	7,683 ( 66.1 )	4,730 ( 65.1 )	5,412 ( 80.5 )
Milk	1,456 ( 59.7 )	5,481 ( 49.9 )	8,005 ( 53.6 )	9,896 ( 65.1 )	7,308 ( 46.7 )	4,427 ( 55.5 )	5,336 ( 52.3 )
Yogurt	357 ( 8.7 )	3,536 ( 7.2 )	7,709 ( 7.9 )	8,613 ( 10.7 )	6,794 ( 4.3 )	3,830 ( 8.6 )	1,090 ( 8.0 )
Cheese	1,451 ( 8.6 )	5,016 ( 5.2 )	7,025 ( 7.7 )	8,715 ( 8.9 )	5,921 ( 3.9 )	3,825 ( 6.2 )	1,098 ( 3.6 )
Butter	1,451 ( 12.9 )	5,019 ( 6.6 )	6,989 ( 10.4 )	8,549 ( 8.1 )	5,902 ( 8.5 )	3,775 ( 11.5 )	1,090 ( 5.8 )
Margarine	1,026 ( 15.2 )	5,068 ( 11.7 )	4,047 ( 10.0 )	8,587 ( 15.6 )	5,883 ( 13.8 )	3,827 ( 23.3 )	5,076 ( 20.9 )
Deep-fried foods or tempura	1,453 ( 18.0 )	5,561 ( 33.2 )	4,187 ( 22.9 )	9,683 ( 23.8 )	6,338 ( 20.0 )	4,379 ( 14.3 )	1,128 ( 26.6 )
Fried vegetables	1,450 ( 45.8 )	5,453 ( 49.0 )	4,233 ( 35.0 )	10,019 ( 31.7 )	6,463 ( 27.9 )	4,530 ( 29.1 )	1,128 ( 38.1 )
Fresh fish	1,460 ( 58.1 )	5,818 ( 69.0 )	5,043 ( 49.9 )	10,264 ( 56.8 )	7,651 ( 51.7 )	4,778 ( 50.6 )	5,315 ( 76.6 )
Kamaboko (fish paste)	244 ( 14.7 )	3,646 ( 18.9 )	7,887 ( 15.4 )	8,899 ( 8.5 )	6,203 ( 12.8 )	4,236 ( 14.5 )	1,119 ( 18.2 )
Himono (Dried fish or salted fish)	1,454 ( 26.5 )	5,501 ( 37.5 )	4,946 ( 24.2 )	9,591 ( 27.8 )	7,460 ( 33.9 )	4,318 ( 17.7 )	1,128 ( 15.7 )
5/w and more, %							
Spinach or garland chrysanthemum	1,037 ( 23.6 )	5,852 ( 38.2 )	7,325 ( 32.4 )	10,110 ( 27.3 )	6,963 ( 24.8 )	4,667 ( 29.4 )	1,139 ( 26.7 )
Carrot or pumpkin	1,457 ( 13.9 )	5,616 ( 17.9 )	5,004 ( 13.8 )	9,921 ( 19.2 )	7,034 ( 7.9 )	4,378 ( 7.3 )	1,132 ( 12.1 )
Tomatoes	1,462 ( 11.1 )	5,566 ( 18.3 )	7,858 ( 12.0 )	9,302 ( 8.6 )	7,147 ( 9.9 )	4,294 ( 6.3 )	1,122 ( 17.8 )
Cabbage or head lettuce	1,458 ( 26.0 )	5,677 ( 27.8 )	5,012 ( 22.5 )	9,992 ( 26.1 )	6,790 ( 14.8 )	4,598 ( 20.6 )	1,128 ( 17.8 )
Chinese cabbage	909 ( 8.8 )	5,538 ( 20.1 )	4,191 ( 17.4 )	9,929 ( 23.5 )	6,379 ( 10.3 )	4,173 ( 7.5 )	1,107 ( 7.3 )
Sansai (Edible wild plants)	1,449 ( 1.0 )	5,472 ( 7.0 )	7,060 ( 2.0 )	9,069 ( 1.4 )	7,053 ( 1.9 )	4,134 ( 1.7 )	1,106 ( 1.3 )
Fungi (enokidake, shiitake, mushroom)	927 ( 2.5 )	5,605 ( 8.7 )	4,196 ( 4.6 )	9,668 ( 8.8 )	6,684 ( 4.5 )	4,480 ( 5.3 )	1,116 ( 4.1 )
Potatoes	1,460 ( 9.8 )	5,658 ( 15.3 )	8,035 ( 10.6 )	9,886 ( 33.0 )	7,480 ( 6.8 )	4,466 ( 4.4 )	5,384 ( 8.6 )
Seaweed (algae)	1,463 ( 15.3 )	5,747 ( 28.4 )	8,101 ( 29.1 )	9,937 ( 33.2 )	7,585 ( 22.2 )	4,600 ( 21.9 )	5,381 ( 21.7 )
Pickles	1,454 ( 54.5 )	5,698 ( 55.8 )	8,081 ( 63.6 )	9,941 ( 64.1 )	7,567 ( 59.5 )	4,556 ( 48.9 )	5,365 ( 62.1 )
Tukudami (Preserved foods concocted with soy sauce)	1,457 ( 2.4 )	5,250 ( 7.0 )	7,958 ( 8.1 )	9,033 ( 6.1 )	7,172 ( 9.5 )	4,185 ( 5.8 )	1,111 ( 4.6 )
Boiled beans	1,451 ( 1.5 )	5,297 ( 4.9 )	7,183 ( 5.4 )	9,543 ( 6.5 )	6,518 ( 4.2 )	4,371 ( 3.3 )	1,103 ( 1.6 )
Tofu (soybean curd)	1,463 ( 23.4 )	5,881 ( 45.2 )	5,054 ( 23.1 )	10,308 ( 26.4 )	7,317 ( 20.1 )	4,750 ( 24.3 )	5,388 ( 24.6 )
Citrus fruits	1,451 ( 8.3 )	5,526 ( 15.6 )	4,993 ( 30.8 )	9,911 ( 38.3 )	6,759 ( 27.3 )	4,466 ( 20.8 )	1,120 ( 14.7 )
Fresh fruit juice (in summer season)	1,449 ( 8.4 )	5,299 ( 15.3 )	4,102 ( 14.2 )	9,156 ( 16.1 )	6,511 ( 16.7 )	4,195 ( 14.4 )	1,097 ( 5.2 )
