Volume 3

# The National Diet & Nutrition Survey: adults aged 19 to 64 years

## Vitamin and mineral intake and urinary analytes


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The Office for National Statistics (ONS) is the government agency responsible for compiling, analysing and disseminating many of the United Kingdom's economic, social and demographic statistics, including the retail prices index, trade figures and labour market data, as well as the periodic census of the population and health statistics. The Director of ONS is also the National Statistician and the Registrar General for England and Wales, and the agency administers the statutory registration of births, marriages and deaths there.

This report has been produced by the Social Survey Division of the Office for National Statistics in accordance with the Official Statistics Code of Practice.

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## Foreword

This survey, of a national sample of adults aged 19 to 64 years, is one of a programme of national surveys with the aim of gathering information about the dietary habits and nutritional status of the British population. The results of the survey will be used to develop nutrition policy and to contribute to the evidence base for Government advice on healthy eating.

This report, covering intakes of vitamins and minerals and levels of urinary analytes, is the third in a series on the findings of this survey. The first report, covering foods consumed, was published in December 2002, and the second, covering intakes of energy and macronutrients, in June 2003. A further report covering nutritional status will be published later this year and a summary report will complete the series.

The work described in this series of reports results from a successful collaboration between the Food Standards Agency and the Department of Health, who jointly funded the collection of the survey data, with the Office for National Statistics and the Medical Research Council Human Nutrition Research.

We warmly welcome this third report of the latest survey in the National Diet and Nutrition Survey programme and express our thanks to all the respondents who took part.

Sir John Krebs
Chairman
Food Standards Agency

Hazel Blears
Minister for Public Health
Department of Health

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# Notes to the tables

## Tables showing percentages

In general, percentages are shown if the base is 30 or more. Where a base number is less than 30, actual numbers are shown within square brackets.

The row or column percentages may add to 99% or 101% because of rounding and weighting.

The varying positions of the bases in the tables denote the presentation of different types of information. Where the base is at the foot of the table, the whole distribution is presented and the individual percentages add to between 99% and 101%. Where the base is given in a column, the figures refer to the proportion of respondents who had the attribute being discussed, and the complementary proportion, to add to 100%, is not shown in the table.

In tables showing cumulative percentages the row labelled 'All' is always shown as 100%. The proportion of cases falling above the upper limit of the previous band can be calculated by subtracting from 100 the proportion in the previous band. Actual maximum values are not shown in tables of cumulative percentages, since they could vary for different subgroups being considered within the same tables.

Unless shown as a separate group, or stated in the text or a footnote to a table, estimates have been calculated for the total number of respondents in the subgroup, excluding those not answering. Base numbers shown in the tables are the total number of respondents in the subgroup, including those not answering.

The total column may include cases from small subgroups not shown separately elsewhere on the tables, therefore the individual column bases may not add to the base in the total column.

## Conventions

The following conventions have been used in the tables:

| | |
|---|---|
| .. | data not available |
| - | category not applicable; no cases |
| 0 | values less than 0.5% |
| [ ] | numbers inside square brackets are the actual numbers of cases, when the base is fewer than 30. |

## Tables showing descriptive statistics – mean, percentiles, standard deviation

These are shown in tables to an appropriate number of decimal places.

## Significant differences

Differences commented on in the text are shown as being significant at the 95% or 99% confidence levels ($p<0.05$ and $p<0.01$). Throughout this volume, the terms 'significant' and 'statistically significant' are used interchangeably. Where differences are shown or described as being 'not statistically significant' or 'ns' this indicates $p>0.05$. The formulae used to test for significant differences are given in Appendix A, pages 137–140.

As a general indication of those groups showing the largest differences, the differences between all pairs of groups were tested for statistical significance. Because of this ‘trawling’ approach, real statistical significance levels are lower than indicated here and some of the reported significant differences are likely to be spurious. However, these significance tests can still be validly used for testing hypotheses suggested by earlier work.

Where differences between subgroups are compared for a number of variables, for example differences between respondents in different age groups in mean daily calcium intake, the significance level shown ($p<0.05$ or $p<0.01$) applies to all comparisons, unless otherwise stated.

## Standard deviations

Standard deviations for estimates of mean values are shown in the tables and have been calculated for a simple random sample design. In testing for the significant difference between two sample estimates, proportions or means, the sampling error calculated as for a simple random design was multiplied by an assumed design factor of 1.5, to allow for the complex sample design. The reader is referred to Appendix A for an account of the method of calculating true standard errors and for tables of design factors for the main variables and subgroups used throughout this volume. In general, design factors were below 1.5. Therefore although not commented on in the text, there will be some differences in sample proportions and means, that are significantly different, at least at the $p<0.05$ level.

## Weighting

Unless otherwise stated, all proportions and means presented in the tables in the substantive chapters in this volume are taken from data weighted to compensate for the differential probabilities of selection and non-response. Base numbers are presented weighted. All base numbers are given in italics. *See* Appendix B for unweighted base numbers, and Appendix D of the Technical Report online for more details on the weighting: accessible at http://www.food.gov.uk/science.

# 1 Background, research design and response

This volume presents findings on vitamin and mineral intakes and urinary analytes from a survey of the diet and nutrition of adults aged 19 to 64 years living in private households in Great Britain, carried out between July 2000 and June 2001. It is the third volume in a series that covers food and nutrient intake data derived from the analyses of dietary records, and data on nutritional status from physical measurements including anthropometric data, blood pressure, physical activity and the analyses of blood and urine samples[1]. This first chapter of this volume describes the background to the National Diet and Nutrition Survey (NDNS) of adults aged 19 to 64 years, its main aims, research designs and methodologies and response. Chapters 2 and 3 report on average daily intakes of vitamins and minerals, respectively, from food sources alone and from all sources, that is including any dietary supplements being taken. Throughout both chapters actual intakes are compared with UK dietary reference values, where appropriate. Chapter 4 presents results from analysis of the 24-hour urine collection. Differences are considered by age, sex, region and household receipt of benefits. Where appropriate comparisons are made between this survey and the Dietary and Nutritional Survey of British Adults aged 16 to 64 years carried out in 1986/87[2].

A Technical Report containing the methodological chapters and appendices is available online[3]. Like previous surveys in the NDNS programme, following publication of the final summary volume, a copy of the survey database, containing the full data set will be deposited with The Data Archive at the University of Essex. Independent researchers who wish to carry out their own analyses should apply to the Archive for access[4].

## 1.1 The National Diet and Nutrition Survey Programme

The survey forms part of the National Diet and Nutrition Survey programme, which was set up jointly by the Ministry of Agriculture, Fisheries and Food[5] and the Department of Health in 1992 following the successful Dietary and Nutritional Survey of British Adults aged 16 to 64 years carried out in 1986/87 (1986/87 Adults Survey)[2]. MAFF's responsibility for the NDNS programme has now transferred to the Food Standards Agency.

The NDNS programme aims to provide comprehensive, cross-sectional information on the dietary habits and nutritional status of the population of Great Britain. The results of the surveys within the programme are used to develop nutrition policy at a national and local level, and to contribute to the evidence base for Government advice on healthy eating.

The NDNS programme is intended to:

- provide detailed quantitative information on the food and nutrient intakes, sources of nutrients and nutritional status of the population under study as a basis for Government policy;
- describe the characteristics of individuals with intakes of specific nutrients that are above and below the national average;
- provide a database to enable the calculation of likely dietary intakes of natural toxicants, contaminants, additives and other food chemicals for risk assessment;

- measure blood and urine indices that give evidence of nutritional status or dietary biomarkers and to relate these to dietary, physiological and social data;
- provide height, weight and other measurements of body size on a representative sample of individuals and examine their relationship to social, dietary, health and anthropometric data as well as data from blood analyses;
- monitor the diet of the population under study to establish the extent to which it is adequately nutritious and varied;
- monitor the extent of deviation of the diet of specified groups of the population from that recommended by independent experts as optimum for health, in order to act as a basis for policy development;
- help determine possible relationships between diet and nutritional status and risk factors in later life;
- assess physical activity levels of the population under study; and
- provide information on oral health in relation to dietary intake and nutritional status.

The NDNS programme consists of a planned programme of cross-sectional surveys of representative samples of defined age groups of the population. The surveys of older adults, pre-school children, and young people have been published[6,7,8]. The last national survey of diet and nutrition in adults was the 1986/87 Adults Survey[2].

## 1.2 The sample design and selection

A nationally representative sample of adults aged 19 to 64 years living in private households was required. The sample was selected using a multi-stage random probability design with postal sectors as first stage units. The sampling frame included all postal sectors within mainland Great Britain; selections were made from the small users' Postcode Address File. The frame was stratified by 1991 Census variables. A total of 152 postal sectors was selected as first stage units, with probability proportional to the number of postal delivery points, and 38 sectors were allocated to each of four fieldwork waves. The allocation took account of the need to have approximately equal numbers of households in each wave of fieldwork and for each wave to be nationally representative. From each postal sector 40 addresses were randomly selected[9].

Eligibility was defined as being aged between 19 and 64 and not pregnant or breastfeeding at the time of the doorstep sift[10]. Where there was more than one adult between the ages of 19 and 64 years living in the same household, only one was selected at random to take part in the survey[11]. A more detailed account of the sample design is given in Appendix D of the Technical Report[3]. In keeping with Social Survey Division of ONS (SSD) normal fieldwork procedures, a letter was sent to each household in the sample in advance of the interviewer calling, telling them briefly about the survey (*see* Appendix A of the Technical Report[3]).

As in previous surveys in the NDNS series, fieldwork covered a 12-month period, to cover any seasonality in eating behaviour and in the nutrient content of foods; for example, full fat milk. The 12-month fieldwork period was divided into four fieldwork waves, each of three months duration[12]. The fieldwork waves were:

Wave 1: July to September 2000

Wave 2: October to December 2000

Wave 3: January to March 2001

Wave 4: April to June 2001

Feasibility work carried out between September and December 1999 by the SSD and the Medical Research Council Human Nutrition Research (HNR) tested all the components of the survey and made recommendations for revisions for the mainstage. For a subgroup of the feasibility study sample, the validity of the dietary recording methodology was tested using the doubly labelled water methodology to compare energy expenditure against reported energy intake. Further details of the design and results of the feasibility study are summarised in Appendix C of the Technical Report[3].

Ethics approval was gained for the feasibility and mainstage survey from a Multi-centre Research Ethics Committee (MREC), and National Health Service Local Research Ethics Committees covering each of the 152 sampled areas (*see* Appendix N of the Technical Report[3]).

## 1.3 The components of the survey

The survey design included: an interview to provide information about the socio-demographic circumstances of the respondent and their household, medication and eating and drinking habits; a weighed dietary record of all food and drink consumed over seven consecutive days; a record of bowel movements for the same seven days; a record of physical activity over the same seven days; physical measurements of the respondent (height, weight, waist and hip circumferences); blood pressure measurements; and a request for a sample of blood and a 24-hour urine collection. Respondents were also asked to do a self-count of the number of teeth and amalgam fillings they had, and provide a sample of tap water from the home for analysis of fluoride. Results of the self-tooth and amalgam filling count are not reported in any of the four volumes of this NDNS.

### 1.3.1 The dietary and post-dietary record interview

The interview comprised two parts. An initial face-to-face interview using computer-assisted personal interviewing methods (CAPI) to collect information about the respondent's household, their usual dietary behaviour, consumption of artificial sweeteners, herbal teas and other drinks; any foods that were avoided and the reasons for doing so, including vegetarianism and dieting behaviours; the use of salt at the table and in cooking; and the use of fluoride preparations and dietary supplements. Information was also collected on: the respondent's health status; their smoking and drinking habits; socio-economic characteristics; and, for women in defined age groups, the use of the contraceptive pill, menopausal state and use of hormone replacement therapy.

There was also a short interview, using CAPI, conducted at the end of the seven dietary recording days (post-dietary record interview). Respondents were asked about any problems they experienced in keeping the diary, whether their consumption of specific foods had changed during the seven days and whether they had been unwell at all during the recording period. Respondents were also asked to complete an eating restraint questionnaire, using computer assisted self-interviewing (CASI) or on paper. Information was also collected on prescribed medications taken during the seven days.

The interview questionnaire is reproduced in Appendix A of the Technical Report[3].

### 1.3.2 The dietary record

The survey used a weighed intake methodology since its main aims were to provide detailed quantitative information on the range and distribution of intakes of foods and nutrients for respondents aged 19 to 64 years in Great Britain, and to investigate relationships between nutrient intakes, physical activity levels and various nutritional status and health measures. The advantages and disadvantages of this method and the factors affecting the choice are discussed in Appendix F of the Technical Report[3].

In deciding to use a weighed intake methodology, the period over which to collect information needed to be long enough to give reliable information on usual food consumption, balanced against the likelihood of poor compliance if the recording period was lengthy. The doubly labelled water study carried out as part of the feasibility study to assess the validity of the seven-day weighed intake method indicated a level of under-reporting that is typical of this method but no evidence of differential bias by age or sex. The feasibility study concluded that it was possible to collect dietary information for a seven-day period from respondents and that the quality of information would be acceptable (*see* Appendix C of the Technical Report[3]).

Information which would be of use to the interviewer when checking the dietary record was also collected: for example, on respondents' usual eating pattern on weekdays and at weekends; and on the types of certain common food items eaten, such as milk, bread and fat. This information was recorded on a paper form rather than in the CAPI program, so that the interviewer could use it to check diary entries during the recording period (*see* F7, Appendix A of the Technical Report[3]).

Respondents were asked to keep a weighed record of all food and drink they consumed, both in and out of the home, over seven consecutive days. Each respondent was issued with a set of accurately calibrated Soehnle Quanta digital food scales and two recording diaries; the 'Home Record' diary for use when it was possible for foods to be weighed, generally foods eaten in the home; and a smaller 'Eating and Drinking Away From Home' diary (the 'Eating Out' diary) for use when foods could not be weighed, generally foods eaten away from home. The respondent was also issued with a pocket-sized notebook for recording any of this information in circumstances where they were reluctant or it was inappropriate to carry the 'Eating Out' diary. The instruction and recording pages from these documents relating to the dietary information are included in Appendix A of the Technical Report[3].

The respondent, together with any other household member who might be involved in keeping the diary, for example their spouse or partner, was shown by the interviewer how to use the scales to weigh food and drinks, how to weigh and record leftovers, and how to record any food that was spilt or otherwise lost and so could not be re-weighed.

The 'Home Record' diary was the main recording and coding document. For each item consumed over the seven days a description of the item was recorded, including the brand name of the product and, where appropriate, the method of preparation. Also recorded was the weight served and the weight of any leftovers, the time food was eaten, whether it was eaten at home or elsewhere, and whether fruit and vegetables were home grown, defined as being grown in the household's own garden or allotment. The person who did the weighing, the respondent or someone else, was also recorded for each food item and, for each day, the respondent was asked to indicate whether they were 'well' or 'unwell'.

Respondents who completed a full seven-day dietary record were given a £10 gift voucher by the interviewer, as a token of appreciation. It was made clear that receiving the voucher was not dependent on co-operation with any other component of the survey, in particular, consenting to provide a blood sample.

Respondents started to record their consumption in the diaries as soon as the interviewer had explained the procedure and left the home, although the seven-day recording period started from midnight. The interviewer called back approximately 24 hours after placing the diaries in order to check that the items were being recorded correctly, to give encouragement and to re-motivate where appropriate. Everything consumed by the respondent had to be recorded, including medicines taken by mouth, vitamin and mineral supplements, and drinks of water. Respondents were encouraged to weigh everything they could, including takeaway meals brought into the home to eat. Where a served item could not be weighed, respondents were asked to record a description of the portion size, using standard household measures, or to describe the size of the item in some other way. Each separate item of food in a served portion needed to be weighed separately in order that the nutrient composition of each food item could be calculated. In addition, recipes for all home-made dishes were collected.

The amount of salt used either at the table or in cooking was not weighed, however questions on the use of salt in the cooking of the respondent's food and their use of salt at the table were asked at the dietary interview. All other sauces, pickles and dressings were recorded.

Vitamin and mineral supplements and artificial sweeteners were recorded as units consumed: for example, one Boots Vitamin C tablet 200mg, one teaspoon of Canderel Spoonful.

A large amount of detail needed to be recorded in the dietary record to enable similar foods prepared and cooked by different methods to be coded correctly, as such foods will have different nutrient compositions. Information could also be needed on cooking method, preparation and packaging as well as an exact description of the item before it could be accurately coded. Details on the recording of leftovers and spillage are given in Appendix F of the Technical Report[3]. An aide-memoire on using the scales and recording in the 'Home Diary' was left with respondents (*see* W1 and W2, Appendix A of the Technical Report[3]).

The 'Eating Out' diary was intended to be used only when it was not possible to weigh the food items. In such cases, respondents were asked to write down as much information as possible about each food item consumed, particularly the portion size and an estimate of the amount of any left over. Prices, descriptions, brand names, place of purchase, and the time and place where the food was consumed were all recorded. In certain circumstances, interviewers were allowed to purchase duplicate items which they would then weigh.

Where the respondent consumed food or drink items provided by their workplace or college, the interviewer was required to visit the workplace/college canteen to collect further information from the catering manager about, for example, cooking methods, portion sizes and types of fats used. The information was recorded on a 'catering questionnaire' which included standard questions on portion sizes and cooking methods, and had provision for recording information on specific items that the respondent had consumed (*see* Appendix A of the Technical Report[3]).

At each visit to the household, interviewers checked the diary entries with the respondent to ensure that they were complete and all the necessary detail had been recorded. Reasons for any apparent omission of meals were probed by the interviewers and noted on the diaries. If the interviewers probing uncovered food items that had been consumed but not recorded, these were added to the diary at the appropriate place. Before returning the coded diaries to ONS headquarters, interviewers were asked to make an assessment of the quality of the dietary record, in particular the extent to which they considered that the diary was an accurate reflection of the respondent's actual diet.

Interviewers were trained in and responsible for coding the food diaries so they could readily identify the level of detail needed for different food items and probe for missing detail at later visits to the household. A food code list, giving code numbers for about 3,500 items and a full description of each item, was prepared by nutritionists at the Food Standards Agency and the ONS, for use by the interviewers. As fieldwork progressed, further codes were added to the food code list for home-made recipe dishes and new products found in the dietary record. A page from the food code list is reproduced in Appendix A of the Technical Report[3].

Brand information was collected for all food items bought pre-wrapped, as some items, such as biscuits, confectionery and breakfast cereals, could not be food coded correctly unless the brand was known. Brand information was only coded for artificial sweeteners, bottled waters, herbal teas and herbal drinks, and soft drinks and fruit juices, to ensure adequate differentiation of these items. Food source codes were also allocated to each meal in order to identify food obtained and consumed outside the home. The contribution to total nutrient intake by foods from different sources could then be calculated.

After the interviewers had coded the entries in the dietary records, ONS headquarters coding and editing staff checked the documents. ONS nutritionists carried out initial checks for completeness of the dietary records, dealt with specific queries from interviewers and coding staff, and advised on and checked the quality of coding, with advice from Food Standards Agency nutritionists. They were also responsible for converting descriptions of portion sizes to weights, and checking that the appropriate codes for recipes and new products had been used. Computer checks for completeness and consistency of information were run on the dietary and questionnaire data. Following completion of these checks and calculations, the information from the dietary record was linked to the nutrient databank; nutrient intakes were thereby calculated from quantities of food consumed. This nutrient databank, which was compiled by the Food Standards Agency, holds information on 56 nutrients for each of the 6,000 food codes. Further details of the nutrient databank are provided in Appendix H of the Technical Report[3]. Each food code used was also allocated to one of 115 subsidiary food groups; these were aggregated into 57 main food groups and further aggregated into 11 food types (*see* Appendix G of the Technical Report[3]).

### 1.3.3 24-hour urine collection

The relationship between dietary intakes of sodium, present in salt (sodium chloride), and other dietary components and blood pressure has been investigated in relation to the established association between hypertension and cardiovascular disease. The Scientific Advisory Committee on Nutrition in its recent report on salt and health concluded that reducing the average population salt intake would proportionally lower population average blood pressure levels and confer significant public health benefits by contributing to a reduction in the burden of cardiovascular disease[13]. It was considered important therefore that this survey obtained information on both sodium intakes and blood pressure[14].

It is not possible to obtain accurate estimates of dietary intake of sodium from weighed food intake information, mainly because it is not possible to assess accurately the amount of salt added to food in cooking or at the table. Estimates of sodium and potassium intakes can be obtained by measuring their urinary excretion, assuming the body is in balance for these minerals.

Since the rate of excretion of both sodium and potassium varies with intake, the best estimate of intake is obtained from the analysis of a urine sample taken from a complete 24-hour collection, which allows for the fluctuations in intake over the collection period. A spot urine sample is not sufficiently representative to provide a valid long-term estimate of intakes, and hence excretion, of sodium and potassium. There were some concerns about the acceptability of a 24-hour collection among this population following the response in the feasibility study for the NDNS of adults aged 65 or over[6]. However, the feasibility study for this NDNS found the 24-hour collection method to be acceptable to respondents (*see* Appendix C of the Technical Report[3]).

The aim was to have a complete collection of urine over a 24-hour period from as many of the respondents as possible, and to analyse a sample from the complete collection for sodium, potassium, creatinine, urea and fluoride.