Other fruits (excluded citrus fruits)	1,448 ( 20.7 )	5,317 ( 24.6 )	4,867 ( 22.9 )	9,325 ( 42.4 )	7,068 ( 17.2 )	4,199 ( 24.5 )	1,084 ( 16.6 )
Sweets	1,459 ( 10.7 )	5,626 ( 14.8 )	4,980 ( 16.6 )	9,932 ( 12.9 )	7,493 ( 10.3 )	4,583 ( 13.8 )	3,669 ( 18.5 )
Coffee	1,461 ( 12.9 )	5,904 ( 18.6 )	8,262 ( 15.5 )	10,475 ( 90.3 )	7,793 ( 41.6 )	4,983 ( 60.6 )	4,902 ( 5.3 )
Black tea	1,032 ( 0.1 )	5,658 ( 0.9 )	7,229 ( 0.9 )	9,597 ( 2.0 )	7,375 ( 1.6 )	4,617 ( 2.9 )	1,119 ( 0.5 )
Green tea	1,458 ( 23.1 )	5,960 ( 55.9 )	7,493 ( 72.8 )	10,415 ( 73.1 )	7,732 ( 74.9 )	4,810 ( 48.7 )	4,441 ( 42.9 )
Oolong tea	922 ( 2.0 )	5,046 ( 3.7 )	7,063 ( 2.4 )	9,341 ( 8.1 )	6,325 ( 3.3 )	4,449 ( 7.4 )	1,090 ( 6.8 )
3/day and more, %							
Bowles of rice (at present)	1,459 ( 84.4 )	6,111 ( 82.7 )	8,310 ( 76.0 )	10,411 ( 74.8 )	7,752 ( 80.3 )	4,965 ( 59.8 )	5,310 ( 71.5 )
Bowles of rice (30 years old)	1,418 ( 91.1 )	5,799 ( 93.5 )	7,879 ( 85.9 )	9,658 ( 85.8 )	7,020 ( 90.6 )	4,620 ( 80.5 )	1,094 ( 91.2 )
Bowles of miso soup (at present)	1,307 ( 62.2 )	5,810 ( 63.3 )	6,221 ( 29.0 )	8,364 ( 36.7 )	3,505 ( 12.7 )	2,885 ( 20.6 )	742 ( 16.0 )
Bowles of miso soup (30 years old)	1,337 ( 68.7 )	5,467 ( 78.5 )	6,275 ( 45.3 )	8,168 ( 56.1 )	3,806 ( 20.6 )	3,161 ( 28.1 )	747 ( 26.2 )
love or like, %							
Taste for salty food	1,462 ( 33.3 )	4,223 ( 40.0 )	8,096 ( 45.1 )	10,147 ( 43.1 )	7,744 ( 41.9 )	4,840 ( 42.6 )	1,115 ( 24.9 )
Taste for fatty food	1,461 ( 29.8 )	4,254 ( 24.8 )	8,092 ( 31.7 )	10,234 ( 35.1 )	7,780 ( 27.1 )	4,900 ( 28.5 )	1,123 ( 15.1 )
Women							
3-4/w and more, %							
Beef	1,581 ( 1.6 )	5,116 ( 3.4 )	6,149 ( 4.9 )	10,242 ( 5.0 )	9,672 ( 16.6 )	8,418 ( 14.1 )	4,009 ( 19.4 )
Pork (excluding ham and sausages)	2,246 ( 26.9 )	7,820 ( 24.8 )	6,251 ( 28.7 )	11,124 ( 27.9 )	9,210 ( 13.7 )	7,620 ( 11.5 )	3,959 ( 18.4 )
Ham	2,230 ( 14.3 )	7,336 ( 16.9 )	9,493 ( 23.2 )	10,115 ( 17.0 )	8,992 ( 11.4 )	7,123 ( 11.1 )	7,087 ( 20.3 )
Chicken	2,246 ( 20.7 )	7,839 ( 25.5 )	9,652 ( 24.4 )	10,809 ( 18.8 )	9,386 ( 23.7 )	7,878 ( 13.7 )	3,948 ( 26.8 )
Liver	2,219 ( 1.5 )	5,167 ( 5.6 )	4,961 ( 3.2 )	9,785 ( 3.4 )	8,290 ( 3.8 )	7,434 ( 2.9 )	9,013 ( 7.8 )
Eggs	2,251 ( 69.8 )	8,262 ( 69.7 )	9,751 ( 73.0 )	11,863 ( 73.4 )	9,763 ( 66.1 )	8,776 ( 63.8 )	9,425 ( 76.8 )
Milk	2,243 ( 66.3 )	7,856 ( 53.6 )	9,625 ( 61.0 )	11,479 ( 68.3 )	9,483 ( 54.6 )	8,352 ( 63.9 )	9,319 ( 60.3 )
Yogurt	519 ( 10.8 )	5,005 ( 11.6 )	9,324 ( 13.9 )	9,933 ( 16.1 )	8,872 ( 7.5 )	7,261 ( 13.8 )	3,940 ( 13.5 )
Cheese	2,230 ( 8.4 )	7,176 ( 6.2 )	8,190 ( 9.0 )	9,870 ( 10.1 )	7,588 ( 4.1 )	7,088 ( 6.9 )	3,960 ( 5.5 )
Butter	2,228 ( 15.1 )	7,202 ( 8.3 )	8,173 ( 13.3 )	9,631 ( 9.8 )	7,561 ( 10.0 )	6,908 ( 13.7 )	3,927 ( 7.6 )
Margarine	1,565 ( 22.7 )	7,256 ( 13.5 )	4,905 ( 15.9 )	9,739 ( 20.7 )	7,547 ( 22.7 )	7,218 ( 38.1 )	8,923 ( 27.6 )
Deep-fried foods or tempura	2,235 ( 17.2 )	7,888 ( 30.2 )	5,133 ( 21.6 )	11,212 ( 23.6 )	8,085 ( 19.5 )	8,199 ( 13.5 )	3,983 ( 24.4 )
Fried vegetables	2,245 ( 55.8 )	7,859 ( 52.2 )	5,174 ( 39.4 )	11,685 ( 37.4 )	8,178 ( 30.3 )	8,540 ( 29.7 )	4,004 ( 40.9 )
Raw fish	2,250 ( 65.8 )	8,183 ( 72.4 )	6,344 ( 50.8 )	11,697 ( 58.4 )	9,668 ( 52.7 )	8,735 ( 51.9 )	9,201 ( 74.2 )
Kamaboko (fish paste)	405 ( 14.8 )	5,070 ( 20.0 )	9,512 ( 17.9 )	10,150 ( 10.5 )	7,874 ( 14.3 )	7,839 ( 14.0 )	3,974 ( 20.2 )
Himono (Dried fish or salted fish)	2,234 ( 29.2 )	7,827 ( 37.5 )	6,227 ( 25.9 )	10,880 ( 29.5 )	9,477 ( 34.9 )	7,725 ( 15.8 )	3,981 ( 19.3 )
5/w and more, %							
Spinach or garland chrysanthemum	1,598 ( 28.9 )	8,255 ( 43.6 )	8,613 ( 36.9 )	11,607 ( 30.0 )	8,976 ( 30.2 )	8,605 ( 37.6 )	4,029 ( 35.8 )
Carrot or pumpkin	2,247 ( 22.9 )	8,071 ( 24.8 )	6,368 ( 24.5 )	11,659 ( 28.9 )	9,009 ( 15.4 )	8,309 ( 14.8 )	4,038 ( 25.4 )
Tomatoes	2,241 ( 20.6 )	7,903 ( 26.4 )	9,429 ( 17.1 )	10,593 ( 10.3 )	9,085 ( 14.2 )	7,892 ( 10.1 )	3,999 ( 33.0 )
Cabbage or head lettuce	2,256 ( 36.5 )	8,058 ( 37.6 )	6,363 ( 31.5 )	11,556 ( 31.4 )	8,775 ( 20.4 )	8,645 ( 29.3 )	4,016 ( 32.9 )
Chinese cabbage	1,431 ( 9.5 )	7,634 ( 22.8 )	5,122 ( 22.4 )	11,337 ( 30.0 )	8,040 ( 13.1 )	7,609 ( 8.6 )	3,887 ( 7.5 )
Sansai (Edible wild plants)	2,221 ( 1.2 )	7,699 ( 7.8 )	8,188 ( 2.1 )	10,261 ( 2.0 )	9,043 ( 2.4 )	7,455 ( 1.8 )	3,928 ( 1.4 )
Fungi (enokidake, shiitake, mushroom)	1,476 ( 4.9 )	7,858 ( 11.6 )	5,147 ( 8.1 )	11,179 ( 12.2 )	8,703 ( 6.4 )	8,348 ( 9.4 )	3,978 ( 6.5 )
Potatoes	2,248 ( 14.5 )	8,027 ( 22.4 )	9,713 ( 17.6 )	11,485 ( 40.9 )	9,640 ( 11.6 )	8,534 ( 10.8 )	9,424 ( 13.9 )
Seaweed (algae)	2,251 ( 22.7 )	8,129 ( 37.0 )	9,783 ( 38.3 )	11,525 ( 42.2 )	9,669 ( 30.6 )	8,584 ( 33.8 )	9,385 ( 32.8 )
Pickles	2,247 ( 58.1 )	8,054 ( 63.1 )	9,775 ( 70.3 )	11,429 ( 69.9 )	9,677 ( 62.6 )	8,508 ( 53.0 )	9,354 ( 63.8 )
Tukudami (Preserved foods concocted with soy sauce)	2,233 ( 2.6 )	7,456 ( 7.8 )	9,559 ( 8.4 )	10,129 ( 6.1 )	9,178 ( 12.6 )	7,678 ( 5.8 )	3,923 ( 5.4 )
Boiled beans	2,240 ( 2.0 )	7,551 ( 6.6 )	8,485 ( 6.8 )	11,127 ( 10.0 )	8,537 ( 5.6 )	8,223 ( 4.6 )	3,967 ( 3.4 )
Tofu (soybean curd)	2,249 ( 31.5 )	8,280 ( 53.1 )	6,383 ( 27.9 )	11,903 ( 32.2 )	9,208 ( 24.8 )	8,872 ( 27.7 )	9,399 ( 30.2 )
Citrus fruits	2,236 ( 16.1 )	7,864 ( 24.5 )	6,335 ( 53.0 )	11,558 ( 58.2 )	8,815 ( 45.7 )	8,492 ( 46.3 )	3,955 ( 23.3 )
Fresh fruit juice (in summer season)	2,222 ( 9.1 )	7,438 ( 19.7 )	4,954 ( 18.3 )	10,246 ( 20.6 )	8,353 ( 21.0 )	7,615 ( 21.4 )	3,895 ( 8.3 )
Other fruits (excluded citrus fruits)	2,222 ( 40.4 )	7,447 ( 37.1 )	6,119 ( 41.7 )	10,723 ( 60.0 )	8,997 ( 31.1 )	7,692 ( 46.7 )	3,888 ( 35.8 )
Sweets	2,247 ( 15.0 )	8,029 ( 22.6 )	6,336 ( 25.8 )	11,521 ( 16.9 )	9,608 ( 15.9 )	8,606 ( 19.0 )	7,292 ( 25.1 )
Coffee	2,254 ( 13.9 )	8,333 ( 17.8 )	9,937 ( 13.2 )	12,179 ( 89.5 )	9,905 ( 41.5 )	9,316 ( 62.2 )	8,902 ( 9.7 )
Black tea	1,580 ( 0.3 )	8,019 ( 0.7 )	8,509 ( 1.2 )	11,095 ( 2.4 )	9,469 ( 1.9 )	8,639 ( 4.3 )	4,007 ( 0.9 )
Green tea	2,238 ( 18.5 )	8,417 ( 52.9 )	8,764 ( 72.9 )	11,994 ( 73.9 )	9,794 ( 76.7 )	8,876 ( 51.5 )	8,100 ( 59.4 )
Oolong tea	1,470 ( 4.3 )	7,138 ( 5.5 )	8,274 ( 4.0 )	10,777 ( 12.6 )	7,997 ( 4.5 )	8,097 ( 12.4 )	3,883 ( 13.4 )
3/day and more, %							
Bowles of rice (at present)	2,244 ( 75.2 )	8,640 ( 78.0 )	9,968 ( 70.3 )	12,022 ( 65.0 )	9,862 ( 77.1 )	9,265 ( 49.1 )	9,329 ( 69.0 )
Bowles of rice (30 years old)	2,210 ( 87.0 )	8,138 ( 89.5 )	9,367 ( 81.9 )	8,922 ( 79.6 )	8,922 ( 87.2 )	8,478 ( 76.7 )	3,85