The collection of a complete 24-hour urine sample is a demanding task, and previous experience has shown that samples are frequently incomplete. Therefore, an additional procedure, 'PABA-check', has been devised. This is designed to monitor the completeness of the collection by asking respondents to take three 80mg tablets of para-aminobenzoic acid (PABA) at intervals during the

24-hour collection period. Measurement of the PABA concentration and total volume of the collected sample permits the calculation of the percentage recovery of the administered PABA, which in turn is a measure of completeness of the 24-hour urine collection. The taking of PABA required signed consent from the respondents.

The use of this procedure in this survey was approved by the Multi-centre and Local Research Ethics Committees and was successfully piloted in the feasibility study. It was included in part of Wave 1 of the mainstage survey. One respondent in Wave 1 exhibited an acute allergic reaction with generalised urticaria and periorbital oedema soon after taking the three PABA doses. Although this occurrence may have been a chance association, the survey doctor decided, after seeking external advice, to recommend the discontinuation of the PABA-check procedure as a precaution[15]. From part-way through Wave 1 until the end of the survey, all subsequent 24-hour urine collections were made without PABA-check[16].

Respondents were provided with an explanation of the procedures for making the 24-hour urine collection and the purpose of this (*see* L2 and L5, Appendix K of the Technical Report[3]). They were also provided with instructions (W3) on how to take the subsamples of the urine, under supervision by the interviewer, and a form (M3A) on which to record the date of collection, times of taking the PABA tablets and any problems with the urine collection or PABA procedures.

During Wave 1 when PABA was used, interviewers first checked whether the respondent had a history of allergy or regular use of drugs that would contraindicate the taking of PABA. If there were no contraindications, interviewers asked the respondent to sign the consent for the taking of PABA (*see* Z8, Appendix K of the Technical Report[3]). Respondents were provided with the following equipment:

- a blister pack of three 80mg tablets of PABA;
- a safety-pin to be attached to an item of under-clothing as a reminder for urine collection;
- a 5-litre plastic bottle for the urine, containing approximately 5g boric acid as a preservative;
- an empty 2-litre plastic bottle for urine collections made outside the home, together with a plastic carrying bag;
- a 1-litre plastic jug for initial collection of each urine sample before transfer to the 5 or 2-litre bottles. All urine was to be transferred to the 5-litre bottle as soon as possible after each collection and swirled to mix in the preservative;

The usual (suggested) procedure was for the respondent to take the first PABA tablet at breakfast time and then to begin the urine collection after breakfast, and continue collecting it until just before breakfast the following day. The other two PABA tablets were usually taken at lunchtime and suppertime, respectively.

On the day after starting the collection the interviewer paid another visit to the respondent to weigh the collection and take the sub-samples. The following items were provided:

- protective disposable gloves;
- an electronic balance weighing up to 10kg in 0.01kg divisions;
- four 10ml Sarstedt[17] syringe-type urine containers without preservative, plus extension tubes;
- disposable absorbent paper and mats;
- pre-printed cryo-labels with the respondent's serial number and barcode; plus a cryo-pen to add the date to these;
- postal containers consisting of four plastic screw-cap containers with absorbent paper liners, inside a cardboard box, inside a padded 'Jiffy' bag;
- parcel tape and scissors;

Once the 24-hour collection was completed, the urine collection was thoroughly mixed. The interviewer weighed the total collection twice and recorded both measurements on form M3B (*see* Appendix K of the Technical Report[3]). The respondent was then asked to take four aliquots, each 10ml, from the total collection using Sarstedt syringes. If the respondent was unable, or unwilling, to take the aliquots themselves, the interviewers were asked to take the subsamples if they were happy to do so. If the collection was tainted with blood no subsamples were taken. The interviewer added the pre-printed cryo-labels to the aliquots, added the date to these, and then transferred all four to the postal plastic containers. These were then placed in the cardboard box and then in the Jiffy bag along with completed forms M3A and M3B. The Jiffy bag was sealed with parcel tape and posted to HNR.

If the respondent failed to make a full 24-hour collection, no repeat collection was attempted. Aliquots were still taken, from the incomplete collection, and a note made of the reasons why a full collection had not been made. Samples were sent by first class post to HNR where they were analysed. On arrival at HNR the samples were stored at –40ºC or lower.

The procedure without PABA was essentially the same, except that all of the equipment, forms and procedural elements that were specific to the PABA-check procedure, were omitted. More detailed information was collected on M3A about missed collections.

## 1.4 Response and weighting

Table 1.1 shows response to the dietary interview and dietary record overall and by fieldwork wave. Of the 5,673 addresses[18] (*see* Chapter 2 of the Technical Report[3]) issued to the interviewers, 35% were ineligible for the survey. This high rate of ineligibility is mainly due to the exclusion of those aged under 19 years and those aged 65 or over. Just over one-third of the eligible sample, 37%, refused outright to take part in the survey. Only 2% of the eligible sample were not contacted. Overall, 61% of the eligible sample completed the dietary interview, including 47% who completed a full seven-day dietary record. Overall, 77% of those who completed the dietary interview completed a full seven-day dietary record.

Table 1.2 shows the proportion of respondents who consented to making a 24-hour urine collection and the proportion of cases where a sample was obtained[19]. Overall, 66% of the responding sample and 83% of the diary sample consented to making a 24-hour urine collection. A urine sample was obtained for 98% of those who consented to making the 24-hour urine collection (65% of the responding and 81% of the diary samples).

While there has been a general fall in response to government social surveys over the last decade[20], the level of refusal to this NDNS was higher than expected. Steps were taken at an early stage to improve response, and included reissuing non-productive cases[21], developing the interviewer training to address further response issues, providing general guidance on approaching and explaining the survey to respondents, and increased support to the interviewers and their managers. This met with some success so that in Wave 4 a higher proportion of the eligible sample, 67%, completed the dietary interview compared with previous waves, 56% to 60%. However, the proportions of the responding sample from whom a urine sample was obtained were lower in Waves 3 and 4, 59% and 61% respectively, than in Waves 1 and 2, 70% and 73%.

Those who completed the dietary record had a similar demographic profile, by sex, age and social class of the Household Reference Person as those who completed the dietary interview (*see* also Chapter 2 of the Technical Report[3]). However, a urine sample was obtained from a significantly lower proportion of men aged 19 to 24 years, 51% of the responding sample, and 25 to 34 years, 58% than from those aged 35 to 49 years, 70% ($p<0.05$).

The potential for bias in any dataset increases as the level of non-response increases. Assessing bias is particularly difficult when there is little or no information on particular subgroups within the study population. An independent evaluation of the potential impact of non-response bias in this survey was undertaken by the University of Southampton[22]. The authors concluded that there was no evidence to suggest serious non-response bias, although this should be interpreted with caution as bias estimates were based upon assumptions about the total refusals and non-contacts for whom there was very little information. The authors recommended population-based weighting by sex, age and region. Indeed, without weighting for the differential response effect, estimates for different groups would be biased estimates because, in particular, they under-represent men and the youngest age group. To correct for this, the data presented in this volume and the other volumes of this survey have been weighted using a combined weight, based on differential sampling probabilities and differential non-response. Bases in tables are weighted bases scaled back to the number of cases in the responding and diary samples. Unweighted bases are given in Appendix B on page 149. Further details of the weighting procedures are given in Appendix D of the Technical Report[3].

In summary, the estimates presented in this report result from weighting the data as effectively as possible using the available information. However, results should be interpreted with caution, particularly where the sample sizes are low. The reader should note that the sample size in Scotland is particularly low and therefore standard errors may be large (*see* Appendix A, pages 137-140, for further details on standard errors).

(Tables 1.1 and 1.2)

## References and endnotes

1 The other volumes in this series are:

(i) Henderson L, Gregory J, Swan G. *National Diet and Nutrition Survey: adults aged 19 to 64 years. Volume 1: Types and quantities of foods consumed.* TSO (London, 2002);

(ii) Henderson L, Gregory J, Irving K, Swan G. *National Diet and Nutrition Survey: adults aged 19 to 64 years. Volume 2: Energy, protein, carbohydrate, fat and alcohol intake.* TSO (London, 2003);

(iii) Nutritional status (blood pressure, anthropometry, blood analytes and physical activity), to be published in autumn 2003;

(iv) Summary report, providing a summary of the key findings from the four volumes, to be published in autumn 2003.

2 Gregory J, Foster K, Tyler H, Wiseman M. *The Dietary and Nutritional Survey of British Adults.* HMSO (London, 1990).

3 The Technical Report is available online at http//:www.food.gov.uk/science.

4 For further information about the archived data contact:

The Data Archive
University of Essex
Wivenhoe Park
Colchester
Essex CO4 3SQ
United Kingdom
Tel: (UK) 01206 872001
Fax: (UK) 01206 872003
E-mail: archive@essex.ac.uk
Website: www.data-archive.ac.uk

5 Responsibility for this survey and the National Diet and Nutrition Survey programme transferred from the Ministry of Agriculture, Fisheries and Food to the Food Standards Agency on its establishment in April 2000.

6 Finch S, Doyle W, Lowe C, Bates CJ, Prentice A, Smithers G, Clarke PC. *National Diet and Nutrition Survey: people aged 65 years and over. Volume 1: Report of the diet and nutrition survey.* TSO (London, 1998).

7 Gregory JR, Collins DL, Davies PSW, Hughes JM, Clarke PC. *National Diet and Nutrition Survey: children aged 1½ to 4½ years. Volume 1: Report of the diet and nutrition survey.* HMSO (London, 1995).

8 Gregory JR, Lowe S, Bates CJ, Prentice A, Jackson LV, Smithers G, Wenlock R, Farron M. *National Diet and Nutrition Survey: young people aged 4 to18 years. Volume 1: Report of the diet and nutrition survey.* TSO (London, 2000).

9 Initially 30 addresses were selected within each postal sector. Results from Wave 1 indicated a higher level of age-related ineligibles than expected and a much lower response rate. In order to increase the actual number of diaries completed and to give interviewers enough work an extra 10 addresses were selected for Waves 2, 3 and 4.

10 The diet and physiology of pregnant or breastfeeding women is likely to be so different from those of other similarly aged women as possibly to distort the results. Further, as the number of pregnant or breastfeeding women identified within the overall achieved sample of 2000 would not be adequate for analysis as a single group, it was decided that they should be regarded as ineligible for interview.

11 Selecting only one eligible adult per household reduces the burden of the survey on the household and therefore reduces possible detrimental effects on co-operation and data quality. It also reduces the clustering of the sample associated with similar dietary behaviour within the same household and improves the precision of the estimates.

12 As in some cases fieldwork extended beyond the end of the three-month fieldwork wave, or cases were re-allocated to another fieldwork wave, cases have been allocated to a wave for analysis purposes as follows. Any case started more than four weeks after the end of the official fieldwork wave has been allocated to the actual quarter in which it started. For example, all cases allocated to Wave 1 and started July to October 2000 appear as Wave 1 cases. Any case allocated to Wave 1 and started in November 2000 or later appears in a subsequent wave; for example a case allocated to Wave 1 which started in November 2000 is counted as Wave 2. All cases in Wave 4 (April to June 2001) had been started by the end of July 2001.

13 Scientific Advisory Committee on Nutrition. *Salt and Health.* TSO (London, 2003).

14 The relationship between urinary sodium and blood pressure is examined in Chapter 3 of Volume 4.

15 The respondent was offered the opportunity of a additional test under medical supervision to ascertain any allergic reaction. This challenge test was performed in July 2001 and concluded that PABA was not the cause of the respondent's allergic symptoms.

16 Subsequent to the removal of the PABA check a decision was made to use plasma creatinine to provide the basis for the calculation of an indicator of the completeness of the 24-hour urine collection (as described on page 128).

17 Sarstedt Ltd, 68 Boston Road, Beaumont Leys, Leicester LE4 1AW: 'Urine Monovette without stabiliser'.

18 Initially 1,140 addresses were issued per wave. This was increased in Wave 2 to 1,520 addresses, 40 in each quota of work. In Wave 3, 27 addresses were withdrawn. These were unapproachable due to access restrictions in place because of the foot-and-mouth disease outbreak.

19 Response rates are based on those who consented to making a 24-hour urine collection, and those for whom a sample was obtained. Samples were taken from the full 24-hour collection. Not all the samples were analysed - some were damaged, or deteriorated in transit. Details of the numbers of urine samples analysed and reported on are given in Chapter 4.

20 Martin J and Matheson J Responses to declining response rates on government surveys. *Survey Methodology Bulletin* 1999; **45**: 33–7.

21 Non-productive cases are those where the interviewer was unable to make contact with the selected household or respondent (non-contacts) and where the household or selected respondent refused to take part in the survey (refusals). Addresses that were returned to the office coded as refusals or non-contacts were considered for reissue. Where it was thought that a non-productive case might result in at least a dietary interview (for example, where the selected respondent had said they were too busy at the time of the original call but would be available at a later date) these addresses were issued to interviewers working in subsequent waves of fieldwork.

22 Skinner CJ and Holmes D (2001) *The 2000–01 National Diet and Nutrition Survey of Adults Aged 19–64 years: The Impact of Non-response.* University of Southampton. Reproduced as Appendix E of the Technical Report (*see* note 3).

## Table 1.1

**Response to the dietary interview and seven-day dietary record by wave of fieldwork***

**Unweighted data** Numbers and percentages

| | Wave of fieldwork | | | | | | | | All | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Wave 1: July–September | | Wave 2: October–December | | Wave 3: January– March | | Wave 4: April–June | | | |
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| **Set sample = 100%** | 1098 | *100* | 1397 | *100* | 1450 | *100* | 1728 | *100* | 5673 | *100* |
| Ineligible | 382 | *35* | 514 | *37* | 515 | *36* | 558 | *32* | 1969 | *35* |
| **Eligible sample = 100%** | 716 | *100* | 883 | *100* | 935 | *100* | 1170 | *100* | 3704 | *100* |
| Non-contacts | 12 | *2* | 24 | *3* | 23 | *2* | 30 | *3* | 89 | *2* |
| Refusals | 271 | *38* | 369 | *42* | 364 | *39* | 360 | *31* | 1364 | *37* |
| Co-operation with: | | | | | | | | | | |
| dietary interview | 433 | *60* | 490 | *56* | 548 | *59* | 780 | *67* | 2251 | *61* |
| seven-day dietary record | 325 | *45* | 385 | *44* | 429 | *46* | 585 | *50* | 1724 | *47* |

*Note: * For productive cases, fieldwork wave is defined as the wave (quarter) in which the dietary interview took place; for unproductive cases, fieldwork wave is the wave in which the case was issued (or reissued).*

## Table 1.2

### Co–operation with the 24-hour urine collection by wave of fieldwork, sex and age of respondent and social class of household reference person

**Unweighted data** Numbers and percentages

| | Consent obtained: | | | Samples obtained*: | | | |
|---|---|---|---|---|---|---|---|
| | No. | % responding sample | % diary sample | No. | % responding sample | % diary sample sample | % consenting sample |
| **Fieldwork wave** | | | | | | | |
| Wave 1 | 306 | *71* | *88* | 301 | *70* | *87* | *98* |
| Wave 2 | 363 | *74* | *89* | 357 | *73* | *88* | *98* |
| Wave 3 | 335 | *61* | *76* | 325 | *59* | *74* | *97* |
| Wave 4 | 491 | *63* | *80* | 476 | *61* | *77* | *97* |
| **Sex and age of respondent** | | | | | | | |
| Men aged (years): | | | | | | | |
| 19–24 | 46 | *54* | *75* | 44 | *51* | *72* | *96* |
| 25–34 | 131 | *60* | *76* | 127 | *58* | *74* | *97* |
| 35–49 | 283 | *72* | *89* | 126 | *70* | *87* | *98* |
| 50–64 | 211 | *68* | *84* | 209 | *68* | *83* | *99* |
| All | 671 | *66* | *84* | 656 | *65* | *82* | *98* |
| Women aged (years): | | | | | | | |
| 19–24 | 67 | *62* | *74* | 62 | *57* | *69* | *92* |
| 25–34 | 179 | *65* | *81* | 175 | *63* | *80* | *98* |
| 35–49 | 332 | *68* | *83* | 324 | *66* | *81* | *98* |
| 50–64 | 246 | *66* | *82* | 242 | *65* | *82* | *98* |
| All | 824 | *66* | *82* | 803 | *65* | *80* | *98* |
| **Social class of household reference person** | | | | | | | |
| Non-manual | 843 | *68* | *83* | 824 | *66* | *81* | *98* |
| Manual | 624 | *66* | *83* | 605 | *64* | *81* | *97* |
| **All** | 1495 | *66* | *83* | 1459 | *65* | *81* | *98* |

*Note: * This includes respondents who reported making a partial collection, that is, recorded missing at least one collection during the 24 hours, but a sample was obtained and analysed.*

# 2 Vitamins

## 2.1 Introduction

Vitamins are organic compounds, which are required in small amounts for growth and metabolism. They are essential substances which, with the exception of vitamin D, cannot be synthesised in the body and are therefore required in the diet.

This chapter presents data on the daily intakes of vitamins and some precursors, for example carotene, which were derived from the quantities of food being consumed and from the intake of dietary supplements. No attempt has been made to adjust the intakes to take account of under-reporting.

Dietary supplements may have a marked impact on the intakes of some vitamins; 40% of women and 29% of men who completed a seven-day dietary record recorded intakes of dietary supplements. In this chapter data are therefore presented for intakes both from *all sources* (that is, including supplements) and *food sources* (excluding supplements) for the 1,724 respondents who completed a seven-day dietary record.

For those vitamins where UK Reference Nutrient Intake values (RNIs) and Lower Reference Nutrient Intake values (LRNIs) have been published for adults in the appropriate sex and age groups, the proportion of respondents with intakes below the LRNIs are shown and mean daily intakes are compared with current RNIs. Current LRNIs and RNIs for vitamins are shown in Table 2.1[1]. Table 2.2 shows the proportion of respondents with intakes below the LRNIs for those vitamins where LRNIs have been published.

(Tables 2.1 and 2.2)

### 2.1.1 Reference Nutrient Intake (RNI) and Lower Reference Nutrient Intake (LRNI)

The RNI for a vitamin or mineral is an amount of that nutrient that is sufficient, or more than sufficient, for about 97% of the people in that group. If the average intake of the group is at the RNI, then the risk of deficiency in the group is judged to be very small. However, if the average intake is lower than the RNI then it is possible that some of the group will have an intake below their requirement. This is even more likely if a proportion of the group have an intake below the Lower Reference Nutrient Intake (LRNI). The LRNI for a vitamin or mineral is the amount of that nutrient that is enough for only the few people in a group who have low needs. For further definitions of the RNI and LRNI see Department of Health (1991)[1, 2].

## 2.2 Vitamin A (retinol and carotene)

Vitamin A as pre-formed retinol is only available from animal products, especially liver, kidneys, oily fish and dairy products. However a number of carotenoids can be converted to retinol in the body, and these are primarily found in the yellow and orange pigments of vegetables; carrots and dark green vegetables are rich sources. Carotene is also added to margarine and fat spreads.

### 2.2.1 Pre-formed retinol

Table 2.3 shows the average daily intake of pre-formed retinol from food sources and all sources, for men and women in different age groups.

Mean daily intake of pre-formed retinol from food sources was 571mg for men and significantly lower for women, 352mg (medians 327mg and 241mg) ($p<0.01$). The two youngest groups of men had significantly lower mean daily intakes of pre-formed retinol than the oldest group of men (25 to 34: $p<0.05$; 19 to 24: $p<0.01$). For example, men aged 19 to 24 years had a mean daily intake of 315mg compared with 735mg for those aged 50 to 64 years. In addition, men aged 19 to 24 years had a significantly lower mean pre-formed retinol intake than those aged 35 to 49 years ($p<0.05$). Mean daily intake of pre-formed retinol was significantly lower for women aged 19 to 24 years, 251mg, than for those aged 50 to 64 years, 449mg ($p<0.01$).

The range of intakes within age and sex groups was wide and the distributions skewed, reflecting the limited distribution of pre-formed retinol in foods[3]. Median intakes were between 20% and 50% lower than mean values.

Dietary supplements providing pre-formed retinol increased the mean daily intake from food sources alone for men by 18%, from 571mg to 673mg, and for women by 34%, from 352mg to 472mg.

(Table 2.3)

### 2.2.2 Total carotene (*β*-carotene equivalents)

Total carotene is expressed as β-carotene equivalents, that is the sum of β-carotene and half the amount of α-carotene and β-cryptoxanthin, which have approximately half the activity of β-carotene.

Table 2.4 shows mean daily intake of total carotene from food sources was 2041µg for men and 1914µg for women (ns). The youngest group of men had significantly lower mean daily intakes of total carotene than men aged 35 to 64 years, and the youngest group of women significantly lower intakes than all other age groups (women 19 to 24 years compared with 25 to 34: $p<0.05$; all others: $p<0.01$). For example, mean daily total carotene intake was 1469µg for men and 1294µg for women aged 19 to 24 years compared with 2459µg for men and 2205µg for women aged 50 to 64 years. In addition, men and women aged 25 to 34 years had significantly lower intakes than those aged 50 to 64 years ($p<0.01$).

The distribution of intakes was skewed, with median intakes 1716µg for men and 1583µg for women, about 16% lower than mean intakes[3]. There was a wide range of intakes of total carotene within each sex/age group.

The contribution of dietary supplements to intakes of total carotene was negligible.

(Table 2.4)

### Food sources of total carotene

Men and women obtained over half their mean daily total carotene intake, 59% and 66% respectively, from vegetables (excluding potatoes) ($p<0.05$). Cooked carrots were the largest single provider accounting for 30% of intake for both men and women; raw carrots provided 5% of intake overall.

Meat & meat products provided a further 12% of the carotene intake overall, mainly from vegetables added to meat dishes.

Overall, drinks provided 4% of mean intake of total carotene, nearly all of which came from the consumption of soft drinks; β-carotene is often used as colour in orange-coloured drinks.

(Table 2.5)

### 2.2.3 *β*-carotene, α-carotene and *β*-cryptoxanthin

β-carotene, α-carotene and β-cryptoxanthin are all carotenoids with vitamin A activity. Only a few of the more than 100 carotenoids have structures that enable them to serve as precursors of vitamin A; β-carotene is the most important of these. α-carotene and β-cryptoxanthin have approximately half the activity of β-carotene on a weight-for-weight basis.

Table 2.6 shows that mean daily intake of β-carotene from food sources was 1836µg for men and 1719µg for women (medians 1560µg and 1424µg) (ns). As with total carotene, the youngest group of men had significantly lower mean daily intakes of β-carotene than men aged 35 to 64 years, and the youngest group of women significantly lower intakes than all other age groups (women 19 to 24 years compared with 25 to 34: $p<0.05$; all others: $p<0.01$). For example, mean daily intake of β-carotene was 1341µg for men and 1170µg for women aged 19 to 24 years compared with 2201µg and 1977µg for men and women, respectively, aged 50 to 64 years. In addition, men and women aged 25 to 34 years had significantly lower intakes than those aged 50 to 64 years (both: $p<0.01$).

Tables 2.7 and 2.8 show the mean daily intake of α-carotene and β-cryptoxanthin respectively, for men and women in different age groups. Mean daily intake of α-carotene from food sources was 342µg for men and 320µg for women (medians 248µg and 227µg), and for β-cryptoxanthin, 66µg and 68µg respectively (medians 44µg for both men and women). Intake of α-carotene was significantly lower for men and women in the youngest age group than for those in the two oldest age groups (women 19 to 24 compared with 35 to 49: $p<0.05$; all others: $p<0.01$). For example, mean daily intake for men aged 19 to 24 years was 197µg compared with 444µg for those aged 50 to 64 years. In addition, men and women aged 25 to 34 years had significantly lower mean daily intakes of α-carotene than those aged 50 to 64 years (women: $p<0.05$; men: $p<0.01$). Mean intakes of β-cryptoxanthin for women were significantly lower for the youngest age group than for all other age groups (25 to 34: $p<0.05$; all others: $p<0.01$). There were no significant differences in mean intakes of β-cryptoxanthin by age for men.

The increase in mean daily intakes of all three carotenoids with age reflects age patterns in fruit and vegetable consumption, where the youngest group of men and women consumed a significantly lower mean number of portions of fruit and vegetables, 1.3 and 1.8 respectively, than men and women aged 50 to 64 years, 3.6 and 3.8 portions respectively (*see* Volume 1, Chapter 2, section 2.4.5[4]).

For all three carotenoids there was a wide range of intakes within sex and age groups, and some respondents had zero intakes of some carotenoids during the seven-day dietary recording period. Overall, 2% of men and 1% of women had zero intakes of α-carotene, and 3% of both men and women had zero intakes of β-cryptoxanthin from food sources.

The contribution of dietary supplements to intakes of β-carotene, α-carotene and β-cryptoxanthin was negligible.

(Tables 2.6 to 2.8)

## 2.2.4 Vitamin A (retinol equivalents)

The total vitamin A content of the diet is usually expressed as retinol equivalents; 1µg retinol equivalent is equal to 1µg retinol or 6µg total carotene (β-carotene equivalents).

Table 2.9 shows the mean daily intake of vitamin A from food and all sources for respondents in the survey. Mean daily intake of vitamin A from food sources was 911µg for men and, significantly lower, 671µg for women ($p<0.01$) (medians 660µg and 549µg).

The two youngest groups of men, and the youngest group of women, had significantly lower mean daily intakes of vitamin A from food sources than the two oldest groups of men and women (men 25 to 34 compared with 35 to 49: $p<0.05$; all others: $p<0.01$). For example, mean daily intake of vitamin A was 560µg for men and 467µg for women aged 19 to 24 years compared with 1145µg and 816µg respectively, for the oldest group of men and women. In addition, women aged 25 to 34 years had significantly lower mean daily intakes of vitamin A than women aged 50 to 64 years ($p<0.05$).

The distribution of intakes was skewed, with median intakes between 11% and 32% lower than mean intakes depending on sex and age[3]. The range of intakes of vitamin A from food sources, like those for pre-formed retinol, α-and β-carotene and β-cryptoxanthin, was very large.

Dietary supplements containing pre-formed retinol or carotene increased mean daily intake of vitamin A overall by 12% for men, from 911µg to 1017µg, and by 19% for women, from 671µg to 800µg. However, the contribution of supplements to mean intakes differed by age for men and women. For example, supplements increased mean intakes from food sources alone by 3% for men aged 19 to 24 years, but by 18% for those aged 25 to 34 years. For women, the increase in mean intake ranged from 8% for those aged 25 to 34 years to 26% for those aged 19 to 24 years.

Table 2.1 shows the current UK RNI and LRNI values for vitamin A for adults for two age groups, 19 to 50 years and 51 to 64 years. Table 2.10 shows average daily intake of vitamin A as a percentage of the RNI[5]. Mean daily intake of vitamin A from food sources was 130% of the RNI for men and 112% for women. Men aged 19 to 24 years and women aged 19 to 24 years and 25 to 34 years were the only age groups where mean intake of vitamin A from food sources was below the RNI. Dietary supplements increased mean intakes of vitamin A to above the RNI for women aged 25 to 34 years.

Table 2.2 shows the proportion of respondents with average daily intakes of vitamin A below the LRNI. Seven per cent of men and 9% of women had intakes of vitamin A from food sources which were below the LRNI (ns). The proportion with intakes below the LRNI ranged from 4% and 5% of the oldest group of men and women to 16% of men and 19% of women aged 19 to 24 years (men: ns;

women: $p<0.05$). Dietary supplements had little effect on the proportion of men or women with intakes below the LRNI.

(Tables 2.9, 2.10 and 2.2)

### Food sources of vitamin A

Table 2.11 shows that the main food groups contributing to mean daily intake of vitamin A were meat & meat products, contributing 28% overall, vegetables (excluding potatoes), 27%, milk & milk products, 14%, and fat spreads, 10%.

Meat & meat products accounted for a significantly higher proportion of vitamin A intake for men than for women, 34% compared with 22% ($p<0.01$). The contribution from this food group came mainly from liver, liver products & liver dishes, accounting for 26% of intake for men and 15% for women ($p<0.01$).

Meat & meat products accounted for a significantly lower proportion of vitamin A intake for men aged 19 to 24 years, 16%, than for men aged 35 to 64 years, 38% ($p<0.01$). In addition, men aged 25 to 34 years obtained a significantly lower proportion of their vitamin A intake from meat & meat products than those aged 35 to 49 years ($p<0.05$). There were no significant differences in the contribution of meat & meat products to vitamin A intake for women by age. However, the contribution made by liver, liver products & dishes increased significantly with age for both sexes, from 6% for the youngest group of men and 9% for the youngest group of women to 32% and 21% respectively for the oldest group of men and women (women: $p<0.05$; men: $p<0.01$).

Men derived about one quarter, 23%, and women one third, 32%, of their vitamin A intake from vegetables (excluding potatoes) ($p<0.01$), about half of which came from carrots.

Overall, milk & milk products contributed a further 14% of the vitamin A intake, including 6% which came from cheese. Fat spreads contributed 10% to the mean daily vitamin A intake.

(Table 2.11)

## 2.3 B vitamins

### 2.3.1 Thiamin (vitamin $B_1$)

Mean daily intake of thiamin from food sources was 2.00mg for men, and for women, significantly lower, 1.54mg ($p<0.01$). Men aged 19 to 24 years had a significantly lower mean daily intake of thiamin, 1.60mg, than men aged 35 to 49 years, 2.04mg, and those aged 50 to 64 years, 2.07mg (35 to 49: $p<0.05$; 50 to 64: $p<0.01$). There were no significant differences by age for women.

Dietary supplements providing thiamin taken by respondents in the survey increased mean intake from that from food sources alone by 11% for men, from 2.00mg to 2.22mg, and by 26% for women, from 1.54mg to 1.94mg.

Table 2.13 shows that average daily intakes of thiamin from food sources alone were well above the RNIs for men and women in each age group[5]. Overall, mean intakes from food sources were 214% and 193% of the RNI for men and women respectively. One per cent of both men and women had an average daily intake of thiamin below the LRNI (*see* Table 2.2). Dietary supplements made no difference to the proportion of men and women with intakes below the LRNI.

(Tables 2.12, 2.13 and 2.2)

### Food sources of thiamin

Most breakfast cereals are fortified with thiamin and cereals & cereal products were the main dietary source of thiamin for respondents in the survey, providing a third of mean daily intake, 34% overall. Within this group the major contributors were breakfast cereals, providing 14% of thiamin intake overall, and white bread which contributed 9%.

Meat & meat products provided a further 21% of thiamin intake, a third of which, 7%, came from bacon & ham. Vegetables (excluding potatoes) provided 15% of the thiamin intake overall, and potatoes & savoury snacks provided a further 13%.

(Table 2.14)

### 2.3.2 Riboflavin (vitamin $B_2$)

Table 2.15 shows the mean daily intake of riboflavin from food sources and all sources for men and women in different age groups. The mean daily intake of riboflavin from food sources was 2.11mg for men and, significantly lower, 1.60mg for women ($p<0.01$). The youngest group of men had significantly lower mean riboflavin intakes than men in any other age group (25 to 34: $p<0.05$; all others: $p<0.01$). For example, mean daily intake of riboflavin was 1.68mg for men aged 19 to 24 years compared with 2.20mg for men aged 50 to 64 years. For women, the two youngest age groups had significantly lower mean intakes than the two oldest groups of women (19 to 24 compared with 35 to 49: $p<0.05$; all others: $p<0.01$).

Dietary supplements increased mean riboflavin intakes from food sources alone by 10% for men, from 2.11mg to 2.33mg, and by 26% for women, from 1.60mg to 2.02mg. For men and women the contribution of supplements to mean intake was most marked for the oldest age group, where intake of riboflavin from all sources was 14% and 42% higher than from food sources alone for men and women respectively.

Table 2.16 shows the mean daily intake of riboflavin as a percentage of RNI. Mean riboflavin intake from food sources was 162% of the RNI for men and 146% for women, and was above the RNI for all sex/age groups[5]. Table 2.2 shows that, overall, 3% of men and a significantly higher proportion of women, 8%, had a riboflavin intake from food sources alone which was below the LRNI (p<0.01). Fifteen per cent of women aged 19 to 24 years and 10% of women aged 25 to 34 years had a mean intake of riboflavin from food sources which was below the LRNI. Dietary supplements had little effect on the proportion of men and women with intakes below the LRNI.

(Tables 2.15, 2.16 and 2.2)

### Food sources of riboflavin

Table 2.17 shows the percentage contribution of food types to mean daily intake of riboflavin. The main source of riboflavin was milk & milk products providing a third, 33%, of intake. Within this group semi-skimmed milk contributed 16% overall. Just under one quarter, 24%, of the mean daily intake of riboflavin came from cereals & cereal products, mainly from breakfast cereals, many of which are fortified with riboflavin.

Meat & meat products contributed a further 15% to mean riboflavin intake overall. Drinks contributed 12% to riboflavin intake for men and 6% for women, including 7% for men and 1% for women which came from beer & lager (men compared with women, drinks and beer & lager: p<0.01).

(Table 2.17)

## 2.3.3 Niacin equivalents

Niacin is a B vitamin, which can be obtained pre-formed from the diet or can be made in the body from the amino acid, tryptophan. Niacin intake is expressed as niacin equivalents, defined as the total amount of niacin plus one sixtieth of the weight, in mg, of tryptophan.

As Table 2.18 shows the mean daily intake of niacin equivalents from food sources was 44.7mg for men and significantly lower for women, 30.9mg (p<0.01). Mean daily intake was significantly lower for women than men in each age group (p<0.01). Men aged 19 to 24 years had a significantly lower mean daily intake than men in any other age group (35 to 49: p<0.05; all others: p<0.01). For example, mean daily intake of niacin equivalents was 39.4mg for men aged 19 to 24 years compared with 46.2mg for men aged 25 to 34 years. Women aged 25 to 34 years had a significantly lower mean intake than women aged 35 to 64 years (35 to 49: p<0.05; 50 to 64: p<0.01).

Supplements contributed very little to niacin intake and thus mean and median intakes from all sources were close to intakes from food sources alone.

Mean daily intake of niacin equivalents from food sources alone was over 200% of the RNI for men and women in each age group[5]. Table 2.2 shows that, overall, less than 0.5% of men and 1% of women had intakes of niacin equivalents from food sources alone that were below the LRNI.

(Tables 2.18, 2.19 and 2.2)

### Food sources of niacin equivalents

The main source of niacin was meat and meat products, providing about one third, 34%, of mean daily intake overall, about half of which came from chicken, turkey & dishes, including coated chicken.

A further 27% of intake came from consumption of cereals & cereal products, just over a third of which came from breakfast cereals, which are often fortified with niacin. Drinks provided a further 12% of intake for men and 5% for women, including 9% for men and 2% for women which came from beer & lager (men compared with women, drinks and beer & lager: p<0.01).

(Table 2.20)

## 2.3.4 Vitamin $B_6$

The mean daily intake of vitamin $B_6$ from food sources for men was 2.9mg, significantly higher than the mean intake for women, 2.0mg (p<0.01). Men had a significantly higher vitamin $B_6$ intake than women in each age group (p<0.01). There were no significant differences in mean daily intake for men by age. However, for women, those aged 25 to 34 years had a significantly lower mean intake of vitamin $B_6$ than those aged 50 to 64 years, 1.9mg and 2.1mg respectively (p<0.05).

Dietary supplements providing vitamin $B_6$ increased mean intake from food sources alone by 14% for men, from 2.9mg to 3.3mg, and by 45% for women, from 2.0mg to 2.9mg.

Table 2.22 shows the average daily intake of vitamin $B_6$ as a percentage of the RNI[5]. For both men and women mean daily intake of vitamin $B_6$ from food sources alone was well above the RNI for each age group. Table 2.2 shows the proportion of respondents with intakes of vitamin $B_6$ below the LRNI. Overall, one per cent of men and 2% of women had an average daily intake of vitamin $B_6$ which was below the LRNI. Five per cent of women aged 19 to 24 years had a mean intake below the LRNI. Dietary supplements providing vitamin $B_6$ made very little difference to the proportions of respondents with intakes below the LRNI.

(Tables 2.21, 2.22 and 2.2)

### Food sources of vitamin $B_6$

Table 2.23 shows the percentage contribution of food types to mean daily intake of vitamin $B_6$. The three main sources of vitamin $B_6$ in the diets of respondents were cereals & cereal products, meat & meat products and potatoes & savoury snacks, each providing about 20% of the mean intake. Within cereals & cereal products the main contributor was breakfast cereals, many of which are fortified with vitamin $B_6$. The contribution from meat & meat products came mainly from chicken, turkey & dishes, including coated chicken, which provided 8% of vitamin $B_6$ intake overall. The contribution from potatoes & savoury snacks came mainly from potato chips, 7%.

Men derived a further 15%, and women 6%, of their vitamin $B_6$ intake from drinks; almost entirely from beer & lager, 13% for men and 3% for women (men compared with women, drinks and beer & lager: $p<0.01$).

(Table 2.23)

## 2.3.5 Vitamin $B_{12}$

Mean daily intake of vitamin $B_{12}$ from food sources was 6.5µg for men and, significantly lower, 4.8µg for women ($p<0.01$). Mean daily intake of vitamin $B_{12}$ was significantly lower for men aged 19 to 24 years than for any other age group ($p<0.01$). In addition, men aged 25 to 49 years had significantly lower intakes than those aged 50 to 64 years ($p<0.05$). For women, mean daily intake was significantly lower for those aged 19 to 34 years compared with those aged 35 to 64 years (19 to 24 compared with 35 to 49: $p<0.05$; all others: $p<0.01$). For example, women aged 19 to 24 years had a mean daily intake of vitamin $B_{12}$ of 4.0µg compared with 5.7µg for those aged 50 to 64 years. Additionally, women aged 35 to 49 years had significantly lower intakes than those aged 50 to 64 years ($p<0.05$).

Dietary supplements increased the mean daily intake of vitamin $B_{12}$ from that from food sources alone by 5% for men, from 6.5µg to 6.8µg, and 6% for women, from 4.8µg to 5.1µg.

As Table 2.25 shows, mean daily intakes of vitamin $B_{12}$ from food sources were well in excess of the RNI, 431% of the RNI for men and 316% of the RNI for women[5]. Less than 0.5% of men and 1% of women had a mean daily intake of vitamin $B_{12}$ below the LRNI (*see* Table 2.2).

(Tables 2.24, 2.25 and 2.2)

### Food sources of vitamin $B_{12}$

Vitamin $B_{12}$ is found only in animal products and in microorganisms including yeast. Table 2.26 shows that the main contributor to vitamin $B_{12}$ intake for respondents in the survey was milk & milk products, providing 36% of intake overall, half of which, 18%, came from semi-skimmed milk. Meat & meat products provided 34% of mean daily intake for men and 24% for women ($p<0.01$). The contribution from meat & meat products came mainly from liver, liver products & dishes and from beef, veal & dishes. The percentage contribution of liver, liver products & dishes to vitamin $B_{12}$ intake increased significantly with age for men from 1% for those aged 19 to 24 years to 13% for those aged 50 to 64 years ($p<0.01$).

The only other major contributor to vitamin $B_{12}$ intake was fish & fish dishes, which accounted for 16% of mean daily intake for men and 22% for women ($p<0.05$). Nearly three-fifths of the contribution made by fish & fish dishes came from oily fish. The contribution from oily fish increased significantly with age for men, from 2% for those aged 19 to 24 years to 12% for those aged 50 to 64 years ($p<0.01$).

(Table 2.26)

## 2.3.6 Folate

The mean daily intake of folate from food sources for men was significantly higher than for women, 344µg and 251µg respectively ($p<0.01$). Men had significantly higher mean folate intakes than women in each age group ($p<0.01$). For both sexes, mean daily intake of folate increased significantly with age, from 301µg for men and 229µg for women aged 19 to 24 years to 361µg and 268µg for men and women aged 50 to 64 years, respectively ($p<0.05$). In addition, women aged 25 to 34 years had significantly lower mean intakes than those aged 35 to 64 years (35 to 49: $p<0.05$; 50 to 64: $p<0.01$). The significant increase in mean daily intake of folate with age reflects age patterns in fruit and vegetable consumption (*see* Volume 1, Chapter 2, section 2.4.5[4]).

Dietary supplements providing folate increased mean intakes from food sources alone by 4% for men, from 344µg to 359µg, and by 16% for women, from 251µg to 292µg. The contribution from supplements was most marked for women aged 50 to 64 years, where dietary supplements increased intake from food sources alone by 34%, from 268µg to 359µg.

As can be seen from Table 2.28, mean daily intakes of folate from food sources were above the appropriate RNI for each sex and age group, providing 172% and 125% of the RNI for men and women respectively[5]. Dietary supplements providing folate increased mean intake as a percentage of the RNI to 180% for men and 146% for women. Overall less than 0.5% of men and, a significantly higher proportion of women, 2%, had an intake of folate below the LRNI, 100µg/day (*see* Table 2.2). The Department of Health currently recommend that those women who could become pregnant take a supplement of 400µg folic acid per day prior to conception and until the twelfth week of pregnancy in order to minimise the risk of neural tube defects (NTD)[6]. In this survey, 86% of women aged 19 to 24 years, 92% of those aged 25 to 34 years and 84% of women aged 35 to 49 years had an intake of folate from all sources, including supplements, of less than 400µg/day.

(Tables 2.27, 2.28 and 2.2)

### Food sources of folate

Table 2.29 shows the percentage contribution of food types to the mean daily intake of folate for men and women in the survey. The main source of folate in the diets of respondents was cereals & cereal products which provided 33% of mean daily intake overall, of which just under half, 15%, came from breakfast cereals, many of which are fortified with folate.

Vegetables (excluding potatoes) contributed 15% to the mean daily intake of folate, and potatoes & savoury snacks provided a further 12%.

Drinks contributed 18% and 9% to the mean daily folate intake for men and women respectively, 11% of folate for men and 3% for women came from beer & lager (men compared with women, drinks and beer & lager: $p<0.01$).

There were no significant age differences for either sex in the contribution of food groups to average daily intake of folate.

(Table 2.29)

### 2.3.7 Biotin and pantothenic acid

Tables 2.30 and 2.31 show the average daily intake of biotin and pantothenic acid respectively, from food sources and all sources, for men and women in different age groups.

Mean daily intake of *biotin* from food sources was 41mg for men and, significantly lower, 29µg for women ($p<0.01$). Mean daily intake of biotin was significantly lower for men aged 19 to 24 years than for men in any other age group ($p<0.01$). For example, mean daily intake was 30µg for the youngest group of men compared with 44µg for men aged 35 to 49 years. The two youngest age groups of women had significantly lower mean intakes of biotin than the two oldest age groups ($p<0.01$).

Dietary supplements providing biotin increased mean intake from food sources alone by 7% for men, from 41µg to 44µg, and by 14% for women, from 29µg to 33µg.