**Table 4.** Sex-specific age-adjusted percentages of higher frequency of foods by geographical feature.

	Men						Women					
	Seaside		Plains		Mountains/Basin		Seaside		Plains		Seaside	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
3-4/w and more, %												
Beef	4,369	( 11.4 )	9,723	( 11.2 )	18,254	( 7.5 )	8,887	( 14.4 )	12,701	( 11.0 )	23,599	( 8.1 )
Pork (excluding ham and sausages)	4,011	( 10.3 )	10,001	( 16.7 )	20,502	( 25.3 )	8,082	( 12.6 )	13,284	( 18.4 )	26,864	( 25.5 )
Ham	6,366	( 20.3 )	9,920	( 14.1 )	21,720	( 17.6 )	10,909	( 17.1 )	13,108	( 13.7 )	28,359	( 17.9 )
Chicken	4,084	( 9.8 )	10,343	( 19.2 )	22,642	( 19.3 )	8,316	( 14.7 )	13,796	( 23.4 )	29,646	( 22.8 )
Liver	6,402	( 4.1 )	10,465	( 5.8 )	16,650	( 4.0 )	11,154	( 4.1 )	13,994	( 5.2 )	21,721	( 3.9 )
Eggs	7,047	( 72.1 )	12,553	( 71.4 )	24,010	( 71.3 )	12,428	( 69.0 )	16,476	( 71.1 )	31,187	( 71.1 )
Milk	6,768	( 54.1 )	12,042	( 51.0 )	23,099	( 57.1 )	12,083	( 62.9 )	15,944	( 56.5 )	30,330	( 62.4 )
Yogurt	3,086	( 9.3 )	9,184	( 5.6 )	19,659	( 8.8 )	6,820	( 14.4 )	12,267	( 8.9 )	25,767	( 14.2 )
Cheese	3,779	( 6.8 )	8,682	( 4.3 )	20,590	( 7.7 )	7,744	( 7.4 )	11,574	( 4.5 )	26,784	( 8.5 )
Butter	3,732	( 12.1 )	8,673	( 8.0 )	20,370	( 8.7 )	7,567	( 13.6 )	11,576	( 9.8 )	26,487	( 10.6 )
Margarine	6,225	( 24.9 )	9,497	( 13.7 )	17,792	( 13.5 )	10,942	( 37.6 )	12,524	( 19.4 )	23,687	( 19.1 )
Deep-fried foods or tempura	4,191	( 15.2 )	9,020	( 25.3 )	19,518	( 23.8 )	8,620	( 14.0 )	12,144	( 24.7 )	25,971	( 23.0 )
Fried vegetables	4,278	( 30.3 )	8,887	( 38.4 )	20,111	( 34.0 )	8,912	( 32.9 )	12,027	( 42.0 )	26,746	( 39.0 )
Raw fish	7,029	( 62.6 )	12,119	( 60.8 )	21,181	( 56.1 )	12,306	( 62.2 )	15,845	( 63.1 )	27,927	( 58.2 )
<i>Kamaboko</i> (fish paste)	3,396	( 12.6 )	8,532	( 17.5 )	20,306	( 11.8 )	7,270	( 13.5 )	11,222	( 19.0 )	26,332	( 14.3 )
<i>Himono</i> (Dried fish or salted fish)	4,069	( 17.0 )	10,163	( 37.1 )	20,166	( 26.4 )	8,131	( 16.2 )	13,507	( 37.6 )	26,713	( 27.4 )
5/w and more, %												
Spinach or garland chrysanthemum	4,360	( 25.8 )	9,734	( 31.5 )	22,999	( 29.7 )	8,926	( 35.3 )	12,937	( 37.3 )	29,820	( 34.0 )
Carrot or pumpkin	4,164	( 7.9 )	9,669	( 11.3 )	20,709	( 16.4 )	8,720	( 17.4 )	13,018	( 18.0 )	27,963	( 25.9 )
Tomatoes	4,071	( 8.3 )	10,309	( 13.4 )	22,371	( 10.6 )	8,341	( 14.9 )	13,628	( 18.7 )	29,173	( 16.7 )
Cabbage or head lettuce	4,345	( 19.6 )	9,544	( 20.7 )	20,766	( 24.2 )	9,025	( 28.9 )	12,904	( 29.3 )	27,740	( 31.5 )
Chinese cabbage	3,996	( 8.1 )	8,420	( 12.3 )	19,810	( 19.9 )	8,139	( 8.6 )	10,975	( 15.0 )	25,946	( 23.4 )
<i>Sansai</i> (Edible wild plants)	3,911	( 0.6 )	10,149	( 4.5 )	21,283	( 1.9 )	7,900	( 0.8 )	13,385	( 5.4 )	27,510	( 2.2 )
Fungi (enokidake, shiitake, mushroom)	4,239	( 4.4 )	8,881	( 6.3 )	19,556	( 7.1 )	8,781	( 8.6 )	11,947	( 8.4 )	25,961	( 10.0 )
Potatoes	6,886	( 8.2 )	12,173	( 7.5 )	23,310	( 20.7 )	12,290	( 13.8 )	16,137	( 12.2 )	30,644	( 26.8 )
Seaweed (algae)	6,953	( 21.8 )	12,362	( 22.3 )	23,499	( 30.2 )	12,288	( 32.2 )	16,246	( 30.2 )	30,792	( 39.6 )
Pickles	6,852	( 52.2 )	12,345	( 59.7 )	23,465	( 62.2 )	12,146	( 55.6 )	16,255	( 64.0 )	30,643	( 67.3 )
<i>Tukudami</i> (Preserved foods concocted with soy sauce)	4,044	( 4.3 )	10,078	( 8.5 )	22,044	( 7.0 )	8,217	( 5.2 )	13,353	( 10.0 )	28,586	( 7.4 )
Boiled beans	4,137	( 2.8 )	9,557	( 4.4 )	21,772	( 5.5 )	8,624	( 3.9 )	12,884	( 5.9 )	28,622	( 7.4 )
Tofu (soybean curd)	7,057	( 24.0 )	11,798	( 27.1 )	21,306	( 27.9 )	12,488	( 27.6 )	15,509	( 32.0 )	28,297	( 34.9 )
Citrus fruits	4,266	( 21.3 )	9,357	( 19.7 )	20,603	( 31.6 )	8,903	( 44.3 )	12,746	( 33.7 )	27,606	( 47.1 )
Fresh fruit juice (in summer season)	4,018	( 12.4 )	9,123	( 15.7 )	18,668	( 15.0 )	8,083	( 18.4 )	12,224	( 20.1 )	24,416	( 18.2 )
Other fruits (excluded citrus fruits)	4,014	( 23.7 )	9,623	( 18.0 )	19,671	( 32.6 )	8,131	( 45.5 )	12,778	( 31.7 )	26,179	( 48.4 )
Sweets	6,864	( 14.0 )	10,215	( 13.3 )	20,663	( 13.9 )	12,223	( 20.4 )	13,745	( 19.8 )	27,671	( 20.0 )
Coffee	7,142	( 38.2 )	12,373	( 29.9 )	24,265	( 36.6 )	12,801	( 42.1 )	16,341	( 31.1 )	31,684	( 30.1 )
Black tea	4,321	( 2.6 )	10,210	( 1.1 )	22,096	( 1.5 )	8,958	( 3.9 )	13,499	( 1.2 )	28,861	( 1.8 )
Green tea	7,043	( 52.2 )	11,775	( 58.4 )	23,491	( 71.0 )	12,515	( 53.6 )	15,272	( 56.9 )	30,396	( 72.1 )
Oolong tea	4,160	( 7.0 )	8,531	( 3.7 )	21,545	( 5.3 )	8,476	( 12.0 )	11,125	( 5.6 )	28,035	( 8.6 )
3/day and more, %												
Bowles of rice (at present)	7,145	( 69.5 )	12,713	( 77.3 )	24,460	( 76.0 )	12,743	( 57.2 )	16,734	( 74.8 )	31,853	( 69.2 )
Bowles of rice (30 years old)	4,312	( 84.0 )	10,266	( 90.7 )	22,910	( 86.9 )	8,806	( 78.1 )	13,521	( 87.6 )	29,516	( 83.0 )
Bowles of miso soup (at present)	2,355	( 18.3 )	7,909	( 42.6 )	18,570	( 36.2 )	4,054	( 8.6 )	10,202	( 34.5 )	22,986	( 23.1 )
Bowles of miso soup (30 years old)	2,724	( 25.3 )	7,913	( 51.8 )	18,324	( 53.0 )	5,058	( 16.4 )	10,308	( 45.5 )	22,934	( 44.3 )
love or like, %												
Taste for salty food	4,491	( 40.9 )	10,977	( 41.4 )	22,159	( 42.5 )	9,182	( 25.6 )	14,436	( 27.2 )	28,359	( 26.3 )
Taste for fatty food	4,548	( 28.1 )	11,021	( 26.7 )	22,275	( 31.9 )	9,447	( 13.2 )	14,548	( 14.2 )	28,677	( 15.3 )