The mean daily intake of *pantothenic acid* from food sources was 7.2mg for men, significantly higher than the mean intake for women, 5.4mg ($p<0.01$). Differences in mean daily intake of pantothenic acid by age and sex were the same as for biotin: the youngest group of men had significantly lower intakes than men in any other age group and the youngest two groups of women had significantly lower intakes than the two oldest groups of women (men aged 19 to 24 compared with 25 to 34, women aged 19 to 24 compared with 35 to 49: $p<0.05$; all others: $p<0.01$). For example, mean daily pantothenic acid intake was 5.9mg for men and 4.8mg for women aged 19 to 24 years compared with 7.5mg and 5.9mg, respectively, for those aged 50 to 64 years.

Dietary supplements increased intakes of pantothenic acid from food sources alone, by 8% for men, from 7.2mg to 7.8mg, and by 18% for women, from 5.4mg to 6.4mg. The most marked increase was among the oldest group of women where mean intake from all sources was 34% higher than that from food sources alone, 7.9mg compared with 5.9mg.

There are no DRVs set for either biotin or pantothenic acid. However intakes for biotin within the range 10mg to 200mg are considered safe and adequate, as are intakes for pantothenic acid in the range of 3mg to 7mg[1]. Mean intakes of biotin were within the range of 10µg to 200µg, as were intakes at both the lower and upper 2.5 percentiles. Less than 0.5% of men and 2% of women had mean intakes of biotin below 10µg. For pantothenic acid, 2% of men and a significantly higher proportion of women, 8%, had intakes below 3mg ($p<0.01$). Fifty-one per cent of men and 23% of women had intakes of pantothenic acid, including dietary supplements, at or above 7.0mg (men compared with women: $p<0.01$). A significantly higher proportion of men and women aged 50 to 64 years had intakes of pantothenic acid at or above 7.0mg than those aged 19 to 24 years ($p<0.01$).

(Tables 2.30 and 2.31)

## 2.4 Vitamin C

Mean daily intakes of vitamin C from food sources were 83.4mg for men and 81.0mg for women (medians 70.7mg and 68.7mg) (ns). Men aged 19 to 34 years and women aged 19 to 49 years, had significantly lower mean vitamin C intakes than those aged 50 to 64 years (women 35 to 49 compared with 50 to 64: $p<0.05$; all others: $p<0.01$). For example, mean daily intakes of vitamin C increased from 64.9mg for men and 67.9mg for women aged 19 to 24 years to 94.5mg for men and 94.5mg for women aged 50 to 64 years. In addition, men aged 19 to 24 years had significantly lower vitamin C intakes than those aged 35 to 49 years ($p<0.05$).

The distribution of intakes was skewed with median intakes between 10% and 21% lower than mean intakes depending on sex and age[3].

Dietary supplements providing vitamin C increased mean intake from food sources alone by 22% for men, from 83.4mg to 101.4mg, and by 38% for women, from 81.0mg to 112.0mg. For men the effect of supplements on mean intake was most marked for those aged 50 to 64 years where intake of vitamin C from all sources was 32% higher than from food sources alone, 125.0mg and 94.5mg respectively. For women, the effect was most marked for those aged 35 to 49 years, where intake from all sources was 54% higher, 123.1mg, than from food sources alone, 80.0mg.

Mean daily intake of vitamin C from food sources was above the RNI for each sex and age group, and as Table 2.33 shows, provided 209% of the RNI for men and 202% of the RNI for women[5]. Dietary supplements increased mean daily intake as a percentage of RNI to 253% for men and 280% for women. As Table 2.2 shows, overall, less than 0.5% of men and women had an average daily intake of vitamin C below the LRNI.

(Tables 2.32, 2.33 and 2.2)

### Food sources of vitamin C

Over one quarter, 27%, of the mean daily intake of vitamin C came from drinks in the form of fruit juice, 19%, and soft drinks, 8%. Soft drinks may be fortified with vitamin C or include vitamin C as an antioxidant. The proportion of vitamin C intake accounted for by drinks was significantly higher for women aged 19 to 24 years than for women aged 50 to 64 years, 40% and 21% respectively ($p<0.05$).

Overall, vegetables (excluding potatoes) contributed 22% to mean daily intake of vitamin C, and potatoes & savoury snacks a further 15%. Men derived a significantly lower proportion of their vitamin C intake from fruit & nuts than women, 16% compared with 22% ($p<0.05$). Fruit & nuts accounted for a significantly lower proportion of vitamin C intake for men aged 19 to 24 years than for men aged 35 to 64 years, and for women aged 19 to 34 years compared with women aged 50 to 64 years (both: $p<0.05$).

(Table 2.34)

## 2.5 Vitamin D

Most of the body's requirement for vitamin D can be synthesised by the skin in the presence of sufficient sunlight of the appropriate wavelength, that is, between April and October in England. Adequate summer exposure provides sufficient vitamin D stores throughout winter. Food sources are therefore particularly important for those who do not receive adequate sunlight. No RNIs have been set for vitamin D for adults aged 19 to 64 years. Vitamin D is found naturally in some animal products, including oily fish. Some foods, such as margarine and fat spreads and some breakfast cereals, are fortified with vitamin D.

Table 2.35 presents data on the average daily intake of vitamin D from food and all sources. Mean daily intake from food sources for men was 3.7µg and for women, 2.8µg (ns) (medians 3.1µg and 2.3µg). Mean daily intake of vitamin D was significantly lower for men aged 19 to 24 years, 2.9µg, than for men aged 35 to 49 years, 3.7µg, and men aged 50 to 64 years, 4.2µg (35 to 49: $p<0.05$; 50 to 64: $p<0.01$). In addition, men aged 25 to 34 years had significantly lower intakes than those aged 50 to 64 years ($p<0.05$). Women aged 19 to 49 years had significantly lower mean vitamin D intakes than the oldest group of women ($p<0.01$).

The distribution of intakes of vitamin D for both men and women was skewed, with median intakes being between 3% and 20% lower than mean intakes depending on sex and age[3].

Overall, supplements providing vitamin D increased mean intakes from food sources alone by 14% for men, from 3.7µg to 4.2µg, and by 32% for women, from 2.8µg to 3.7µg. Mean daily intake of vitamin D for women aged 50 to 64 years, increased by 46%, from 3.5µg to 5.1µg, when dietary supplements were included.

(Table 2.35)

### Food sources of vitamin D

The main sources of vitamin D in the diets of respondents in the survey were fish & fish dishes, meat & meat products, cereals & cereal products and fat spreads[7]. Fish & fish dishes contributed 21% and 30% respectively to the mean daily intake of vitamin D for men and women ($p<0.01$), nearly all of which came from oily fish, which is a rich source of vitamin D. Men aged 19 to 24 years obtained 3% of their vitamin D intake from fish & fish dishes, a significantly lower proportion than for any other age group (25 to 34: $p<0.05$; all others: $p<0.01$). In addition, men aged 25 to 34 years obtained a significantly lower proportion of their vitamin D intake from fish & fish dishes than the oldest group of men ($p<0.05$). Fish & fish dishes accounted for a significantly lower proportion of vitamin D intake for women aged 19 to 24 years, 21%, and 25 to 34 years, 22%, than for those aged 50 to 64 years, 37% ($p<0.05$).

Meat & meat products contributed 24% and 18% respectively to the vitamin D intake for men and women ($p<0.05$). Cereals & cereal products provided a further 21% of vitamin D intake overall. Within this group breakfast cereals contributed 13% of the intake of vitamin D. Some breakfast cereals are fortified with vitamin D.

Overall, fat spreads contributed 17% to the mean daily intake of vitamin D. About half the contribution made by fat spreads, 8%, came from reduced fat spreads. Vitamin D is required by law to be added to margarine and is also added to most reduced and low fat spreads.

(Table 2.36)

## 2.6 Vitamin E

The vitamin E data is expressed as α-tocopherol equivalents. Vitamin E in food is present as various tocopherols and tocotrienols, each having a different level of vitamin E activity. In most animal products the α-form is the only significant form present, but in plant products, especially seeds and their oils, γ-tocopherol and other forms are present in significant amounts.

Table 2.37 shows the mean daily intake of vitamin E from all sources and food sources for men and women in different age groups. Men had a significantly higher mean daily intake of vitamin E from food sources, 10.6mg than women, 8.1mg ($p<0.01$). There were no significant differences in mean daily intakes of vitamin E for men or women by age.

Supplements providing vitamin E increased mean daily intakes from food sources alone by 26% for men, from 10.6mg to 13.4mg, and by 85% for women, from 8.1mg to 15.0mg. For both sexes, there were marked differences in the contribution of supplements between age groups; for example, supplement taking increased mean intakes by 3% for men and 19% for women aged 19 to 24 years, but by 38% for men and 183% for women aged 50 to 64 years.

There are no DRVs set for vitamin E. However, intakes above 4mg/d for adult men and above 3mg/d for adult women are considered safe[1]. Mean intakes for men and women in each age group were above these levels. Overall, 3% of men had a mean daily intake of vitamin E below 4mg, and 3% of women had an intake of less than 3mg.

(Table 2.37)

### Food sources of vitamin E

Table 2.38 presents data on the percentage contribution of food types to mean daily intake of vitamin E. The main contributor was fat spreads, providing 18% of vitamin E intake overall, over half of which, 11%, came from polyunsaturated reduced and low fat spreads.

Cereals & cereal products provided 17% of vitamin E intake, a third of which, 5%, came from breakfast cereals, and a further third, 5%, from biscuits, buns, cakes & pastries.

Overall, potatoes & savoury snacks contributed 13% to the vitamin E intake. Within this food group, potato chips and savoury snacks were the main contributors, where vitamin E was provided by the oil used in cooking and frying. Vegetables (excluding potatoes) contributed a further 13% of intake.

Meat & meat products provided 11% of vitamin E intake overall, of which 5% came from chicken, turkey & dishes, including coated chicken.

(Table 2.38)

## 2.7 Variations in vitamin intake

In this section, the variation in the average daily intake of vitamins from *food sources* and *all sources* in relation to the region[8] in which the respondent lives and household receipt of benefits[9] is considered. Variation in mean daily intake from food sources and all sources as a percentage of the RNI, and in the proportion of respondents with intakes below the LRNI is also considered.

### *Caveat*

Inter-relationship between the main classificatory variables need to be borne in mind when interpreting these results. For example, there is significant variation in the age distribution of respondents by household benefit status and any variation associated with this characteristic may be partly accounted for by variation by age (or equally variation with age could be accounted for by variation with this characteristic)[10].

### 2.7.1 Region

Table 2.39 shows mean daily intake of vitamins from food sources and all sources for men and women by region.

There were very few significant regional differences in vitamin intakes from food sources for men or women. Men living in the Northern region and in Central and South West regions of England and in Wales had a significantly lower mean daily intake of vitamin C than men in London and the South East, 77.1mg and 79.4mg compared with 93.8mg ($p<0.05$).

Women living in London and the South East had a significantly higher mean daily intake of total carotene, 2206µg, than those living in Central and South West regions of England and in Wales, 1815µg, and in the Northern region, 1741µg ($p<0.05$). In addition, women in London and the South East had a significantly higher mean daily intake of vitamin E, 8.7mg, than those in the Northern region, 7.7mg ($p<0.05$), and a higher intake of vitamin D, 3.3µg compared with women in Scotland, 2.4µg, and those in Central and South West regions of England and in Wales, 2.6µg ($p<0.01$).

When dietary supplements are included the only remaining significant differences are for women in the London and the South East, who had significantly higher intakes of total carotene compared with women in the Northern region ($p<0.05$), and significantly higher intakes of vitamin D compared with women in Scotland ($p<0.05$) and in Central and South West regions of England and in Wales ($p<0.01$)[11].

Table 2.40 shows mean daily intakes of vitamins from food sources and all sources as a percentage of the RNI and the proportion of men and women with intakes below the LRNI by region. For all vitamins, mean daily intake from food sources was above the RNI for men and women in each of the four regions. There were no significant regional differences in the proportion of men or women with intakes from food sources below the LRNI for any of the vitamins. This remained the case when dietary supplements were included. The inclusion of intakes from dietary supplements had little effect on the proportions with intakes below the LRNI, except for vitamin A intakes in Scotland. Dietary supplements reduced the proportion of men and women with vitamin A intakes below the LRNI in Scotland from 7% of both men and women to 4% of men and 3% of women.

(Tables 2.39 and 2.40)

### 2.7.2 Household receipt of benefits

Table 2.41 shows that mean daily intakes from food sources for the majority of vitamins were significantly lower for men and women living in benefit households compared with those in non-benefit households. For both men and women, intakes from food sources of riboflavin, vitamin $B_6$, vitamin $B_{12}$, folate, vitamin C and vitamin E were significantly lower for those living in benefit households than for those in non-benefit households (men, vitamin $B_{12}$ and vitamin E: $p<0.05$; all others: $p<0.01$). For example, mean daily intake of vitamin C from food sources was 62.7mg for men and 60.4mg for women living in benefit households compared with 86.6mg for men and 85.1mg for women in non-benefit households. In addition, men in benefit households had a significantly lower mean daily intake of thiamin from food sources, and women in benefit households significantly lower intakes of vitamin A, total carotene and vitamin D, than those in non-benefit households ($p<0.01$).

When dietary supplements are included, significant differences in mean intakes by household benefit status remain for vitamin $B_{12}$ and vitamin C for men and women, for folate for men and for vitamin A, total carotene and vitamin D for women[11].

As noted in section 2.3.6, the Department of Health currently recommends a folate intake of 400µg/day for women who could become pregnant. In this survey, 93% of women aged 19 to 24 years, 99% of women aged 25 to 34 years, and 85% of women aged 35 to 49 years, living in benefit households had an mean daily folate intake less than 400µg/day (table not shown).

Table 2.42 shows average daily intake of vitamins from food sources and all sources as a percentage of the RNI and the proportion with intakes below the LRNI by sex and household benefit status. For most vitamins mean daily intakes from food sources as a percentage of the RNI were lower for men and women living in benefit households compared with those in non-benefit households. However, mean intakes from food sources for benefit households were above the RNI for all vitamins except for vitamin A for women which was 84% of the RNI. Dietary supplements increased intakes of vitamin A for women in benefit households to 97% of the RNI.

A significantly higher proportion of women in benefit households had intakes of vitamin A and riboflavin from food sources below the LRNI, 22% and 19%, respectively, than women in non-benefit households, 6% and 5% ($p<0.01$). Six per cent of women in benefit households had an intake of folate below the LRNI, 100µg/day, compared with 1% of women in non-benefit households (ns). Dietary supplements made a negligible difference to the proportions of men or women in benefit and non-benefit households with intakes below the LRNI.

(Tables 2.41 and 2.42)

## 2.8 Comparison of vitamin intakes between 1986/87 Adults survey and present NDNS

Tables 2.43(a) and (b) and 2.44(a) and (b) compare vitamin intakes from food sources and all sources in the present survey of adults with corresponding data from the Dietary and Nutritional Survey of British Adults aged 16 to 64 years carried out in 1986/87 (1986/87 Adults Survey)[12]. Tables 2.43(a) and 2.43(b) present data on vitamin intakes from food sources alone for the two sets of survey data for men and women by age respectively. Tables 2.44(a) and 2.44(b) present data on vitamin intakes from all sources for men and women respectively. Comparisons are made between comparable age groups in the two surveys; no attempt is made to use the data to undertake cohort analysis[13]. It should be noted that in the 1986/87 Adults Survey the youngest age group was adults aged 16 to 24 years, while in the current NDNS the youngest age group is adults aged 19 to 24 years. This should be borne in mind where there are differences between these groups. A summary of the methodology and findings from the 1986/87 Adults Survey is given in Appendix S of the Technical Report[14]. Data are presented on absolute intakes from food sources and all sources, and comparisons do not take into account differences in energy intake.

The following discussion focuses on differences between the two surveys in intakes of vitamins from food sources alone. The effect of dietary supplements on intakes between the two surveys is then commented on. Data on mean daily intakes of total carotene from food sources alone were not available for the 1986/87 Adults Survey.

For seven of the thirteen vitamins presented, intakes from food sources were significantly higher for men and women overall in the present survey compared with the 1986/87 Adults Survey. This was true for thiamin, niacin equivalents, vitamin $B_6$, folate, pantothenic acid, vitamin C and vitamin E (men, vitamin E: $p<0.05$; all others: $p<0.01$). In addition, intakes of vitamin D were significantly higher for women in the present survey than in the 1986/87 Adults Survey ($p<0.05$). The increase in intakes of vitamin D for women seen in the present survey is likely to be attributable in part to the revision of vitamin D values in poultry and meat and meat products[7].

Men aged 25 to 64 years had significantly higher mean daily intakes of niacin equivalents and vitamin $B_6$ and those aged 35 to 64 years significantly higher intakes of thiamin, pantothenic acid and vitamin C in the present survey than the equivalent age groups in the 1986/87 Adults Survey (thiamin for 35 to 49 years and niacin equivalents for 25 to 34 years: $p<0.05$; all others: $p<0.01$). In addition, the oldest group of men had significantly higher intakes of folate and vitamin E in the present survey ($p<0.01$).

Women in all age groups in the current survey had significantly higher mean daily intakes of vitamin $B_6$, and those from the age of 25 years significantly higher mean daily intakes of folate, vitamin C and thiamin than those in equivalent age groups in the 1986/87 Adults Survey (thiamin and folate for 25 to 34 years: $p<0.05$; all others: $p<0.01$). In addition, women from the age of 35 years had significantly higher intakes of niacin equivalents and pantothenic acid, and the oldest group of women significantly higher mean biotin, vitamin D and vitamin E intakes compared with women in equivalent age groups in the earlier survey (niacin equivalents for 35 to 49 years, biotin and vitamin D for 50 to 64 years: $p<0.05$; all others: $p<0.01$).

Intakes of vitamin A and pre-formed retinol were significantly lower for both men and women in the present survey ($p<0.01$). This fall in assessed intakes is largely due to revised data for retinol levels in liver and milk becoming available since the 1986/87 Adults Survey.

In all age groups, men and women had significantly lower mean daily intakes of vitamin A and pre-formed retinol in the present survey than the equivalent age groups in the 1986/87 Adults Survey (men aged 25 to 34 years vitamin A: $p<0.05$; all others: $p<0.01$). In addition, men aged 19 to 24 years in the present survey had significantly lower mean daily intakes of vitamin $B_{12}$ than men aged 16 to 24 years in the earlier survey, 4.4µg and 6.2µg respectively ($p<0.01$).

For both sexes and all age groups there were no significant differences between the two sets of survey data for mean daily intakes from food sources of riboflavin.

In the 2000/01 NDNS, 41% of women and 30% of men who completed the dietary record reported taking dietary supplements, this compares with 17% of women and 9% of men in the 1986/87 Adults Survey. Many of the differences in mean daily intakes from food sources between the two sets of survey data are still evident when dietary supplements are included (see Tables 2.44(a) and 2.44(b))[11]. When dietary supplements are included significant differences between the two sets of survey data remain, overall, for both men and women for intakes of vitamin A, pre-formed retinol, niacin equivalents, folate, pantothenic acid and vitamin C, for men for intakes of vitamin $B_6$ and for women for intakes of vitamin D and vitamin E. In addition, when dietary supplements are included men and women in the present survey had a significantly higher mean intake of biotin, and men, but not women a significantly lower mean intake of total carotene than those in the 1986/87 Adults Survey. There are no consistent patterns by age for men or women in the significant differences that remain when dietary supplements are included.

The extent to which these differences reflect changes in the diets of adults over the period is not clear. Many factors contribute to any differences, including changes in nutrient composition and, as noted previously, new analytical methods[7], increase in fortification practices, changes in food consumption patterns and increased use of dietary supplements.

(Tables 2.43(a), 2.43(b), 2.44(a) and 2.44(b))

## References and endnotes

1 Department of Health. Report on Health and Social Subjects: 41. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom.* HMSO (London, 1991).

2 Department of Health. *Dietary Reference Values. A Guide.* HMSO (London, 1991).

3 For each sex and age group the distribution of data was evaluated using the skewness statistic in SPSS. If the skewness statistic was less than twice the standard error of the statistic then data were considered to be normally distributed.

4 Henderson L, Gregory J, Swan G. *National Diet and Nutrition Survey: adults aged 19 to 64 years. Volume 1: Types and quantities of foods consumed.* TSO (London, 2002).

5 Intakes as a percentage of the RNI were calculated for each respondent, taking the appropriate RNI for each sex/age groups. The values for all respondents in each age group were then pooled to give a mean, median and standard deviation.

6 Department of Health. Report on health and social subjects: 50. *Folic acid and the prevention of disease: report of the Committee on Medical Aspects of Food and Nutrition Policy.* TSO (London, 2000).

7 Measurable amounts of vitamin D and its metabolites have now been found in meats as a result of new analytical methods.

8 The areas included in each of the four analysis 'regions' are given in the response chapter, Chapter 2 of the Technical Report, online at http://www.food.gov.uk/science. Definitions of 'regions' are given in the glossary (*see* Appendix C).

9 Households receiving benefits are those where someone in the respondent's household was currently receiving Working Families Tax Credit or had, in the previous 14 days, drawn Income Support or (Income-related) Job Seeker's Allowance. Definitions of 'household' and 'benefits (receiving)', are given in the glossary (*see* Appendix C).

10 Chapter 2 of the Technical Report includes information on inter-relationships between the main socio-economic variables and gives tables of distributions for household benefit status by sex and age of respondent (Table 2.23). The Technical report is available online at http://www.food.gov.uk/science.

11 Where there are no longer significant differences once dietary supplements are included this does not necessarily mean that dietary supplements reduce differences between sub-groups, as the inclusion of dietary supplements is likely to increase the variance and skew the distribution.

12 Gregory J, Foster K, Tyler H, Wiseman M. *The Dietary and Nutritional Survey of British Adults.* HMSO (London, 1990).

13 Due to the number of years between the two surveys it would only be possible to undertake cohort analysis for those who were aged 16 to 40 years in the 1986/87 Adults Survey. The numbers available to undertake this form of analysis are therefore limited.

14 The Technical Report is available online at http://www.food.gov.uk/science.

## Table 2.1

### Reference Nutrient Intakes (RNIs) and Lower Reference Nutrient Intakes (LRNIs) for vitamins*

| RNI and LRNI by age (years)** and sex | | Vitamins | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Vitamin A | Thiamin*** | Riboflavin | Niacin*** | Vitamin $B_6$**** | Vitamin $B_{12}$ | Folate | Vitamin C |
| **Men** | | µg/d | mg/d | mg/d | mg/d | mg/d | µg/d | µg/d | mg/d |
| 19 to 50 | RNI | 700 | 1.0 | 1.3 | 17 | 1.4 | 1.5 | 200 | 40 |
| | LRNI | 300 | 0.6 | 0.8 | 11 | 1.0 | 1.0 | 100 | 10 |
| 51 to 64 | RNI | 700 | 0.9 | 1.3 | 16 | 1.4 | 1.5 | 200 | 40 |
| | LRNI | 300 | 0.5 | 0.8 | 10 | 1.0 | 1.0 | 100 | 10 |
| **Women** | | | | | | | | | |
| 19 to 50 | RNI | 600 | 0.8 | 1.1 | 13 | 1.2 | 1.5 | 200 | 40 |
| | LRNI | 250 | 0.4 | 0.8 | 9 | 0.8 | 1.0 | 100 | 10 |
| 51 to 64 | RNI | 600 | 0.8 | 1.1 | 12 | 1.2 | 1.5 | 200 | 40 |
| | LRNI | 250 | 0.4 | 0.8 | 8 | 0.8 | 1.0 | 100 | 10 |

*Note: * Source: Department of Health. Report on Health and Social Subjects: 41. Dietary Reference Values for Food Energy and Nutrients for the United Kingdom. HMSO (London, 1991).*
*** The age groups presented represent those for which different RNI and LRNI values are calculated.*
**** Calculated values based on Estimated Average Requirements (EARS) for energy; calculated values from quoted LRNIs mg/1000kcal.*
***** Based on protein providing 14.7% of the EAR for energy . Calculated values from quoted LRNIs µg/g protein.*

## Table 2.2

### Proportion of respondents with average daily intakes of vitamins below the Lower Reference Nutrient Intake (LRNI) by sex and age of respondent

Percentages

| Vitamins | % with average daily intake below the LRNI | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | % | % | % | % | % | % | % | % | % | % |
| **All sources** | | | | | | | | | | |
| Vitamin A | 16 | 5 | 5 | 3 | 6 | 15 | 10 | 6 | 4 | 8 |
| Thiamin | 2 | 0 | 0 | 1 | 1 | - | 2 | 1 | 1 | 1 |
| Riboflavin | 7 | 1 | 2 | 2 | 2 | 13 | 10 | 5 | 5 | 7 |
| Niacin equivalents | - | - | 0 | 0 | 0 | 2 | - | 1 | 0 | 1 |
| Vitamin $B_6$ | - | 0 | 1 | 1 | 1 | 5 | 1 | 2 | 2 | 2 |
| Vitamin $B_{12}$ | 1 | - | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| Folate | 2 | - | 0 | - | 0 | 3 | 2 | 1 | 2 | 2 |
| Vitamin C | - | 0 | - | - | 0 | 1 | - | 0 | 0 | 0 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| **Food sources** | | | | | | | | | | |
| Vitamin A | 16 | 7 | 5 | 4 | 7 | 19 | 11 | 8 | 5 | 9 |
| Thiamin | 2 | 0 | 0 | 1 | 1 | - | 2 | 1 | 1 | 1 |
| Riboflavin | 8 | 1 | 2 | 3 | 3 | 15 | 10 | 5 | 6 | 8 |
| Niacin equivalents | - | - | 0 | 0 | 0 | 2 | - | 1 | 0 | 1 |
| Vitamin $B_6$ | - | 0 | 2 | 1 | 1 | 5 | 1 | 2 | 2 | 2 |
| Vitamin $B_{12}$ | 1 | - | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| Folate | 2 | - | 0 | - | 0 | 3 | 2 | 2 | 2 | 2 |
| Vitamin C | - | 0 | - | - | 0 | 1 | - | 0 | 0 | 0 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |

Table 2.3

## Average daily intake of pre-formed retinol (µg) by sex and age of respondent

Cumulative percentages

| Pre-formed retinol (µg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 100 | 10 | 1 | 2 | 1 | 3 | 15 | 10 | 7 | 4 | 8 |
| Less than 150 | 18 | 6 | 10 | 6 | 9 | 25 | 21 | 18 | 11 | 18 |
| Less than 200 | 25 | 19 | 15 | 12 | 16 | 50 | 36 | 27 | 24 | 31 |
| Less than 250 | 45 | 33 | 26 | 21 | 29 | 68 | 49 | 41 | 32 | 43 |
| Less than 300 | 55 | 43 | 37 | 27 | 38 | 74 | 64 | 54 | 42 | 55 |
| Less than 350 | 65 | 52 | 45 | 36 | 47 | 75 | 78 | 61 | 52 | 64 |
| Less than 400 | 76 | 61 | 56 | 43 | 56 | 77 | 83 | 69 | 55 | 70 |
| Less than 500 | 86 | 71 | 73 | 60 | 70 | 78 | 90 | 76 | 65 | 76 |
| Less than 600 | 91 | 76 | 76 | 65 | 75 | 86 | 92 | 80 | 69 | 81 |
| Less than 800 | 95 | 82 | 83 | 72 | 81 | 90 | 94 | 83 | 72 | 83 |
| Less than 1000 | 98 | 89 | 85 | 75 | 85 | 97 | 98 | 88 | 80 | 89 |
| Less than 2000 | 98 | 96 | 94 | 92 | 94 | 99 | 99 | 97 | 95 | 97 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 334 | 551 | 721 | 877 | 673 | 341 | 341 | 462 | 645 | 472 |
| Median | 280 | 332 | 367 | 444 | 363 | 201 | 257 | 285 | 331 | 277 |
| Lower 2.5 percentile | 51 | 123 | 106 | 117 | 100 | 44 | 36 | 59 | 80 | 60 |
| Upper 2.5 percentile | 906 | 3079 | 4024 | 5168 | 3922 | 1790 | 944 | 2130 | 3194 | 2122 |
| Standard deviation | 305 | 647 | 1350 | 1278 | 1095 | 402 | 668 | 541 | 800 | 654 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 100 | 11 | 2 | 4 | 1 | 3 | 17 | 10 | 8 | 5 | 9 |
| Less than 150 | 18 | 7 | 12 | 7 | 10 | 29 | 22 | 21 | 15 | 21 |
| Less than 200 | 25 | 21 | 17 | 13 | 18 | 57 | 40 | 34 | 32 | 38 |
| Less than 250 | 49 | 37 | 31 | 24 | 33 | 77 | 53 | 51 | 44 | 53 |
| Less than 300 | 60 | 51 | 41 | 34 | 44 | 85 | 70 | 65 | 57 | 66 |
| Less than 350 | 73 | 62 | 50 | 44 | 54 | 88 | 84 | 74 | 71 | 77 |
| Less than 400 | 80 | 70 | 62 | 54 | 64 | 90 | 89 | 83 | 76 | 83 |
| Less than 500 | 92 | 80 | 80 | 71 | 79 | 93 | 95 | 90 | 85 | 90 |
| Less than 600 | 94 | 84 | 84 | 78 | 84 | 95 | 97 | 94 | 90 | 93 |
| Less than 800 | 96 | 91 | 89 | 85 | 89 | 97 | 98 | 95 | 92 | 95 |
| Less than 1000 | 98 | 93 | 91 | 87 | 91 | 99 | 99 | 96 | 92 | 96 |
| Less than 2000 | 98 | 97 | 95 | 92 | 95 | 99 | 99 | 98 | 96 | 98 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 315 | 424 | 643 | 735 | 571 | 251 | 302 | 339 | 449 | 352 |
| Median | 252 | 297 | 350 | 380 | 327 | 187 | 230 | 248 | 267 | 241 |
| Lower 2.5 percentile | 51 | 108 | 82 | 111 | 81 | 44 | 36 | 49 | 78 | 54 |
| Upper 2.5 percentile | 906 | 2078 | 4024 | 5168 | 3659 | 954 | 674 | 1381 | 3190 | 1498 |
| Standard deviation | 296 | 435 | 1327 | 1221 | 1034 | 323 | 654 | 445 | 726 | 584 |

## Table 2.4

# Average daily intake of total carotene (β-carotene equivalents) (μg) by sex and age of respondent

Cumulative percentages

| Total carotene (β-carotene equivalents) (μg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 300 | 4 | 2 | 0 | 2 | 2 | 7 | 3 | 3 | 2 | 3 |
| Less than 600 | 23 | 12 | 6 | 7 | 10 | 18 | 17 | 9 | 6 | 11 |
| Less than 900 | 33 | 25 | 13 | 12 | 18 | 40 | 29 | 23 | 14 | 24 |
| Less than 1200 | 43 | 39 | 28 | 19 | 30 | 62 | 43 | 35 | 26 | 37 |
| Less than 1500 | 55 | 51 | 37 | 29 | 40 | 70 | 52 | 43 | 37 | 47 |
| Less than 1800 | 68 | 62 | 49 | 43 | 53 | 81 | 60 | 51 | 45 | 55 |
| Less than 2100 | 82 | 70 | 62 | 54 | 64 | 87 | 70 | 61 | 52 | 63 |
| Less than 2400 | 84 | 77 | 69 | 62 | 71 | 89 | 76 | 69 | 59 | 70 |
| Less than 2700 | 89 | 82 | 76 | 68 | 77 | 91 | 84 | 76 | 69 | 78 |
| Less than 3000 | 90 | 84 | 81 | 70 | 80 | 91 | 86 | 82 | 76 | 82 |
| Less than 3300 | 96 | 89 | 85 | 73 | 84 | 92 | 92 | 88 | 82 | 88 |
| Less than 3500 | 96 | 90 | 90 | 76 | 86 | 94 | 93 | 89 | 86 | 90 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1470 | 1806 | 2088 | 2514 | 2063 | 1498 | 1754 | 2047 | 2222 | 1964 |
| Median | 1392 | 1474 | 1853 | 1936 | 1716 | 1054 | 1428 | 1753 | 2019 | 1608 |
| Lower 2.5 percentile | 275 | 307 | 427 | 302 | 322 | 145 | 288 | 261 | 371 | 275 |
| Upper 2.5 percentile | 4281 | 4989 | 5750 | 6676 | 5774 | 4283 | 5797 | 6280 | 5275 | 5275 |
| Standard deviation | 970 | 1258 | 1276 | 1965 | 1524 | 1936 | 1357 | 1710 | 1395 | 1591 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 300 | 4 | 2 | 1 | 2 | 2 | 7 | 3 | 3 | 2 | 3 |
| Less than 600 | 23 | 12 | 6 | 7 | 10 | 18 | 17 | 9 | 6 | 11 |
| Less than 900 | 33 | 25 | 13 | 12 | 19 | 41 | 28 | 23 | 14 | 24 |
| Less than 1200 | 43 | 39 | 28 | 19 | 30 | 63 | 43 | 35 | 26 | 37 |
| Less than 1500 | 55 | 51 | 37 | 29 | 41 | 71 | 52 | 44 | 38 | 47 |
| Less than 1800 | 68 | 62 | 49 | 43 | 53 | 82 | 60 | 51 | 47 | 56 |
| Less than 2100 | 82 | 70 | 63 | 55 | 65 | 88 | 70 | 61 | 53 | 64 |
| Less than 2400 | 84 | 78 | 69 | 63 | 71 | 90 | 76 | 70 | 60 | 71 |
| Less than 2700 | 89 | 82 | 77 | 69 | 77 | 92 | 84 | 77 | 69 | 78 |
| Less than 3000 | 90 | 85 | 81 | 71 | 80 | 92 | 86 | 82 | 76 | 83 |
| Less than 3300 | 96 | 89 | 85 | 73 | 84 | 93 | 92 | 88 | 82 | 88 |
| Less than 3500 | 96 | 90 | 89 | 76 | 86 | 95 | 93 | 89 | 86 | 90 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1469 | 1801 | 2077 | 2459 | 2041 | 1294 | 1712 | 2015 | 2205 | 1914 |
| Median | 1392 | 1474 | 1853 | 1936 | 1716 | 1045 | 1426 | 1741 | 1991 | 1583 |
| Lower 2.5 percentile | 258 | 307 | 422 | 302 | 322 | 145 | 270 | 261 | 371 | 267 |
| Upper 2.5 percentile | 4281 | 4989 | 5750 | 6676 | 5750 | 4283 | 5193 | 6280 | 5275 | 5186 |
| Standard deviation | 971 | 1253 | 1267 | 1741 | 1431 | 966 | 1231 | 1522 | 1397 | 1392 |

# Table 2.5

## Percentage contribution of food types to average daily intake of total carotene (β-carotene equivalents) by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 8 | 5 | 3 | 3 | 4 | 6 | 5 | 3 | 3 | 4 | 4 |
| Milk & milk products | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 3 |
| Eggs & egg dishes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Fat spreads | 5 | 4 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 3 | 3 |
| Meat & meat products | 16 | 16 | 14 | 11 | 14 | 11 | 11 | 11 | 9 | 10 | 12 |
| Fish & fish dishes | 1 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 1 |
| Vegetables (excluding potatoes) | 47 | 56 | 60 | 63 | 59 | 60 | 64 | 66 | 68 | 66 | 62 |
| *of which:* | | | | | | | | | | | |
| *raw carrots* | *3* | *5* | *4* | *6* | *5* | *9* | *5* | *7* | *4* | *6* | *5* |
| *other salad vegetables* | *2* | *4* | *4* | *4* | *4* | *3* | *5* | *5* | *4* | *5* | *4* |
| *raw tomatoes* | *3* | *5* | *5* | *5* | *5* | *5* | *6* | *6* | *6* | *6* | *5* |
| *carrots – not raw* | *26* | *28* | *30* | *32* | *30* | *26* | *24* | *28* | *35* | *30* | *30* |
| Potatoes & savoury snacks | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| Fruit & nuts | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 3 | 4 | 3 | 2 |
| Sugars, preserves & confectionery | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drinks* | 13 | 4 | 5 | 3 | 5 | 7 | 5 | 4 | 3 | 4 | 4 |
| *of which:* | | | | | | | | | | | |
| *fruit juice* | *0* | *1* | *0* | *1* | *1* | *1* | *1* | *2* | *1* | *1* | *1* |
| *soft drinks, including low calorie* | *12* | *3* | *4* | *2* | *4* | *7* | *3* | *2* | *2* | *3* | *3* |
| Miscellaneous** | 6 | 8 | 6 | 9 | 8 | 6 | 7 | 6 | 7 | 7 | 7 |
| **Average daily intake (µg)** | **1469** | **1801** | **2077** | **2459** | **2041** | **1294** | **1712** | **2015** | **2205** | **1914** | **1975** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 2.6

### Average daily intake of β-carotene (µg) by sex and age of respondent

Cumulative percentages

| β-carotene (µg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 200 | 2 | 1 | - | 1 | 1 | 3 | 1 | 2 | 0 | 1 |
| Less than 400 | 9 | 6 | 2 | 5 | 5 | 12 | 8 | 4 | 3 | 5 |
| Less than 600 | 25 | 12 | 6 | 8 | 10 | 22 | 20 | 12 | 8 | 14 |
| Less than 800 | 33 | 22 | 12 | 11 | 17 | 35 | 27 | 22 | 14 | 22 |
| Less than 1200 | 45 | 43 | 31 | 23 | 34 | 65 | 45 | 38 | 30 | 41 |
| Less than 1600 | 66 | 62 | 48 | 41 | 52 | 76 | 61 | 52 | 45 | 55 |
| Less than 2000 | 84 | 72 | 65 | 58 | 67 | 86 | 73 | 65 | 54 | 66 |
| Less than 2400 | 89 | 81 | 76 | 69 | 77 | 90 | 84 | 75 | 70 | 77 |
| Less than 2800 | 90 | 85 | 83 | 72 | 81 | 90 | 89 | 85 | 80 | 85 |
| Less than 3200 | 96 | 90 | 89 | 79 | 87 | 94 | 93 | 90 | 86 | 90 |
| Less than 3600 | 96 | 91 | 92 | 84 | 90 | 94 | 95 | 92 | 91 | 93 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1342 | 1633 | 1875 | 2255 | 1858 | 1374 | 1579 | 1842 | 1995 | 1770 |
| Median | 1282 | 1346 | 1669 | 1774 | 1560 | 972 | 1307 | 1551 | 1801 | 1464 |
| Lower 2.5 percentile | 208 | 301 | 417 | 290 | 301 | 142 | 274 | 252 | 334 | 262 |
| Upper 2.5 percentile | 3840 | 4341 | 4802 | 5760 | 5031 | 3722 | 5204 | 5405 | 4609 | 4676 |
| Standard deviation | 881 | 1108 | 1102 | 1770 | 1354 | 1888 | 1221 | 1540 | 1223 | 1444 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 200 | 2 | 1 | - | 1 | 1 | 3 | 1 | 2 | 0 | 1 |
| Less than 400 | 9 | 6 | 2 | 5 | 5 | 11 | 8 | 4 | 3 | 6 |
| Less than 600 | 25 | 12 | 6 | 8 | 10 | 22 | 20 | 12 | 8 | 14 |
| Less than 800 | 33 | 22 | 12 | 11 | 17 | 36 | 27 | 22 | 14 | 22 |
| Less than 1200 | 45 | 43 | 31 | 24 | 34 | 67 | 46 | 38 | 31 | 41 |
| Less than 1600 | 66 | 62 | 48 | 41 | 52 | 77 | 61 | 52 | 47 | 55 |
| Less than 2000 | 84 | 72 | 65 | 59 | 68 | 87 | 73 | 65 | 56 | 67 |
| Less than 2400 | 89 | 82 | 77 | 69 | 78 | 91 | 84 | 76 | 71 | 78 |
| Less than 2800 | 90 | 86 | 83 | 73 | 82 | 91 | 89 | 85 | 80 | 85 |
| Less than 3200 | 96 | 90 | 90 | 80 | 88 | 95 | 93 | 90 | 86 | 90 |
| Less than 3600 | 96 | 91 | 92 | 85 | 90 | 95 | 96 | 92 | 91 | 93 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1341 | 1627 | 1864 | 2201 | 1836 | 1170 | 1538 | 1810 | 1977 | 1719 |
| Median | 1282 | 1346 | 1669 | 1774 | 1560 | 956 | 1304 | 1539 | 1746 | 1424 |
| Lower 2.5 percentile | 208 | 301 | 411 | 290 | 301 | 142 | 253 | 252 | 334 | 255 |
| Upper 2.5 percentile | 3840 | 4341 | 4802 | 5692 | 5031 | 3678 | 4536 | 5405 | 4609 | 4568 |
| Standard deviation | 882 | 1103 | 1093 | 1514 | 1248 | 837 | 1076 | 1349 | 1224 | 1225 |

## Table 2.7

# Average daily intake of α-carotene(µg) by sex and age of respondent

Cumulative percentages

| α-carotene (µg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Zero | 5 | 3 | 1 | 0 | 2 | 1 | 1 | 2 | 1 | 1 |
| Less than 10 | 19 | 16 | 6 | 9 | 11 | 21 | 13 | 9 | 8 | 11 |
| Less than 25 | 30 | 20 | 13 | 13 | 17 | 27 | 18 | 13 | 12 | 16 |
| Less than 50 | 34 | 27 | 15 | 16 | 21 | 33 | 23 | 18 | 15 | 20 |
| Less than 75 | 38 | 32 | 19 | 17 | 24 | 38 | 28 | 23 | 19 | 25 |
| Less than 150 | 42 | 45 | 31 | 26 | 35 | 61 | 45 | 35 | 32 | 39 |
| Less than 300 | 72 | 66 | 57 | 49 | 59 | 76 | 67 | 58 | 51 | 60 |
| Less than 400 | 94 | 74 | 69 | 61 | 71 | 87 | 74 | 70 | 59 | 69 |
| Less than 500 | 96 | 80 | 81 | 68 | 79 | 88 | 82 | 77 | 70 | 78 |
| Less than 600 | 96 | 85 | 84 | 74 | 83 | 94 | 85 | 85 | 78 | 84 |
| Less than 700 | 98 | 90 | 89 | 78 | 87 | 94 | 91 | 89 | 85 | 89 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 198 | 282 | 352 | 444 | 342 | 203 | 275 | 336 | 383 | 320 |
| Median | 181 | 189 | 263 | 303 | 248 | 117 | 174 | 259 | 294 | 227 |
| Lower 2.5 percentile | 0 | 0 | 3 | 2 | 1 | 0 | 1 | 1 | 2 | 1 |
| Upper 2.5 percentile | 713 | 1275 | 1611 | 1693 | 1363 | 1163 | 1022 | 1307 | 1331 | 1176 |
| Standard deviation | 181 | 315 | 379 | 461 | 381 | 263 | 292 | 358 | 350 | 335 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Zero | 5 | 3 | 1 | 0 | 2 | 1 | 1 | 2 | 1 | 1 |
| Less than 10 | 19 | 16 | 6 | 9 | 11 | 21 | 13 | 9 | 8 | 11 |
| Less than 25 | 31 | 20 | 13 | 13 | 17 | 27 | 18 | 13 | 12 | 16 |
| Less than 50 | 34 | 27 | 15 | 16 | 21 | 33 | 23 | 18 | 15 | 20 |
| Less than 75 | 38 | 32 | 19 | 17 | 24 | 38 | 28 | 23 | 19 | 25 |
| Less than 150 | 42 | 45 | 31 | 26 | 35 | 61 | 45 | 35 | 32 | 39 |
| Less than 300 | 72 | 66 | 57 | 49 | 59 | 76 | 67 | 58 | 51 | 60 |
| Less than 400 | 94 | 74 | 69 | 61 | 71 | 87 | 74 | 70 | 59 | 69 |
| Less than 500 | 96 | 80 | 81 | 68 | 79 | 88 | 82 | 77 | 70 | 78 |
| Less than 600 | 96 | 85 | 84 | 74 | 83 | 94 | 85 | 85 | 78 | 84 |
| Less than 700 | 98 | 90 | 89 | 78 | 87 | 94 | 91 | 89 | 85 | 89 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 197 | 282 | 352 | 444 | 342 | 203 | 275 | 336 | 383 | 320 |
| Median | 181 | 189 | 263 | 303 | 248 | 117 | 174 | 259 | 294 | 227 |
| Lower 2.5 percentile | 0 | 0 | 3 | 2 | 1 | 0 | 1 | 1 | 2 | 1 |
| Upper 2.5 percentile | 713 | 1275 | 1611 | 1693 | 1363 | 1163 | 1022 | 1307 | 1331 | 1176 |
| Standard deviation | 182 | 315 | 379 | 461 | 381 | 263 | 292 | 357 | 350 | 335 |