**Table 4.** Sex-specific age-adjusted means and standard deviations of nutrient intake by geographical area.

	Hokkaido	Tohoku	Kanto	Chubu	Kinki	Chugoku	Kyusyu
No of subjects	786	3,972	3,611	6,758	5,092	3,161	1,006
Men							
Total weight	g/day 1435 ( 18 )	1788 ( 8 )	1739 ( 8 )	1858 ( 6 )	1710 ( 7 )	1481 ( 9 )	1710 ( 16 )
Total energy	kcal/day 1587 ( 16 )	1872 ( 7 )	1570 ( 8 )	1634 ( 6 )	1629 ( 6 )	1464 ( 8 )	1593 ( 14 )
Water	g/day 1120 ( 15 )	1418 ( 7 )	1427 ( 7 )	1533 ( 5 )	1383 ( 6 )	1200 ( 8 )	1391 ( 14 )
Animal protein	g/day 23.8 ( 0.3 )	28.5 ( 0.2 )	24.6 ( 0.2 )	26.8 ( 0.1 )	24.1 ( 0.1 )	23.2 ( 0.2 )	25.2 ( 0.3 )
Vegetable protein	g/day 29.3 ( 0.3 )	35.3 ( 0.1 )	28.1 ( 0.1 )	28.8 ( 0.1 )	26.1 ( 0.1 )	23.6 ( 0.2 )	26.7 ( 0.3 )
Total protein	g/day 53.2 ( 0.5 )	63.9 ( 0.2 )	52.7 ( 0.3 )	55.6 ( 0.2 )	50.2 ( 0.2 )	46.8 ( 0.3 )	51.9 ( 0.5 )
Animal fat	g/day 12.1 ( 0.2 )	13.2 ( 0.1 )	13.0 ( 0.1 )	14.3 ( 0.1 )	12.4 ( 0.1 )	13.0 ( 0.1 )	12.5 ( 0.2 )
Vegetable fat	g/day 15.1 ( 0.2 )	18.0 ( 0.1 )	14.3 ( 0.1 )	14.5 ( 0.1 )	11.8 ( 0.1 )	12.2 ( 0.1 )	12.8 ( 0.2 )
Total fat	g/day 30.7 ( 0.4 )	35.6 ( 0.2 )	30.6 ( 0.2 )	32.5 ( 0.1 )	27.8 ( 0.1 )	28.3 ( 0.2 )	28.9 ( 0.3 )
Carbohydrate	g/day 215.8 ( 2.6 )	251.1 ( 1.2 )	212.0 ( 1.2 )	220.4 ( 0.9 )	235.6 ( 1.0 )	193.5 ( 1.3 )	224.1 ( 2.3 )
Crude fiber	g/day 3.07 ( 0.04 )	3.76 ( 0.02 )	3.04 ( 0.02 )	3.17 ( 0.01 )	2.42 ( 0.01 )	2.37 ( 0.02 )	2.61 ( 0.03 )
Ash	g/day 12.2 ( 0.1 )	14.9 ( 0.1 )	12.3 ( 0.1 )	12.8 ( 0.0 )	9.7 ( 0.1 )	9.9 ( 0.1 )	10.3 ( 0.1 )
Calcium	mg/day 450.7 ( 5.5 )	518.5 ( 2.4 )	457.1 ( 2.6 )	493.6 ( 1.9 )	386.1 ( 2.2 )	421.8 ( 2.8 )	390.9 ( 4.8 )
Phosphate	mg/day 744.9 ( 7.8 )	879.7 ( 3.5 )	748.4 ( 3.6 )	802.0 ( 2.7 )	700.0 ( 3.0 )	678.9 ( 3.9 )	707.7 ( 6.9 )
Iron	mg/day 7.93 ( 0.09 )	10.04 ( 0.04 )	8.26 ( 0.04 )	8.38 ( 0.03 )	6.69 ( 0.04 )	6.62 ( 0.05 )	7.32 ( 0.08 )
Sodium	mg/day 2427 ( 31 )	2989 ( 14 )	2339 ( 14 )	2316 ( 11 )	1623 ( 12 )	1727 ( 16 )	1774 ( 27 )
Potassium	mg/day 1863 ( 21 )	2214 ( 9 )	1939 ( 10 )	2127 ( 7 )	1701 ( 8 )	1692 ( 11 )	1741 ( 18 )
Retinol	$\mu$ g/day 427 ( 30 )	762 ( 13 )	573 ( 14 )	560 ( 10 )	545 ( 12 )	531 ( 15 )	693 ( 26 )
Carotin	$\mu$ g/day 1929 ( 31 )	2320 ( 14 )	2001 ( 14 )	1970 ( 10 )	1551 ( 12 )	1611 ( 15 )	1783 ( 27 )
Vitamin A	IU/day 2509 ( 104 )	3838 ( 46 )	3034 ( 48 )	2977 ( 35 )	2691 ( 41 )	2681 ( 52 )	3313 ( 92 )
Vitamin B1	mg/day 0.76 ( 0.01 )	0.91 ( 0.00 )	0.78 ( 0.00 )	0.83 ( 0.00 )	0.69 ( 0.00 )	0.65 ( 0.00 )	0.72 ( 0.01 )
Vitamin B2	mg/day 0.92 ( 0.01 )	1.14 ( 0.01 )	1.03 ( 0.01 )	1.10 ( 0.00 )	0.94 ( 0.00 )	0.94 ( 0.01 )	0.99 ( 0.01 )
Niacine	mg/day 10.5 ( 0.1 )	13.0 ( 0.1 )	10.7 ( 0.1 )	11.5 ( 0.0 )	10.1 ( 0.0 )	9.2 ( 0.1 )	10.7 ( 0.1 )
Vitamin C	mg/day 91.3 ( 1.4 )	109.6 ( 0.6 )	102.6 ( 0.7 )	109.3 ( 0.5 )	87.0 ( 0.5 )	84.5 ( 0.7 )	87.8 ( 1.2 )
Salt	g/day 6.04 ( 0.08 )	7.45 ( 0.03 )	5.81 ( 0.04 )	5.74 ( 0.03 )	4.00 ( 0.03 )	4.26 ( 0.04 )	4.38 ( 0.07 )
Cholesterol	mg/day 219.4 ( 3.3 )	270.2 ( 1.5 )	239.3 ( 1.5 )	254.3 ( 1.1 )	219.3 ( 1.3 )	219.9 ( 1.7 )	226.7 ( 2.9 )
-tocopherol	mg/day 3.94 ( 0.04 )	4.67 ( 0.02 )	3.91 ( 0.02 )	4.07 ( 0.01 )	3.60 ( 0.02 )	3.38 ( 0.02 )	3.83 ( 0.04 )
-tocopherol	mg/day 0.15 ( 0.00 )	0.18 ( 0.00 )	0.13 ( 0.00 )	0.13 ( 0.00 )	0.08 ( 0.00 )	0.10 ( 0.00 )	0.10 ( 0.00 )
-tocopherol	mg/day 4.85 ( 0.07 )	6.18 ( 0.03 )	4.48 ( 0.03 )	4.45 ( 0.02 )	2.71 ( 0.03 )	3.23 ( 0.03 )	3.43 ( 0.06 )
-tocopherol	mg/day 1.99 ( 0.03 )	2.57 ( 0.01 )	1.82 ( 0.01 )	1.79 ( 0.01 )	1.03 ( 0.01 )	1.25 ( 0.01 )	1.34 ( 0.03 )
Vitamin E	mg/day 4.23 ( 0.04 )	5.03 ( 0.02 )	4.17 ( 0.02 )	4.32 ( 0.01 )	3.75 ( 0.02 )	3.56 ( 0.02 )	4.02 ( 0.04 )
Total fatty acids	mg/day 26.4 ( 0.3 )	30.8 ( 0.1 )	26.5 ( 0.1 )	28.0 ( 0.1 )	23.9 ( 0.1 )	24.2 ( 0.2 )	25.0 ( 0.3 )
Saturated fatty acids	mg/day 8.71 ( 0.12 )	9.59 ( 0.05 )	8.84 ( 0.05 )	9.67 ( 0.04 )	8.58 ( 0.05 )	8.88 ( 0.06 )	8.43 ( 0.10 )
Monounsaturated fatty acids	mg/day 9.16 ( 0.12 )	10.71 ( 0.05 )	9.36 ( 0.06 )	9.85 ( 0.04 )	8.56 ( 0.05 )	8.50 ( 0.06 )	9.06 ( 0.11 )
Polyunsaturated fatty acids	mg/day 8.47 ( 0.10 )	10.43 ( 0.04 )	8.24 ( 0.05 )	8.34 ( 0.03 )	6.67 ( 0.04 )	6.64 ( 0.05 )	7.46 ( 0.09 )
n3-fatty acids	mg/day 1.70 ( 0.02 )	2.08 ( 0.01 )	1.62 ( 0.01 )	1.71 ( 0.01 )	1.42 ( 0.01 )	1.37 ( 0.01 )	1.55 ( 0.02 )
n6-fatty acids	mg/day 6.77 ( 0.08 )	8.34 ( 0.03 )	6.62 ( 0.04 )	6.64 ( 0.03 )	5.26 ( 0.03 )	5.27 ( 0.04 )	5.91 ( 0.07 )
Women							
No of subjects	1,358	6,032	4,631	8,740	6,920	6,048	3,764
Total weight	g/day 1363 ( 12 )	1653 ( 6 )	1690 ( 6 )	1802 ( 5 )	1658 ( 5 )	1497 ( 6 )	1647 ( 7 )
Total energy	kcal/day 1271 ( 9 )	1438 ( 4 )	1294 ( 5 )	1320 ( 4 )	1366 ( 4 )	1224 ( 4 )	1289 ( 5 )
Water	g/day 1078 ( 11 )	1329 ( 5 )	1398 ( 6 )	1504 ( 4 )	1349 ( 5 )	1224 ( 5 )	1357 ( 6 )
Animal protein	g/day 24.4 ( 0.3 )	28.5 ( 0.1 )	25.5 ( 0.1 )	27.1 ( 0.1 )	24.6 ( 0.1 )	23.6 ( 0.1 )	27.0 ( 0.2 )
Vegetable protein	g/day 26.3 ( 0.2 )	31.0 ( 0.1 )	26.2 ( 0.1 )	26.4 ( 0.1 )	24.9 ( 0.1 )	22.5 ( 0.1 )	24.3 ( 0.1 )
Total protein	g/day 50.7 ( 0.4 )	59.5 ( 0.2 )	51.7 ( 0.2 )	53.4 ( 0.2 )	49.5 ( 0.2 )	46.1 ( 0.2 )	51.4 ( 0.2 )
Animal fat	g/day 12.3 ( 0.2 )	13.2 ( 0.1 )	13.8 ( 0.1 )	14.6 ( 0.1 )	12.9 ( 0.1 )	13.7 ( 0.1 )	13.8 ( 0.1 )
Vegetable fat	g/day 14.5 ( 0.1 )	16.8 ( 0.1 )	14.2 ( 0.1 )	14.2 ( 0.1 )	12.2 ( 0.1 )	12.6 ( 0.1 )	12.9 ( 0.1 )
Total fat	g/day 30.6 ( 0.3 )	34.5 ( 0.1 )	31.3 ( 0.2 )	32.5 ( 0.1 )	28.6 ( 0.1 )	29.2 ( 0.1 )	30.5 ( 0.2 )
Carbohydrate	g/day 188.7 ( 1.5 )	212.2 ( 0.7 )	193.8 ( 0.8 )	195.4 ( 0.6 )	217.7 ( 0.7 )	184.1 ( 0.7 )	193.6 ( 0.9 )
Crude fiber	g/day 3.03 ( 0.02 )	3.64 ( 0.01 )	3.13 ( 0.01 )	3.19 ( 0.01 )	2.53 ( 0.01 )	2.47 ( 0.01 )	2.71 ( 0.01 )
Ash	g/day 11.8 ( 0.1 )	14.2 ( 0.0 )	12.4 ( 0.1 )	12.7 ( 0.0 )	10.0 ( 0.0 )	9.9 ( 0.0 )	10.6 ( 0.1 )