# Table 2.8

## Average daily intake of β-cryptoxanthin (µg) by sex and age of respondent

Cumulative percentages

| β-cryptoxanthin (µg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Zero | - | 3 | 2 | 3 | 2 | 3 | 2 | 4 | 3 | 3 |
| Less than 10 | 19 | 11 | 9 | 14 | 12 | 16 | 12 | 16 | 11 | 14 |
| Less than 30 | 44 | 43 | 33 | 34 | 38 | 44 | 35 | 36 | 33 | 36 |
| Less than 60 | 68 | 62 | 61 | 62 | 62 | 78 | 65 | 62 | 61 | 64 |
| Less than 90 | 76 | 76 | 75 | 78 | 76 | 89 | 77 | 75 | 75 | 77 |
| Less than 120 | 91 | 89 | 83 | 85 | 86 | 95 | 83 | 83 | 84 | 85 |
| Less than 150 | 93 | 92 | 90 | 90 | 91 | 97 | 87 | 88 | 87 | 89 |
| Less than 180 | 95 | 95 | 95 | 92 | 94 | 97 | 90 | 91 | 91 | 91 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 57 | 62 | 71 | 69 | 66 | 43 | 71 | 72 | 69 | 68 |
| Median | 37 | 37 | 51 | 46 | 44 | 34 | 44 | 46 | 48 | 44 |
| Lower 2.5 percentile | 1 | 0 | 2 | 0 | 1 | 0 | 2 | 0 | 0 | 0 |
| Upper 2.5 percentile | 248 | 290 | 270 | 330 | 290 | 195 | 290 | 350 | 254 | 271 |
| Standard deviation | 63.0 | 64.9 | 92.8 | 77.5 | 77.9 | 41.0 | 92.1 | 86.0 | 71.6 | 79.9 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Zero | 1 | 3 | 2 | 3 | 3 | 3 | 2 | 4 | 3 | 3 |
| Less than 10 | 19 | 11 | 9 | 14 | 14 | 16 | 12 | 16 | 11 | 14 |
| Less than 30 | 44 | 43 | 33 | 34 | 34 | 44 | 35 | 36 | 33 | 36 |
| Less than 60 | 68 | 62 | 61 | 62 | 62 | 78 | 65 | 62 | 61 | 64 |
| Less than 90 | 76 | 76 | 75 | 78 | 78 | 89 | 77 | 75 | 75 | 77 |
| Less than 120 | 91 | 89 | 83 | 85 | 85 | 95 | 83 | 83 | 84 | 85 |
| Less than 150 | 93 | 92 | 90 | 90 | 90 | 97 | 87 | 88 | 87 | 89 |
| Less than 180 | 95 | 95 | 95 | 92 | 92 | 97 | 90 | 91 | 91 | 91 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 57 | 62 | 71 | 69 | 66 | 43 | 71 | 72 | 69 | 68 |
| Median | 37 | 37 | 51 | 46 | 44 | 34 | 44 | 46 | 48 | 44 |
| Lower 2.5 percentile | 1 | 0 | 2 | 0 | 1 | 0 | 2 | 0 | 0 | 0 |
| Upper 2.5 percentile | 248 | 290 | 270 | 330 | 290 | 195 | 290 | 350 | 254 | 271 |
| Standard deviation | 63.0 | 64.9 | 92.8 | 77.5 | 77.9 | 41.0 | 92.1 | 86.0 | 71.6 | 79.9 |

## Table 2.9

# Average daily intake of vitamin A (retinol equivalents) (µg) by sex and age of respondent

Cumulative percentages

| Vitamin A (retinol equivalents) (µg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 250 | 9 | 3 | 2 | 1 | 3 | 15 | 10 | 6 | 4 | 8 |
| Less than 300 | 16 | 5 | 5 | 3 | 6 | 24 | 17 | 11 | 5 | 12 |
| Less than 400 | 35 | 20 | 11 | 9 | 16 | 46 | 33 | 20 | 11 | 24 |
| Less than 600 | 60 | 46 | 34 | 25 | 38 | 70 | 62 | 46 | 34 | 49 |
| Less than 700 | 72 | 58 | 49 | 36 | 50 | 71 | 75 | 57 | 44 | 59 |
| Less than 800 | 84 | 65 | 58 | 45 | 59 | 82 | 82 | 65 | 53 | 67 |
| Less than 1000 | 90 | 75 | 72 | 57 | 71 | 92 | 89 | 76 | 65 | 77 |
| Less than 1200 | 96 | 83 | 80 | 66 | 79 | 93 | 93 | 82 | 72 | 83 |
| Less than 1400 | 99 | 87 | 84 | 73 | 83 | 97 | 97 | 89 | 80 | 89 |
| Less than 1600 | 99 | 90 | 88 | 80 | 88 | 97 | 98 | 93 | 87 | 93 |
| Less than 1800 | 99 | 92 | 90 | 83 | 90 | 97 | 99 | 95 | 91 | 95 |
| Less than 2000 | 99 | 94 | 93 | 85 | 92 | 97 | 99 | 96 | 93 | 96 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 579 | 852 | 1069 | 1296 | 1017 | 590 | 634 | 803 | 1015 | 800 |
| Median | 489 | 643 | 715 | 865 | 697 | 418 | 534 | 624 | 754 | 606 |
| Lower 2.5 percentile | 166 | 242 | 241 | 295 | 221 | 127 | 132 | 173 | 226 | 173 |
| Upper 2.5 percentile | 1230 | 3477 | 4287 | 5382 | 4286 | 2712 | 1461 | 2534 | 3769 | 2635 |
| Standard deviation | 361 | 711 | 1380 | 1339 | 1151 | 595 | 718 | 629 | 838 | 729 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 250 | 9 | 4 | 3 | 2 | 4 | 19 | 11 | 8 | 5 | 9 |
| Less than 300 | 16 | 7 | 5 | 4 | 7 | 29 | 18 | 13 | 5 | 14 |
| Less than 400 | 38 | 23 | 12 | 10 | 18 | 53 | 35 | 24 | 15 | 27 |
| Less than 600 | 62 | 51 | 39 | 30 | 42 | 81 | 68 | 54 | 47 | 59 |
| Less than 700 | 74 | 65 | 54 | 42 | 56 | 85 | 81 | 67 | 58 | 70 |
| Less than 800 | 86 | 73 | 65 | 52 | 66 | 90 | 86 | 76 | 70 | 78 |
| Less than 1000 | 93 | 83 | 80 | 66 | 78 | 97 | 92 | 87 | 84 | 88 |
| Less than 1200 | 96 | 89 | 85 | 76 | 85 | 99 | 96 | 92 | 89 | 93 |
| Less than 1400 | 99 | 92 | 88 | 82 | 89 | 99 | 99 | 94 | 92 | 95 |
| Less than 1600 | 99 | 93 | 90 | 87 | 91 | 99 | 99 | 97 | 93 | 96 |
| Less than 1800 | 99 | 95 | 92 | 88 | 93 | 99 | 99 | 97 | 94 | 97 |
| Less than 2000 | 99 | 97 | 94 | 90 | 94 | 99 | 99 | 98 | 95 | 97 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 560 | 724 | 989 | 1145 | 911 | 467 | 587 | 675 | 816 | 671 |
| Median | 489 | 585 | 670 | 789 | 660 | 393 | 510 | 571 | 635 | 549 |
| Lower 2.5 percentile | 162 | 219 | 235 | 271 | 219 | 127 | 132 | 170 | 222 | 171 |
| Upper 2.5 percentile | 1218 | 2412 | 4287 | 5382 | 4124 | 1076 | 1270 | 1878 | 3713 | 2103 |
| Standard deviation | 351 | 525 | 1353 | 1269 | 1083 | 347 | 692 | 507 | 766 | 633 |

## Table 2.10

## Average daily intake of vitamin A (retinol equivalents) as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 83 | 70 | 51.6 | *108* | 80 | 70 | 50.2 | *108* |
| 25–34 | 122 | 92 | 101.6 | *219* | 103 | 84 | 74.9 | *219* |
| 35–49 | 153 | 102 | 197.1 | *253* | 141 | 96 | 193.3 | *253* |
| 50–64 | 185 | 124 | 191.2 | *253* | 164 | 112 | 181.3 | *253* |
| All | 145 | 100 | 164.4 | *833* | 130 | 94 | 154.7 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 98 | 70 | 99.1 | *104* | 78 | 66 | 57.8 | *104* |
| 25–34 | 106 | 90 | 119.6 | *210* | 98 | 85 | 115.4 | *210* |
| 35–49 | 134 | 104 | 104.8 | *318* | 112 | 95 | 84.5 | *318* |
| 50–64 | 169 | 126 | 139.6 | *259* | 136 | 106 | 127.6 | *259* |
| All | 133 | 101 | 121.5 | *891* | 112 | 92 | 105.5 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 2.11

## Percentage contribution of food types to average daily intake of vitamin A (retinol equivalents) by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 13 | 9 | 6 | 5 | 7 | 11 | 10 | 7 | 7 | 8 | 7 |
| *of which:* | | | | | | | | | | | |
| *pizza* | *6* | *3* | *1* | *1* | *2* | *3* | *2* | *1* | *1* | *1* | *2* |
| *buns, cakes & pastries* | *3* | *3* | *2* | *2* | *2* | *1* | *3* | *3* | *3* | *3* | *2* |
| Milk & milk products | 15 | 17 | 14 | 12 | 14 | 19 | 16 | 15 | 13 | 15 | 14 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *1* | *3* | *2* | *2* | *2* | *4* | *3* | *3* | *2* | *2* | *2* |
| *reduced fat milk* | *4* | *3* | *3* | *2* | *3* | *3* | *3* | *4* | *3* | *3* | *3* |
| *cheese* | *9* | *8* | *6* | *5* | *6* | *8* | *8* | *6* | *5* | *6* | *6* |
| Eggs & egg dishes | 6 | 5 | 4 | 4 | 5 | 5 | 4 | 5 | 5 | 5 | 5 |
| Fat spreads | 16 | 11 | 9 | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 10 |
| *of which:* | | | | | | | | | | | |
| *butter* | *6* | *3* | *4* | *4* | *4* | *3* | *3* | *4* | *4* | *4* | *4* |
| *soft margarine, not polyunsaturated* | *2* | *2* | *1* | *1* | *1* | *1* | *1* | *1* | *1* | *1* | *1* |
| *polyunsaturated low fat spread* | *2* | *2* | *1* | *1* | *1* | *1* | *2* | *1* | *1* | *1* | *1* |
| *polyunsaturated reduced fat spread* | *2* | *1* | *1* | *1* | *1* | *0* | *1* | *1* | *1* | *1* | *1* |
| *other reduced fat spread* | *3* | *3* | *2* | *1* | *2* | *3* | *1* | *2* | *1* | *1* | *2* |
| Meat & meat products | 16 | 25 | 38 | 38 | 34 | 16 | 18 | 21 | 26 | 22 | 28 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *6* | *3* | *3* | *2* | *3* | *4* | *3* | *3* | *2* | *3* | *3* |
| *chicken, turkey & dishes including coated* | *2* | *3* | *2* | *1* | *2* | *2* | *3* | *3* | *2* | *2* | *2* |
| *liver, liver products & dishes* | *6* | *15* | *31* | *32* | *26* | *9* | *11* | *13* | *21* | *15* | *21* |
| Fish & fish dishes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| Vegetables (excluding potatoes) | 21 | 24 | 22 | 23 | 23 | 28 | 32 | 33 | 31 | 32 | 27 |
| *of which:* | | | | | | | | | | | |
| *raw carrots* | *1* | *2* | *2* | *2* | *2* | *4* | *3* | *3* | *2* | *3* | *2* |
| *raw tomatoes* | *1* | *2* | *2* | *2* | *2* | *2* | *3* | *3* | *3* | *3* | *2* |
| *carrots - not raw* | *12* | *12* | *10* | *11* | *11* | *12* | *12* | *14* | *16* | *14* | *12* |
| Potatoes & savoury snacks | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| Fruit & nuts | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 |
| Sugars, preserves & confectionery | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Drinks* | 6 | 2 | 2 | 1 | 2 | 4 | 2 | 2 | 1 | 2 | 2 |
| Miscellaneous** | 3 | 4 | 3 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 4 |
| **Average daily intake (µg)** | **560** | **724** | **989** | **1145** | **911** | **467** | **587** | **675** | **816** | **671** | **787** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 2.12

## Average daily intake of thiamin (mg) by sex and age of respondent

Cumulative percentages

| Thiamin (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 0.70 | 3 | 0 | 2 | 1 | 1 | 5 | 6 | 6 | 4 | 5 |
| Less than 0.80 | 12 | 2 | 5 | 3 | 5 | 14 | 17 | 10 | 9 | 12 |
| Less than 1.00 | 26 | 11 | 9 | 8 | 11 | 26 | 27 | 23 | 20 | 24 |
| Less than 1.30 | 32 | 20 | 20 | 16 | 20 | 51 | 47 | 37 | 31 | 39 |
| Less than 1.50 | 36 | 34 | 25 | 24 | 28 | 67 | 61 | 48 | 44 | 52 |
| Less than 1.70 | 51 | 47 | 35 | 38 | 41 | 73 | 71 | 63 | 56 | 64 |
| Less than 1.90 | 67 | 55 | 49 | 46 | 52 | 82 | 81 | 76 | 67 | 75 |
| Less than 2.10 | 81 | 65 | 61 | 56 | 63 | 85 | 86 | 81 | 73 | 80 |
| Less than 2.30 | 88 | 71 | 74 | 64 | 72 | 88 | 89 | 86 | 80 | 85 |
| Less than 2.50 | 93 | 76 | 79 | 74 | 79 | 89 | 92 | 89 | 83 | 88 |
| Less than 2.70 | 95 | 81 | 86 | 81 | 84 | 90 | 93 | 92 | 87 | 91 |
| Less than 3.00 | 100 | 87 | 91 | 85 | 89 | 91 | 95 | 94 | 91 | 93 |
| All | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1.62 | 2.32 | 2.26 | 2.35 | 2.22 | 1.58 | 1.62 | 1.97 | 2.33 | 1.94 |
| Median | 1.67 | 1.78 | 1.92 | 1.96 | 1.86 | 1.29 | 1.36 | 1.52 | 1.62 | 1.46 |
| Lower 2.5 percentile | 0.64 | 0.90 | 0.78 | 0.84 | 0.82 | 0.47 | 0.53 | 0.54 | 0.64 | 0.56 |
| Upper 2.5 percentile | 2.75 | 5.87 | 5.28 | 5.38 | 5.38 | 5.31 | 5.70 | 3.81 | 6.64 | 5.17 |
| Standard deviation | 0.570 | 2.624 | 2.551 | 3.132 | 2.615 | 0.961 | 1.344 | 5.688 | 6.560 | 4.958 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 0.70 | 3 | 0 | 2 | 2 | 2 | 5 | 6 | 6 | 4 | 5 |
| Less than 0.80 | 12 | 2 | 5 | 4 | 5 | 18 | 18 | 11 | 10 | 13 |
| Less than 1.00 | 26 | 11 | 10 | 10 | 12 | 30 | 30 | 26 | 22 | 26 |
| Less than 1.30 | 32 | 21 | 21 | 18 | 22 | 55 | 49 | 40 | 35 | 43 |
| Less than 1.50 | 36 | 36 | 26 | 26 | 30 | 71 | 64 | 53 | 53 | 58 |
| Less than 1.70 | 52 | 51 | 36 | 41 | 44 | 78 | 75 | 71 | 69 | 72 |
| Less than 1.90 | 72 | 60 | 51 | 50 | 56 | 87 | 85 | 85 | 79 | 84 |
| Less than 2.10 | 82 | 71 | 64 | 61 | 67 | 90 | 89 | 91 | 86 | 89 |
| Less than 2.30 | 89 | 79 | 78 | 69 | 77 | 94 | 92 | 95 | 91 | 93 |
| Less than 2.50 | 96 | 84 | 84 | 78 | 84 | 95 | 94 | 97 | 93 | 95 |
| Less than 2.70 | 97 | 89 | 90 | 85 | 89 | 95 | 95 | 98 | 94 | 96 |
| Less than 3.00 | 100 | 92 | 95 | 91 | 93 | 95 | 96 | 98 | 96 | 97 |
| All | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1.60 | 2.08 | 2.04 | 2.07 | 2.00 | 1.45 | 1.55 | 1.52 | 1.60 | 1.54 |
| Median | 1.67 | 1.69 | 1.89 | 1.89 | 1.78 | 1.25 | 1.32 | 1.47 | 1.44 | 1.40 |
| Lower 2.5 percentile | 0.64 | 0.90 | 0.78 | 0.77 | 0.79 | 0.47 | 0.53 | 0.54 | 0.63 | 0.54 |
| Upper 2.5 percentile | 2.74 | 5.12 | 3.59 | 4.99 | 4.00 | 4.11 | 4.40 | 2.59 | 3.82 | 3.90 |
| Standard deviation | 0.555 | 2.263 | 1.620 | 1.263 | 1.638 | 0.781 | 1.288 | 0.970 | 0.864 | 1.007 |

## Table 2.13

### Average daily intake of thiamin as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 162 | 167 | 57.0 | *108* | 160 | 167 | 55.5 | *108* |
| 25–34 | 232 | 178 | 262.4 | *219* | 232 | 178 | 262.4 | *219* |
| 35–49 | 226 | 193 | 255.1 | *253* | 204 | 189 | 162.0 | *253* |
| 50–64 | 261 | 218 | 347.9 | *253* | 230 | 211 | 140.4 | *253* |
| All | 230 | 191 | 275.1 | *833* | 214 | 188 | 181.5 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 198 | 161 | 120.2 | *104* | 181 | 157 | 97.6 | *104* |
| 25–34 | 202 | 170 | 167.9 | *210* | 194 | 165 | 160.9 | *210* |
| 35–49 | 246 | 190 | 711.0 | *318* | 190 | 183 | 121.2 | *318* |
| 50–64 | 291 | 203 | 820.0 | *259* | 200 | 180 | 107.9 | *259* |
| All | 243 | 182 | 619.8 | *891* | 193 | 175 | 125.9 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 2.14

### Percentage contribution of food types to average daily intake of thiamin by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 37 | 33 | 35 | 34 | 35 | 32 | 32 | 34 | 35 | 34 | 34 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *12* | *9* | *10* | *9* | *10* | *10* | *8* | *8* | *7* | *8* | *9* |
| *wholemeal bread* | *1* | *2* | *2* | *3* | *2* | *1* | *2* | *2* | *3* | *2* | *2* |
| *soft grain bread and other bread* | *3* | *3* | *3* | *4* | *3* | *3* | *3* | *3* | *3* | *3* | *3* |
| *whole grain and high fibre breakfast cereals* | *5* | *8* | *8* | *8* | *8* | *6* | *5* | *9* | *11* | *8* | *8* |
| *other breakfast cereals* | *8* | *5* | *6* | *5* | *6* | *7* | *7* | *6* | *5* | *6* | *6* |
| Milk & milk products | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 7 | 7 | 7 | 6 |
| Eggs & egg dishes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 26 | 22 | 23 | 23 | 23 | 19 | 16 | 19 | 18 | 18 | 21 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *9* | *7* | *8* | *9* | *8* | *6* | *6* | *6* | *6* | *6* | *7* |
| *pork & dishes* | *2* | *3* | *4* | *4* | *4* | *2* | *2* | *3* | *3* | *3* | *3* |
| *chicken, turkey & dishes including coated* | *4* | *5* | *5* | *3* | *4* | *4* | *4* | *5* | *3* | *4* | *4* |
| Fish & fish dishes | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 1 |
| Vegetables (excluding potatoes) | 6 | 18 | 14 | 15 | 15 | 16 | 23 | 15 | 14 | 17 | 15 |
| Potatoes and savoury snacks | 17 | 12 | 12 | 12 | 13 | 18 | 13 | 13 | 12 | 13 | 13 |
| *of which:* | | | | | | | | | | | |
| *potato chips* | *8* | *5* | *4* | *3* | *4* | *7* | *4* | *3* | *3* | *4* | *4* |
| Fruit & nuts | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 4 | 3 | 3 |
| Sugars, preserves & confectionery | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| Drinks* | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 |
| Miscellaneous** | 4 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |
| **Average daily intake (mg)** | **1.60** | **2.08** | **2.04** | **2.07** | **2.00** | **1.45** | **1.55** | **1.52** | **1.60** | **1.54** | **1.77** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 2.15