Calcium	mg/day 455.0 ( 4.1 )	514.3 ( 1.9 )	476.8 ( 2.2 )	504.2 ( 1.6 )	407.1 ( 1.8 )	439.2 ( 2.0 )	432.0 ( 2.5 )
Phosphate	mg/day 721.5 ( 5.6 )	832.9 ( 2.7 )	748.7 ( 3.0 )	785.3 ( 2.2 )	701.3 ( 2.5 )	679.1 ( 2.7 )	719.7 ( 3.4 )
Iron	mg/day 7.62 ( 0.07 )	9.50 ( 0.03 )	8.23 ( 0.04 )	8.22 ( 0.03 )	6.87 ( 0.03 )	6.66 ( 0.03 )	7.56 ( 0.04 )
Sodium	mg/day 2219 ( 21 )	2745 ( 10 )	2241 ( 11 )	2203 ( 8 )	1625 ( 9 )	1590 ( 10 )	1733 ( 13 )
Potassium	mg/day 1922 ( 15 )	2230 ( 7 )	2056 ( 8 )	2195 ( 6 )	1811 ( 7 )	1823 ( 7 )	1903 ( 9 )
Retinol	$\mu$ g/day 360 ( 23 )	551 ( 11 )	533 ( 13 )	490 ( 9 )	536 ( 10 )	541 ( 11 )	737 ( 14 )
Carotin	$\mu$ g/day 2168 ( 23 )	2480 ( 11 )	2246 ( 13 )	2130 ( 9 )	1777 ( 10 )	1875 ( 11 )	2120 ( 14 )
Vitamin A	IU/day 2418 ( 80 )	3222 ( 38 )	3036 ( 43 )	2831 ( 32 )	2788 ( 36 )	2863 ( 38 )	3648 ( 48 )
Vitamin B1	mg/day 0.75 ( 0.01 )	0.87 ( 0.00 )	0.80 ( 0.00 )	0.82 ( 0.00 )	0.71 ( 0.00 )	0.68 ( 0.00 )	0.75 ( 0.00 )
Vitamin B2	mg/day 0.92 ( 0.01 )	1.09 ( 0.00 )	1.06 ( 0.01 )	1.11 ( 0.00 )	0.97 ( 0.00 )	0.99 ( 0.00 )	1.06 ( 0.01 )
Niacine	mg/day 10.3 ( 0.1 )	12.4 ( 0.0 )	10.8 ( 0.0 )	11.3 ( 0.0 )	10.1 ( 0.0 )	9.2 ( 0.0 )	10.9 ( 0.1 )
Vitamin C	mg/day 102.2 ( 1.0 )	118.4 ( 0.5 )	117.0 ( 0.6 )	120.5 ( 0.4 )	99.8 ( 0.5 )	101.8 ( 0.5 )	101.7 ( 0.6 )
Salt	g/day 5.51 ( 0.05 )	6.83 ( 0.03 )	5.56 ( 0.03 )	5.46 ( 0.02 )	4.00 ( 0.02 )	3.91 ( 0.03 )	4.28 ( 0.03 )
Cholesterol	mg/day 221.1 ( 2.5 )	263.6 ( 1.2 )	243.0 ( 1.4 )	252.4 ( 1.0 )	221.5 ( 1.1 )	217.7 ( 1.2 )	239.3 ( 1.5 )
-tocopherol	mg/day 3.96 ( 0.03 )	4.51 ( 0.01 )	3.97 ( 0.02 )	3.99 ( 0.01 )	3.65 ( 0.01 )	3.48 ( 0.01 )	3.92 ( 0.02 )
-tocopherol	mg/day 0.14 ( 0.00 )	0.16 ( 0.00 )	0.13 ( 0.00 )	0.13 ( 0.00 )	0.09 ( 0.00 )	0.10 ( 0.00 )	0.10 ( 0.00 )
-tocopherol	mg/day 4.41 ( 0.04 )	5.62 ( 0.02 )	4.22 ( 0.02 )	4.17 ( 0.02 )	2.71 ( 0.02 )	2.93 ( 0.02 )	3.39 ( 0.03 )
-tocopherol	mg/day 1.74 ( 0.02 )	2.30 ( 0.01 )	1.67 ( 0.01 )	1.64 ( 0.01 )	1.00 ( 0.01 )	1.06 ( 0.01 )	1.28 ( 0.01 )
Vitamin E	mg/day 4.21 ( 0.03 )	4.84 ( 0.01 )	4.21 ( 0.02 )	4.23 ( 0.01 )	3.79 ( 0.01 )	3.64 ( 0.01 )	4.11 ( 0.02 )
Total fatty acids	mg/day 26.0 ( 0.2 )	29.7 ( 0.1 )	26.8 ( 0.1 )	27.8 ( 0.1 )	24.3 ( 0.1 )	24.4 ( 0.1 )	25.9 ( 0.1 )
Saturated fatty acids	mg/day 8.68 ( 0.09 )	9.33 ( 0.04 )	9.08 ( 0.05 )	9.66 ( 0.03 )	8.72 ( 0.04 )	9.12 ( 0.04 )	8.95 ( 0.05 )
Monounsaturated fatty acids	mg/day 9.18 ( 0.09 )	10.52 ( 0.04 )	9.60 ( 0.05 )	9.89 ( 0.04 )	8.76 ( 0.04 )	8.69 ( 0.04 )	9.53 ( 0.05 )
Polyunsaturated fatty acids	mg/day 8.07 ( 0.07 )	9.82 ( 0.03 )	8.07 ( 0.04 )	8.09 ( 0.03 )	6.68 ( 0.03 )	6.42 ( 0.03 )	7.39 ( 0.04 )
n3-fatty acids	mg/day 1.71 ( 0.02 )	2.06 ( 0.01 )	1.63 ( 0.01 )	1.71 ( 0.01 )	1.45 ( 0.01 )	1.35 ( 0.01 )	1.60 ( 0.01 )
n6-fatty acids	mg/day 6.35 ( 0.05 )	7.75 ( 0.03 )	6.43 ( 0.03 )	6.38 ( 0.02 )	5.23 ( 0.02 )	5.08 ( 0.03 )	5.79 ( 0.03 )

Standard deviations in parentheses.