### Average daily intake of riboflavin (mg) by sex and age of respondent

Cumulative percentages

| Riboflavin (mg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 0.80 | 7 | 1 | 2 | 2 | 2 | 13 | 10 | 5 | 5 | 7 |
| Less than 1.00 | 12 | 5 | 4 | 6 | 6 | 33 | 20 | 12 | 11 | 16 |
| Less than 1.10 | 33 | 10 | 9 | 9 | 12 | 43 | 36 | 21 | 18 | 26 |
| Less than 1.30 | 40 | 17 | 17 | 14 | 19 | 52 | 48 | 32 | 28 | 37 |
| Less than 1.60 | 52 | 30 | 28 | 23 | 30 | 64 | 60 | 46 | 39 | 49 |
| Less than 1.80 | 62 | 41 | 35 | 30 | 39 | 73 | 73 | 56 | 46 | 59 |
| Less than 2.00 | 71 | 49 | 46 | 41 | 49 | 76 | 82 | 67 | 57 | 69 |
| Less than 2.20 | 79 | 57 | 52 | 51 | 57 | 83 | 88 | 75 | 65 | 76 |
| Less than 2.40 | 82 | 65 | 62 | 61 | 65 | 86 | 91 | 81 | 70 | 81 |
| Less than 2.60 | 88 | 74 | 70 | 67 | 73 | 86 | 94 | 85 | 78 | 85 |
| Less than 2.80 | 90 | 76 | 75 | 72 | 76 | 88 | 95 | 86 | 83 | 88 |
| Less than 3.00 | 90 | 81 | 81 | 77 | 81 | 93 | 97 | 89 | 85 | 90 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1.71 | 2.40 | 2.35 | 2.51 | 2.33 | 1.53 | 1.52 | 2.13 | 2.48 | 2.02 |
| Median | 1.56 | 2.03 | 2.11 | 2.16 | 2.02 | 1.31 | 1.41 | 1.69 | 1.85 | 1.62 |
| Lower 2.5 percentile | 0.47 | 0.90 | 0.88 | 0.85 | 0.80 | 0.51 | 0.56 | 0.65 | 0.70 | 0.60 |
| Upper 2.5 percentile | 3.81 | 5.13 | 4.56 | 4.82 | 4.77 | 3.56 | 3.34 | 3.95 | 4.22 | 3.91 |
| Standard deviation | 0.803 | 2.216 | 1.838 | 3.698 | 2.568 | 0.806 | 0.636 | 5.486 | 6.585 | 4.856 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 0.80 | 8 | 1 | 2 | 3 | 3 | 15 | 10 | 5 | 6 | 8 |
| Less than 1.00 | 15 | 5 | 4 | 6 | 7 | 33 | 21 | 12 | 13 | 17 |
| Less than 1.10 | 33 | 11 | 9 | 10 | 13 | 45 | 38 | 22 | 21 | 28 |
| Less than 1.30 | 40 | 18 | 17 | 15 | 20 | 54 | 53 | 35 | 33 | 41 |
| Less than 1.60 | 52 | 34 | 28 | 25 | 32 | 70 | 65 | 50 | 45 | 54 |
| Less than 1.80 | 62 | 45 | 35 | 33 | 41 | 80 | 78 | 62 | 56 | 66 |
| Less than 2.00 | 71 | 53 | 48 | 44 | 51 | 83 | 86 | 75 | 69 | 77 |
| Less than 2.20 | 79 | 62 | 54 | 55 | 60 | 90 | 92 | 84 | 77 | 85 |
| Less than 2.40 | 83 | 70 | 64 | 66 | 68 | 94 | 94 | 90 | 84 | 90 |
| Less than 2.60 | 89 | 79 | 72 | 72 | 76 | 95 | 97 | 93 | 91 | 93 |
| Less than 2.80 | 91 | 83 | 77 | 77 | 80 | 97 | 97 | 95 | 94 | 95 |
| Less than 3.00 | 91 | 87 | 84 | 83 | 85 | 99 | 98 | 96 | 96 | 97 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1.68 | 2.12 | 2.19 | 2.20 | 2.11 | 1.39 | 1.44 | 1.66 | 1.75 | 1.60 |
| Median | 1.56 | 1.91 | 2.07 | 2.06 | 1.98 | 1.25 | 1.35 | 1.60 | 1.68 | 1.54 |
| Lower 2.5 percentile | 0.47 | 0.90 | 0.87 | 0.79 | 0.79 | 0.51 | 0.56 | 0.64 | 0.70 | 0.59 |
| Upper 2.5 percentile | 3.81 | 4.00 | 3.97 | 4.21 | 3.92 | 2.87 | 2.81 | 3.10 | 3.25 | 3.09 |
| Standard deviation | 0.780 | 1.097 | 0.894 | 0.847 | 0.939 | 0.636 | 0.546 | 0.614 | 0.688 | 0.638 |

## Table 2.16

## Average daily intake of riboflavin as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 132 | 120 | 61.8 | *108* | 129 | 120 | 60.0 | *108* |
| 25–34 | 185 | 156 | 170.5 | *219* | 163 | 147 | 84.4 | *219* |
| 35–49 | 181 | 163 | 141.4 | *253* | 168 | 159 | 68.8 | *253* |
| 50–64 | 193 | 166 | 284.4 | 253 | 169 | 159 | 65.2 | *253* |
| All | 179 | 156 | 197.5 | *833* | 162 | 152 | 72.2 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 139 | 120 | 73.3 | *104* | 126 | 113 | 57.8 | *104* |
| 25–34 | 138 | 128 | 57.8 | *210* | 131 | 122 | 49.6 | *210* |
| 35–49 | 194 | 153 | 498.7 | *318* | 151 | 145 | 55.8 | *318* |
| 50–64 | 225 | 168 | 598.6 | *259* | 159 | 153 | 62.5 | *259* |
| All | 183 | 147 | 441.5 | *891* | 146 | 140 | 58.0 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

# Table 2.17

## Percentage contribution of food types to average daily intake of riboflavin by sex and age of respondent

Percentages

| Type of food | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 25 | 25 | 23 | 22 | 23 | 25 | 25 | 24 | 25 | 25 | 24 |
| *of which:* | | | | | | | | | | | |
| *whole grain and high fibre breakfast cereals* | *5* | *11* | *9* | *9* | *9* | *7* | *7* | *9* | *12* | *9* | *9* |
| *other breakfast cereals* | *8* | *5* | *5* | *5* | *5* | *8* | *8* | *6* | *6* | *6* | *6* |
| Milk & milk products | 24 | 30 | 32 | 31 | 30 | 34 | 34 | 36 | 36 | 36 | 33 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *3* | *6* | *6* | *6* | *6* | *8* | *7* | *6* | *4* | *6* | *6* |
| *semi-skimmed milk* | *15* | *14* | *17* | *15* | *15* | *13* | *16* | *17* | *17* | *16* | *16* |
| *skimmed milk* | *1* | *3* | *2* | *3* | *2* | *4* | *3* | *5* | *6* | *5* | *4* |
| *cheese* | *3* | *3* | *3* | *3* | *3* | *3* | *4* | *3* | *3* | *3* | *3* |
| *yogurt* | *1* | *2* | *2* | *2* | *2* | *2* | *3* | *3* | *3* | *3* | *2* |
| Eggs & egg dishes | 4 | 4 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 4 | 4 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 18 | 15 | 17 | 16 | 16 | 14 | 12 | 13 | 13 | 13 | 15 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *4* | *4* | *3* | *3* | *3* | *4* | *3* | *3* | *3* | *3* | *3* |
| *chicken, turkey & dishes including coated* | *5* | *4* | *4* | *3* | *4* | *4* | *4* | *4* | *3* | *4* | *4* |
| *liver, liver products & dishes* | *0* | *1* | *3* | *3* | *2* | *1* | *1* | *1* | *2* | *1* | *2* |
| Fish & fish dishes | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Vegetables (excluding potatoes) | 3 | 3 | 4 | 4 | 4 | 5 | 6 | 4 | 4 | 5 | 4 |
| Potatoes & savoury snacks | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| Fruit & nuts | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Sugars, preserves & confectionery | 3 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 1 | 2 | 2 |
| Drinks* | 12 | 13 | 11 | 12 | 12 | 7 | 6 | 7 | 6 | 6 | 10 |
| *of which:* | | | | | | | | | | | |
| *beer & lager* | *9* | *9* | *7* | *6* | *7* | *3* | *2* | *1* | *0* | *1* | *5* |
| *tea* | *2* | *2* | *3* | *4* | *3* | *2* | *3* | *4* | *4* | *3* | *3* |
| Miscellaneous** | 5 | 3 | 2 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 |
| **Average daily intake (mg)** | **1.68** | **2.12** | **2.19** | **2.20** | **2.11** | **1.39** | **1.44** | **1.66** | **1.75** | **1.60** | **1.85** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

Table 2.18

## Average daily intake of niacin equivalents (mg) by sex and age of respondent

Cumulative percentages

| Niacin equivalents (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 12 | - | - | 0 | 0 | 0 | 4 | - | 1 | 1 | 1 |
| Less than 13 | - | - | 0 | 0 | 0 | 4 | 1 | 2 | 1 | 2 |
| Less than 16 | 2 | - | 1 | 1 | 1 | 7 | 8 | 4 | 3 | 5 |
| Less than 17 | 2 | - | 2 | 1 | 1 | 7 | 9 | 4 | 4 | 6 |
| Less than 21 | 4 | - | 3 | 2 | 2 | 15 | 18 | 10 | 7 | 12 |
| Less than 28 | 17 | 12 | 8 | 8 | 10 | 40 | 49 | 33 | 25 | 35 |
| Less than 35 | 35 | 21 | 21 | 24 | 24 | 65 | 76 | 59 | 56 | 63 |
| Less than 42 | 59 | 41 | 37 | 41 | 42 | 85 | 90 | 81 | 78 | 83 |
| Less than 49 | 80 | 64 | 60 | 63 | 64 | 95 | 96 | 91 | 91 | 93 |
| Less than 56 | 91 | 77 | 75 | 78 | 79 | 99 | 100 | 96 | 96 | 97 |
| Less than 63 | 98 | 86 | 88 | 89 | 89 | 100 | | 98 | 98 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 39.7 | 49.2 | 47.0 | 46.2 | 46.4 | 31.1 | 29.3 | 33.7 | 35.1 | 32.8 |
| Median | 39.8 | 45.0 | 46.5 | 44.7 | 44.5 | 32.1 | 28.8 | 32.8 | 33.9 | 32.1 |
| Lower 2.5 percentile | 17.1 | 23.6 | 19.5 | 19.9 | 21.4 | 10.5 | 13.6 | 14.2 | 13.8 | 13.6 |
| Upper 2.5 percentile | 62.1 | 83.9 | 83.8 | 79.5 | 81.8 | 55.7 | 51.4 | 60.9 | 60.4 | 57.2 |
| Standard deviation | 11.73 | 29.50 | 15.76 | 14.54 | 19.83 | 10.49 | 9.48 | 12.22 | 12.35 | 11.67 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 12 | - | - | 0 | 0 | 0 | 4 | - | 1 | 1 | 1 |
| Less than 13 | - | - | 0 | 0 | 0 | 4 | 1 | 2 | 1 | 2 |
| Less than 16 | 2 | - | 1 | 1 | 1 | 7 | 8 | 4 | 3 | 5 |
| Less than 17 | 2 | - | 2 | 1 | 1 | 7 | 9 | 5 | 4 | 6 |
| Less than 21 | 4 | - | 3 | 3 | 2 | 16 | 19 | 11 | 8 | 13 |
| Less than 28 | 17 | 12 | 8 | 10 | 11 | 46 | 51 | 36 | 30 | 39 |
| Less than 35 | 35 | 23 | 21 | 26 | 25 | 71 | 79 | 66 | 66 | 70 |
| Less than 42 | 59 | 43 | 39 | 45 | 44 | 90 | 91 | 88 | 87 | 89 |
| Less than 49 | 80 | 68 | 61 | 66 | 67 | 98 | 96 | 97 | 96 | 97 |
| Less than 56 | 91 | 83 | 76 | 82 | 82 | 100 | 100 | 99 | 99 | 100 |
| Less than 63 | 98 | 91 | 90 | 90 | 91 | | | 100 | 100 | |
| All | 100 | 100 | 100 | 100 | 100 | | | | | |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 39.4 | 46.2 | 45.9 | 44.6 | 44.7 | 29.5 | 28.8 | 31.5 | 32.3 | 30.9 |
| Median | 37.9 | 44.5 | 46.2 | 44.2 | 44.2 | 29.3 | 27.9 | 31.1 | 31.9 | 30.4 |
| Lower 2.5 percentile | 17.1 | 23.6 | 19.5 | 19.8 | 21.4 | 10.5 | 13.6 | 14.1 | 13.8 | 13.6 |
| Upper 2.5 percentile | 62.1 | 82.5 | 74.7 | 74.3 | 74.1 | 47.3 | 50.9 | 50.1 | 52.7 | 50.3 |
| Standard deviation | 11.46 | 18.17 | 13.40 | 13.43 | 14.73 | 9.61 | 9.16 | 9.09 | 8.85 | 9.20 |

## Table 2.19

## Average daily intake of niacin equivalents as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 233 | 234 | 69.0 | *108* | 232 | 223 | 67.4 | *108* |
| 25–34 | 289 | 265 | 173.5 | *219* | 272 | 262 | 106.9 | *219* |
| 35–49 | 277 | 273 | 92.7 | *253* | 270 | 271 | 78.8 | *253* |
| 50–64 | 289 | 280 | 90.9 | *253* | 279 | 276 | 83.9 | *253* |
| All | 278 | 266 | 118.1 | *833* | 268 | 263 | 88.3 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 259 | 268 | 87.5 | *104* | 246 | 245 | 80.1 | *104* |
| 25–34 | 245 | 240 | 79.0 | *210* | 240 | 233 | 76.3 | *210* |
| 35–49 | 281 | 273 | 101.8 | *318* | 263 | 259 | 75.7 | *318* |
| 50–64 | 292 | 282 | 102.9 | *259* | 270 | 266 | 73.8 | *259* |
| All | 273 | 267 | 97.2 | *891* | 257 | 254 | 76.6 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

# Table 2.20

## Percentage contribution of food types to average daily intake of niacin equivalents by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 26 | 26 | 26 | 26 | 26 | 26 | 29 | 28 | 28 | 28 | 27 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *8* | *7* | *7* | *7* | *7* | *7* | *7* | *6* | *5* | *6* | *7* |
| *wholemeal bread* | *1* | *2* | *3* | *3* | *2* | *1* | *3* | *3* | *3* | *3* | *2* |
| *soft grain bread and other bread* | *2* | *2* | *2* | *3* | *2* | *3* | *3* | *2* | *2* | *3* | *2* |
| *whole grain & high fibre breakfast cereals* | *3* | *6* | *5* | *6* | *5* | *4* | *4* | *7* | *8* | *6* | *6* |
| *other breakfast cereals* | *4* | *3* | *4* | *3* | *3* | *5* | *5* | *4* | *4* | *4* | *4* |
| Milk & milk products | 6 | 7 | 7 | 8 | 7 | 8 | 9 | 9 | 9 | 9 | 8 |
| *of which:* | | | | | | | | | | | |
| *milk* | *3* | *4* | *4* | *4* | *4* | *4* | *5* | *5* | *5* | *5* | *4* |
| *cheese* | *8* | *11* | *12* | *12* | *11* | *12* | *13* | *14* | *15* | *14* | *12* |
| Eggs & egg dishes | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 39 | 36 | 36 | 34 | 36 | 36 | 32 | 33 | 31 | 33 | 34 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *5* | *4* | *4* | *5* | *5* | *3* | *4* | *3* | *4* | *4* | *4* |
| *beef, veal & dishes* | *6* | *6* | *6* | *6* | *6* | *7* | *5* | *6* | *5* | *6* | *6* |
| *chicken, turkey & dishes including coated* | *16* | *16* | *15* | *12* | *15* | *17* | *17* | *16* | *14* | *15* | *15* |
| Fish & fish dishes | 3 | 4 | 6 | 7 | 5 | 6 | 6 | 8 | 10 | 8 | 6 |
| *of which:* | | | | | | | | | | | |
| *oily fish* | *1* | *3* | *4* | *4* | *3* | *5* | *4* | *5* | *7* | *5* | *4* |
| Vegetables (excluding potatoes) | 3 | 3 | 4 | 4 | 4 | 4 | 6 | 5 | 5 | 5 | 4 |
| Potatoes and savoury snacks | 7 | 5 | 4 | 4 | 5 | 8 | 6 | 5 | 4 | 5 | 5 |
| Fruit & nuts | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Sugars, preserves & confectionery | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Drinks* | 13 | 13 | 11 | 10 | 12 | 7 | 5 | 5 | 4 | 5 | 9 |
| *of which:* | | | | | | | | | | | |
| *beer & lager* | *10* | *10* | *8* | *7* | *9* | *4* | *3* | *2* | *1* | *2* | *6* |
| *coffee* | *1* | *2* | *2* | *2* | *2* | *1* | *2* | *3* | *3* | *2* | *2* |
| Miscellaneous** | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| **Average daily intake (mg)** | **39.4** | **46.2** | **45.9** | **44.6** | **44.7** | **29.5** | **28.8** | **31.5** | **32.3** | **30.9** | **37.6** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 2.21

## Average daily intake of vitamin $B_6$ (mg) by sex and age of respondent

Cumulative percentages

| Vitamim $B_6$ (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 0.8 | - | - | 0 | - | 0 | 5 | 1 | 2 | 2 | 2 |
| Less than 1.0 | - | 0 | 1 | 1 | 1 | 8 | 5 | 4 | 3 | 5 |
| Less than 1.2 | 2 | 0 | 3 | 1 | 1 | 12 | 14 | 9 | 7 | 10 |
| Less than 1.4 | 12 | 4 | 5 | 6 | 6 | 16 | 24 | 14 | 12 | 16 |
| Less than 1.7 | 24 | 8 | 8 | 11 | 11 | 32 | 38 | 29 | 27 | 31 |
| Less than 2.0 | 24 | 16 | 16 | 17 | 17 | 51 | 56 | 46 | 37 | 46 |
| Less than 2.5 | 49 | 36 | 36 | 34 | 37 | 74 | 82 | 70 | 63 | 71 |
| Less than 3.0 | 62 | 56 | 57 | 56 | 57 | 88 | 90 | 83 | 79 | 84 |
| Less than 3.5 | 75 | 69 | 74 | 73 | 73 | 94 | 95 | 90 | 87 | 91 |
| Less than 4.0 | 88 | 81 | 83 | 85 | 84 | 96 | 96 | 94 | 92 | 94 |
| Less than 4.5 | 97 | 87 | 91 | 89 | 90 | 99 | 98 | 96 | 94 | 96 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 2.7 | 3.3 | 3.5 | 3.4 | 3.3 | 2.1 | 2.3 | 3.4 | 3.3 | 2.9 |
| Median | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 | 2.0 | 1.9 | 2.1 | 2.2 | 2.1 |
| Lower 2.5 percentile | 1.2 | 1.4 | 1.2 | 1.2 | 1.2 | 0.7 | 0.8 | 0.9 | 1.0 | 0.8 |
| Upper 2.5 percentile | 4.5 | 6.8 | 6.4 | 6.4 | 6.4 | 4.2 | 4.2 | 8.4 | 12.6 | 5.2 |
| Standard deviation | 0.96 | 2.23 | 5.05 | 4.62 | 3.96 | 0.92 | 3.20 | 9.80 | 8.34 | 7.56 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 0.8 | - | - | 0 | - | 0 | 5 | 1 | 2 | 2 | 2 |
| Less than 1.0 | - | 0 | 2 | 1 | 1 | 8 | 6 | 5 | 3 | 5 |
| Less than 1.2 | 2 | 0 | 3 | 1 | 2 | 12 | 14 | 10 | 7 | 10 |
| Less than 1.4 | 12 | 4 | 5 | 7 | 6 | 21 | 24 | 15 | 13 | 17 |
| Less than 1.7 | 24 | 8 | 8 | 12 | 11 | 36 | 39 | 31 | 31 | 33 |
| Less than 2.0 | 24 | 16 | 16 | 20 | 18 | 55 | 59 | 50 | 44 | 51 |
| Less than 2.5 | 49 | 38 | 36 | 37 | 39 | 79 | 88 | 77 | 73 | 79 |
| Less than 3.0 | 62 | 60 | 59 | 61 | 60 | 94 | 96 | 92 | 91 | 93 |
| Less than 3.5 | 78 | 75 | 77 | 78 | 77 | 98 | 98 | 97 | 95 | 97 |
| Less than 4.0 | 89 | 87 | 85 | 89 | 87 | 99 | 99 | 100 | 98 | 99 |
| Less than 4.5 | 98 | 93 | 93 | 95 | 94 | 100 | 100 | | 99 | 100 |
| All | | 100 | 100 | 100 | 100 | 100 | | | | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 2.6 | 3.0 | 2.9 | 2.8 | 2.9 | 2.0 | 1.9 | 2.0 | 2.1 | 2.0 |
| Median | 2.7 | 2.7 | 2.7 | 2.8 | 2.7 | 1.9 | 1.9 | 2.0 | 2.1 | 2.0 |
| Lower 2.5 percentile | 1.2 | 1.4 | 1.1 | 1.2 | 1.2 | 0.7 | 0.8 | 0.8 | 1.0 | 0.8 |
| Upper 2.5 percentile | 4.4 | 5.3 | 5.3 | 4.8 | 5.2 | 3.5 | 3.4 | 3.6 | 3.8 | 3.6 |
| Standard deviation | 0.94 | 1.16 | 1.00 | 0.95 | 1.03 | 0.73 | 0.64 | 0.66 | 0.73 | 0.69 |