**Table 6.** Sex-specific age-adjusted means and standard deviations of nutrient intake by geographical feature.

		Men			Women		
		Seaside	Plains	Mountains/Basin	Seaside	Plains	Mountains/Basin
No of subjects		3,124	6,723	14,539	6,633	9,634	21,226
Total weight	g/day	1495 ( 9 )	1745 ( 6 )	1773 ( 4 )	1496 ( 6 )	1651 ( 5 )	1710 ( 3 )
Total energy	kcal/day	1467 ( 8 )	1744 ( 6 )	1624 ( 4 )	1223 ( 4 )	1401 ( 3 )	1320 ( 2 )
Water	g/day	1210 ( 8 )	1398 ( 5 )	1450 ( 4 )	1223 ( 5 )	1335 ( 4 )	1412 ( 3 )
Animal protein	g/day	22.8 ( 0.2 )	26.1 ( 0.1 )	25.9 ( 0.1 )	23.7 ( 0.1 )	26.7 ( 0.1 )	26.4 ( 0.1 )
Vegetable protein	g/day	23.9 ( 0.2 )	30.3 ( 0.1 )	28.6 ( 0.1 )	22.7 ( 0.1 )	27.6 ( 0.1 )	26.3 ( 0.1 )
Total protein	g/day	46.7 ( 0.3 )	56.4 ( 0.2 )	54.5 ( 0.1 )	46.4 ( 0.2 )	54.2 ( 0.1 )	52.7 ( 0.1 )
Animal fat	g/day	12.6 ( 0.1 )	12.7 ( 0.1 )	13.6 ( 0.0 )	13.4 ( 0.1 )	13.1 ( 0.1 )	14.0 ( 0.0 )
Vegetable fat	g/day	12.2 ( 0.1 )	14.6 ( 0.1 )	14.3 ( 0.0 )	12.6 ( 0.1 )	14.3 ( 0.1 )	14.1 ( 0.0 )
Total fat	g/day	27.9 ( 0.2 )	31.3 ( 0.1 )	31.5 ( 0.1 )	29.1 ( 0.1 )	31.4 ( 0.1 )	31.7 ( 0.1 )
Carbohydrate	g/day	197.7 ( 1.3 )	243.4 ( 0.9 )	220.4 ( 0.6 )	184.1 ( 0.7 )	214.8 ( 0.6 )	197.8 ( 0.4 )
Crude fiber	g/day	2.35 (0.02)	3.02 (0.01)	3.06 (0.01)	2.48 (0.01)	3.03 (0.01)	3.08 (0.01)
Ash	g/day	9.66 (0.08)	12.11 (0.05)	12.32 (0.03)	9.84 (0.05)	12.00 (0.04)	12.13 (0.03)
Calcium	mg/day	404.8 ( 2.9 )	451.8 ( 2.0 )	467.1 ( 1.3 )	428.7 ( 1.9 )	463.4 ( 1.6 )	477.1 ( 1.1 )
Phosphate	mg/day	667.2 ( 4.0 )	785.8 ( 2.7 )	774.2 ( 1.9 )	673.8 ( 2.6 )	767.7 ( 2.1 )	760.3 ( 1.5 )
Iron	mg/day	6.50 (0.05)	8.21 (0.03)	8.21 (0.02)	6.68 (0.03)	8.09 (0.03)	8.08 (0.02)
Sodium	mg/day	1664 ( 17 )	2270 ( 12 )	2265 ( 8 )	1583 ( 11 )	2165 ( 9 )	2130 ( 6 )
Potassium	mg/day	1671 ( 11 )	1928 ( 7 )	2010 ( 5 )	1815 ( 7 )	2005 ( 6 )	2079 ( 4 )
Retinol	µ g/day	488 ( 15 )	661 ( 10 )	578 ( 7 )	528 ( 11 )	583 ( 9 )	527 ( 6 )
Carotin	µ g/day	1605 ( 16 )	1883 ( 11 )	1952 ( 7 )	1919 ( 11 )	2095 ( 9 )	2150 ( 6 )
Vitamin A	IU/day	2533 ( 53 )	3260 ( 36 )	3024 ( 24 )	2842 ( 37 )	3120 ( 30 )	2966 ( 20 )
Vitamin B1	mg/day	0.65 (0.00)	0.78 (0.00)	0.80 (0.00)	0.69 (0.00)	0.78 (0.00)	0.80 (0.00)
Vitamin B2	mg/day	0.91 (0.01)	1.04 (0.00)	1.05 (0.00)	0.97 (0.00)	1.04 (0.00)	1.07 (0.00)
Niacine	mg/day	9.21 (0.07)	11.30 (0.04)	11.17 (0.03)	9.43 (0.04)	11.14 (0.03)	11.04 (0.02)
Vitamin C	mg/day	84.7 ( 0.7 )	95.9 ( 0.5 )	103.5 ( 0.3 )	101.7 ( 0.5 )	107.7 ( 0.4 )	114.2 ( 0.3 )
Salt	g/day	4.11 (0.04)	5.63 (0.03)	5.62 (0.02)	3.90 (0.03)	5.37 (0.02)	5.28 (0.01)
Cholesterol	mg/day	211.0 ( 1.7 )	242.9 ( 1.2 )	246.0 ( 0.8 )	213.6 ( 1.2 )	243.0 ( 1.0 )	245.6 ( 0.6 )
-tocopherol	mg/day	3.42 (0.02)	4.06 (0.01)	3.99 (0.01)	3.56 (0.01)	4.03 (0.01)	3.98 (0.01)
-tocopherol	mg/day	0.10 (0.00)	0.13 (0.00)	0.13 (0.00)	0.10 (0.00)	0.12 (0.00)	0.12 (0.00)
-tocopherol	mg/day	3.14 (0.04)	4.27 (0.03)	4.37 (0.02)	2.97 (0.02)	4.03 (0.02)	4.08 (0.01)
-tocopherol	mg/day	1.20 (0.02)	1.73 (0.01)	1.76 (0.01)	1.08 (0.01)	1.59 (0.01)	1.60 (0.01)
Vitamin E	mg/day	3.59 (0.02)	4.31 (0.02)	4.25 (0.01)	3.71 (0.01)	4.26 (0.01)	4.21 (0.01)
Total fatty acids	mg/day	23.8 ( 0.2 )	27.1 ( 0.1 )	27.2 ( 0.1 )	24.2 ( 0.1 )	26.9 ( 0.1 )	27.1 ( 0.1 )
Saturated fatty acids	mg/day	8.64 (0.06)	9.08 (0.04)	9.24 (0.03)	8.91 (0.04)	9.08 (0.03)	9.28 (0.02)
Monounsaturated fatty acids	mg/day	8.41 (0.06)	9.50 (0.04)	9.59 (0.03)	8.70 (0.04)	9.57 (0.03)	9.70 (0.02)
Polyunsaturated fatty acids	mg/day	6.59 (0.05)	8.37 (0.04)	8.24 (0.02)	6.50 (0.03)	8.13 (0.03)	8.00 (0.02)
n3-fatty acids	mg/day	1.37 (0.01)	1.72 (0.01)	1.67 (0.01)	1.39 (0.01)	1.74 (0.01)	1.67 (0.00)
n6-fatty acids	mg/day	5.22 (0.04)	6.65 (0.03)	6.57 (0.02)	5.11 (0.03)	6.39 (0.02)	6.32 (0.01)

Standard deviations in parentheses.