## Table 2.22

### Average daily intake of vitamin $B_6$ as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 190 | 194 | 68.9 | *108* | 189 | 194 | 67.5 | *108* |
| 25–34 | 233 | 200 | 158.9 | *219* | 211 | 195 | 82.7 | *219* |
| 35–49 | 250 | 198 | 360.9 | *253* | 206 | 196 | 71.3 | *253* |
| 50–64 | 241 | 202 | 329.9 | *253* | 201 | 198 | 67.8 | *253* |
| All | 235 | 199 | 282.7 | *833* | 204 | 196 | 73.2 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 178 | 166 | 76.9 | *104* | 165 | 161 | 60.9 | *104* |
| 25–34 | 188 | 160 | 267.0 | *210* | 158 | 156 | 53.0 | *210* |
| 35–49 | 284 | 173 | 816.4 | *318* | 170 | 167 | 55.0 | *318* |
| 50–64 | 273 | 183 | 695.1 | *259* | 177 | 174 | 60.9 | *259* |
| All | 246 | 172 | 629.7 | *891* | 169 | 165 | 57.4 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 2.23

### Percentage contribution of food types to average daily intake of vitamin $B_6$ by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 19 | 21 | 20 | 20 | 20 | 20 | 23 | 22 | 23 | 22 | 21 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *3* | *2* | *2* | *2* | *2* | *3* | *2* | *2* | *2* | *2* | *2* |
| *wholemeal bread* | *0* | *1* | *1* | *1* | *1* | *0* | *1* | *1* | *1* | *1* | *1* |
| *soft grain bread and other bread* | *1* | *1* | *1* | *1* | *1* | *1* | *1* | *1* | *1* | *1* | *1* |
| *whole grain & high fibre breakfast cereals* | *3* | *8* | *6* | *6* | *6* | *4* | *5* | *7* | *9* | *7* | *7* |
| *other breakfast cereals* | *7* | *5* | *6* | *5* | *5* | *7* | *8* | *6* | *6* | *7* | *6* |
| Milk & milk products | 6 | 8 | 9 | 9 | 8 | 8 | 9 | 11 | 10 | 10 | 9 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *1* | *2* | *2* | *2* | *2* | *3* | *2* | *2* | *2* | *2* | *2* |
| *semi-skimmed milk* | *4* | *4* | *5* | *5* | *5* | *4* | *5* | *6* | *6* | *6* | *5* |
| *skimmed milk* | *0* | *1* | *1* | *1* | *1* | *1* | *1* | *2* | *2* | *1* | *1* |
| Eggs & egg dishes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 24 | 22 | 22 | 21 | 22 | 21 | 19 | 20 | 18 | 19 | 21 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *4* | *3* | *4* | *4* | *4* | *2* | *3* | *3* | *3* | *3* | *3* |
| *beef, veal & dishes* | *5* | *5* | *5* | *5* | *5* | *6* | *4* | *5* | *4* | *4* | *5* |
| *chicken, turkey & dishes including coated* | *9* | *9* | *9* | *7* | *8* | *9* | *8* | *8* | *7* | *8* | *8* |
| Fish & fish dishes | 1 | 2 | 3 | 4 | 3 | 3 | 3 | 4 | 6 | 4 | 4 |
| Vegetables (excluding potatoes) | 4 | 5 | 6 | 6 | 5 | 5 | 8 | 8 | 7 | 7 | 6 |
| Potatoes and savoury snacks | 23 | 18 | 18 | 18 | 19 | 27 | 21 | 19 | 19 | 20 | 19 |
| *of which:* | | | | | | | | | | | |
| *potato chips* | *12* | *7* | *7* | *6* | *7* | *11* | *8* | *6* | *5* | *6* | *7* |
| Fruit & nuts | 2 | 3 | 5 | 6 | 5 | 4 | 6 | 7 | 10 | 7 | 6 |
| Sugars, preserves & confectionery | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drinks* | 18 | 18 | 14 | 12 | 15 | 10 | 7 | 5 | 3 | 6 | 11 |
| *of which:* | | | | | | | | | | | |
| *beer & lager* | *15* | *16* | *11* | *10* | *13* | *6* | *4* | *3* | *1* | *3* | *8* |
| Miscellaneous** | 1 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| **Average daily intake (mg)** | **2.6** | **3.0** | **2.9** | **2.8** | **2.9** | **2.0** | **1.9** | **2.0** | **2.1** | **2.0** | **2.4** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 2.24

## Average daily intake of vitamin $B_{12}$ (µg) by sex and age of respondent

Cumulative percentages

| Vitamin $B_{12}$ (µg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 1.0 | 1 | - | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| Less than 1.5 | 4 | 1 | 1 | 0 | 1 | 5 | 2 | 3 | 1 | 2 |
| Less than 2.5 | 11 | 7 | 6 | 4 | 6 | 18 | 16 | 11 | 5 | 11 |
| Less than 3.5 | 28 | 14 | 12 | 9 | 14 | 47 | 49 | 21 | 19 | 30 |
| Less than 4.5 | 56 | 35 | 24 | 18 | 29 | 64 | 74 | 47 | 35 | 52 |
| Less than 5.5 | 75 | 54 | 43 | 36 | 48 | 83 | 83 | 66 | 52 | 68 |
| Less than 6.5 | 88 | 70 | 58 | 52 | 63 | 86 | 90 | 81 | 69 | 80 |
| Less than 7.5 | 95 | 78 | 72 | 67 | 75 | 96 | 96 | 88 | 80 | 88 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 4.5 | 6.2 | 7.4 | 7.6 | 6.8 | 4.1 | 4.0 | 5.5 | 6.1 | 5.1 |
| Median | 4.3 | 5.2 | 6.0 | 6.4 | 5.6 | 3.7 | 3.6 | 4.6 | 5.4 | 4.4 |
| Lower 2.5 percentile | 1.2 | 2.2 | 2.1 | 2.2 | 2.0 | 1.2 | 1.5 | 1.5 | 2.0 | 1.5 |
| Upper 2.5 percentile | 8.1 | 15.5 | 25.0 | 23.0 | 19.7 | 9.3 | 8.3 | 12.1 | 18.9 | 12.8 |
| Standard deviation | 1.67 | 4.26 | 7.25 | 6.55 | 5.93 | 2.09 | 2.17 | 6.43 | 3.66 | 4.57 |
| | cum% | cum% | cum% | cum% | cum% | cum% | cum% | cum% | cum% | cum% |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 1.0 | 1 | - | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| Less than 1.5 | 4 | 1 | 1 | 0 | 1 | 5 | 2 | 3 | 1 | 3 |
| Less than 2.5 | 11 | 7 | 6 | 4 | 6 | 20 | 17 | 12 | 6 | 12 |
| Less than 3.5 | 28 | 16 | 12 | 9 | 14 | 47 | 50 | 22 | 22 | 32 |
| Less than 4.5 | 56 | 38 | 25 | 20 | 31 | 66 | 76 | 52 | 40 | 56 |
| Less than 5.5 | 75 | 56 | 44 | 39 | 50 | 85 | 84 | 69 | 57 | 71 |
| Less than 6.5 | 88 | 70 | 60 | 55 | 65 | 88 | 90 | 83 | 73 | 82 |
| Less than 7.5 | 97 | 80 | 73 | 70 | 77 | 97 | 96 | 90 | 84 | 91 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 4.4 | 5.9 | 7.0 | 7.3 | 6.5 | 4.0 | 4.0 | 4.9 | 5.7 | 4.8 |
| Median | 4.3 | 5.1 | 5.9 | 6.2 | 5.5 | 3.7 | 3.4 | 4.5 | 5.1 | 4.3 |
| Lower 2.5 percentile | 1.2 | 2.2 | 2.1 | 2.2 | 2.0 | 1.2 | 1.5 | 1.4 | 2.0 | 1.5 |
| Upper 2.5 percentile | 7.5 | 15.5 | 20.4 | 23.0 | 19.6 | 9.3 | 8.3 | 10.6 | 14.4 | 10.7 |
| Standard deviation | 1.62 | 3.42 | 5.42 | 5.40 | 4.69 | 2.00 | 2.17 | 2.50 | 3.22 | 2.69 |

## Table 2.25

## Average daily intake of vitamin $B_{12}$ as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 298 | 287 | 111.3 | *108* | 296 | 287 | 108.0 | *108* |
| 25–34 | 410 | 347 | 283.9 | *219* | 395 | 341 | 227.8 | *219* |
| 35–49 | 491 | 399 | 483.6 | *253* | 465 | 397 | 361.1 | *253* |
| 50–64 | 508 | 427 | 436.4 | *253* | 485 | 412 | 359.7 | *253* |
| All | 450 | 377 | 395.1 | *833* | 431 | 369 | 312.5 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 272 | 248 | 139.3 | *104* | 266 | 248 | 133.3 | *104* |
| 25–34 | 268 | 239 | 144.4 | *210* | 264 | 229 | 144.8 | *210* |
| 35–49 | 363 | 308 | 428.4 | *318* | 325 | 298 | 166.4 | *318* |
| 50–64 | 406 | 357 | 243.7 | *259* | 378 | 340 | 214.7 | *259* |
| All | 342 | 294 | 304.8 | *891* | 319 | 286 | 179.6 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 2.26

# Percentage contribution of food types to average daily intake of vitamin $B_{12}$ by sex and age of respondent

Percentages

| **Type of food** | **Men aged (years):** | | | | **All men** | **Women aged (years):** | | | | **All women** | **All** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 11 | 9 | 6 | 6 | 7 | 8 | 8 | 7 | 7 | 7 | 7 |
| Milk & milk products | 30 | 37 | 34 | 31 | 33 | 38 | 41 | 41 | 36 | 39 | 36 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *3* | *7* | *6* | *5* | *6* | *9* | *8* | *7* | *4* | *6* | *6* |
| *semi-skimmed milk* | *18* | *17* | *18* | *16* | *17* | *15* | *19* | *20* | *18* | *18* | *18* |
| *skimmed milk* | *1* | *4* | *2* | *3* | *3* | *5* | *4* | *6* | *7* | *6* | *4* |
| *cheese* | *6* | *6* | *5* | *5* | *5* | *5* | *7* | *5* | *5* | *5* | *5* |
| Eggs & egg dishes | 8 | 7 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 6 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 39 | 32 | 34 | 34 | 34 | 29 | 23 | 24 | 25 | 24 | 30 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *11* | *9* | *8* | *7* | *8* | *10* | *7* | *8* | *7* | *8* | *8* |
| *liver, liver products & dishes* | *1* | *5* | *12* | *13* | *10* | *2* | *3* | *4* | *8* | *5* | *8* |
| *burgers & kebabs* | *10* | *5* | *2* | *1* | *3* | *6* | *3* | *2* | *1* | *2* | *3* |
| *sausages* | *4* | *2* | *2* | *1* | *2* | *2* | *2* | *1* | *1* | *1* | *2* |
| Fish & fish dishes | 8 | 12 | 18 | 19 | 16 | 16 | 19 | 21 | 26 | 22 | 18 |
| *of which:* | | | | | | | | | | | |
| *shellfish* | *2* | *2* | *5* | *3* | *3* | *5* | *6* | *5* | *5* | *5* | *4* |
| *oily fish* | *2* | *7* | *10* | *12* | *9* | *9* | *10* | *13* | *16* | *13* | *11* |
| Vegetables (excluding potatoes) | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| Potatoes & savoury snacks | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fruit & nuts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sugars, preserves & confectionery | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| Drinks* | 1 | 1 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Miscellaneous** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Average daily intake (µg)** | **4.4** | **5.9** | **7.0** | **7.3** | **6.5** | **4.0** | **4.0** | **4.9** | **5.7** | **4.8** | **5.6** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 2.27

### Average daily intake of folate (µg) by sex and age of respondent

Cumulative percentages

| Folate (µg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 100 | 2 | - | 0 | - | 0 | 3 | 2 | 1 | 2 | 2 |
| Less than 150 | 5 | 1 | 4 | 3 | 3 | 23 | 15 | 11 | 8 | 12 |
| Less than 200 | 14 | 14 | 8 | 10 | 11 | 35 | 35 | 26 | 22 | 28 |
| Less than 250 | 28 | 19 | 21 | 18 | 20 | 59 | 57 | 46 | 37 | 48 |
| Less than 300 | 61 | 40 | 39 | 35 | 41 | 76 | 75 | 67 | 60 | 68 |
| Less than 350 | 72 | 53 | 56 | 49 | 55 | 84 | 86 | 80 | 76 | 81 |
| Less than 400 | 76 | 65 | 69 | 66 | 68 | 86 | 92 | 84 | 81 | 86 |
| Less than 450 | 89 | 73 | 79 | 76 | 78 | 95 | 97 | 89 | 89 | 92 |
| Less than 500 | 92 | 83 | 86 | 83 | 85 | 97 | 98 | 94 | 92 | 95 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 305 | 376 | 355 | 373 | 359 | 248 | 249 | 280 | 359 | 292 |
| Median | 275 | 341 | 330 | 354 | 333 | 232 | 233 | 258 | 275 | 255 |
| Lower 2.5 percentile | 106 | 169 | 136 | 142 | 144 | 91 | 98 | 111 | 114 | 102 |
| Upper 2.5 percentile | 565 | 680 | 633 | 754 | 680 | 517 | 473 | 551 | 572 | 554 |
| Standard deviation | 113.7 | 223.6 | 171.2 | 150.8 | 176.2 | 109.2 | 113.2 | 123.4 | 916.9 | 505.2 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 100 | 2 | - | 0 | - | 0 | 3 | 2 | 2 | 2 | 2 |
| Less than 150 | 5 | 1 | 4 | 4 | 3 | 24 | 15 | 12 | 10 | 13 |
| Less than 200 | 14 | 14 | 9 | 10 | 11 | 40 | 36 | 28 | 25 | 30 |
| Less than 250 | 32 | 20 | 22 | 18 | 21 | 65 | 60 | 50 | 43 | 52 |
| Less than 300 | 61 | 43 | 39 | 36 | 42 | 82 | 79 | 72 | 67 | 74 |
| Less than 350 | 72 | 57 | 58 | 50 | 57 | 93 | 90 | 87 | 84 | 87 |
| Less than 400 | 76 | 70 | 72 | 68 | 71 | 95 | 97 | 93 | 89 | 93 |
| Less than 450 | 89 | 78 | 82 | 79 | 81 | 99 | 100 | 97 | 96 | 97 |
| Less than 500 | 94 | 89 | 89 | 86 | 89 | 99 | | 100 | 98 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | | | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 301 | 346 | 343 | 361 | 344 | 229 | 233 | 255 | 268 | 251 |
| Median | 275 | 326 | 327 | 349 | 327 | 225 | 229 | 251 | 267 | 245 |
| Lower 2.5 percentile | 106 | 169 | 133 | 141 | 141 | 91 | 98 | 111 | 114 | 101 |
| Upper 2.5 percentile | 535 | 617 | 605 | 637 | 612 | 444 | 403 | 463 | 465 | 451 |
| Standard deviation | 108.4 | 128.1 | 118.5 | 137.0 | 126.8 | 91.6 | 80.6 | 87.3 | 95.7 | 89.9 |

# Table 2.28

## Average daily intake of folate as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 153 | 138 | 57 | *108* | 151 | 138 | 54 | *108* |
| 25–34 | 188 | 170 | 112 | *219* | 173 | 163 | 64 | *219* |
| 35–49 | 177 | 165 | 86 | *253* | 171 | 164 | 59 | *253* |
| 50–64 | 186 | 177 | 75 | *253* | 181 | 174 | 68 | *253* |
| All | 180 | 166 | 88 | *833* | 172 | 163 | 63 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 124 | 116 | 55 | *104* | 114 | 113 | 46 | *104* |
| 25–34 | 124 | 116 | 57 | *210* | 117 | 115 | 40 | *210* |
| 35–49 | 140 | 129 | 62 | *318* | 128 | 125 | 44 | *318* |
| 50–64 | 179 | 138 | 458 | *259* | 134 | 133 | 48 | *259* |
| All | 146 | 128 | 253 | *891* | 125 | 122 | 45 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 2.29

### Percentage contribution of food types to average daily intake of folate by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 34 | 34 | 33 | 32 | 33 | 34 | 35 | 32 | 34 | 33 | 33 |
| *of which:* | | | | | | | | | | | |
| *pizza* | *10* | *6* | *3* | *2* | *4* | *5* | *4* | *2* | *2* | *3* | *3* |
| *white bread* | *7* | *6* | *7* | *6* | *6* | *6* | *6* | *5* | *4* | *5* | *6* |
| *wholemeal and other bread* | *1* | *2* | *2* | *2* | *2* | *1* | *2* | *2* | *3* | *2* | *2* |
| *soft grain bread and other breads* | *2* | *3* | *3* | *4* | *3* | *4* | *4* | *3* | *3* | *3* | *3* |
| *whole grain & high fibre breakfast cereals* | *4* | *9* | *8* | *8* | *8* | *6* | *6* | *9* | *11* | *9* | *8* |
| *other breakfast cereals* | *7* | *5* | *6* | *6* | *6* | *10* | *9* | *7* | *7* | *7* | *7* |
| Milk & milk products | 5 | 7 | 8 | 7 | 7 | 7 | 8 | 9 | 9 | 9 | 8 |
| Eggs & egg dishes | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 8 | 7 | 8 | 7 | 7 | 7 | 6 | 7 | 6 | 6 | 7 |
| Fish & fish dishes | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 |
| Vegetables (excluding potatoes) | 10 | 11 | 13 | 16 | 13 | 13 | 17 | 18 | 19 | 17 | 15 |
| Potatoes & savoury snacks | 15 | 12 | 12 | 10 | 12 | 18 | 13 | 12 | 10 | 12 | 12 |
| *of which:* | | | | | | | | | | | |
| *potato chips* | *8* | *5* | *5* | *4* | *5* | *8* | *5* | *4* | *3* | *4* | *5* |
| Fruit & nuts | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 4 | 6 | 4 | 3 |
| Sugars, preserves & confectionery | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Drinks* | 20 | 20 | 17 | 15 | 18 | 13 | 10 | 10 | 8 | 9 | 14 |
| *of which:* | | | | | | | | | | | |
| *fruit juice* | *3* | *2* | *3* | *3* | *2* | *4* | *3* | *3* | *3* | *3* | *3* |
| *beer & lager* | *14* | *15* | *11* | *8* | *11* | *6* | *4* | *3* | *1* | *3* | *8* |
| *tea* | *2* | *2* | *3* | *4* | *3* | *2* | *2* | *4* | *3* | *3* | *3* |
| Miscellaneous** | 3 | 2 | 2 | 4 | 3 | 2 | 3 | 3 | 4 | 3 | 3 |
| **Average daily intake (µg)** | **301** | **346** | **343** | **361** | **344** | **229** | **233** | **255** | **268** | **251** | **296** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 2.30

## Average daily intake of biotin (µg) by sex and age of respondent

Cumulative percentages

| Biotin (µg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 10 | 1 | - | - | - | 0 | 2 | 2 | 2 | 1 | 2 |
| Less than 15 | 6 | - | 2 | 3 | 3 | 17 | 11 | 5 | 4 | 8 |
| Less than 20 | 18 | 5 | 6 | 6 | 7 | 39 | 27 | 15 | 14 | 20 |
| Less than 25 | 33 | 15 | 11 | 13 | 15 | 56 | 51 | 32 | 27 | 38 |
| Less than 30 | 52 | 25 | 18 | 20 | 25 | 77 | 69 | 51 | 44 | 56 |
| Less than 40 | 77 | 49 | 41 | 44 | 48 | 92 | 90 | 84 | 74 | 83 |
| Less than 50 | 93 | 74 | 68 | 70 | 74 | 96 | 98 | 91 | 90 | 93 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 31 | 45 | 47 | 46 | 44 | 27 | 28 | 34 | 37 | 33 |
| Median | 29 | 40 | 43 | 42 | 41 | 23 | 25 | 30 | 32 | 28 |
| Lower 2.5 percentile | 10 | 19 | 15 | 13 | 15 | 10 | 10 | 11 | 12 | 10 |
| Upper 2.5 percentile | 60 | 131 | 103 | 116 | 99 | 148 | 54 | 137 | 66 | 76 |
| Standard deviation | 12.3 | 27.4 | 38.5 | 24.8 | 29.6 | 22.7 | 22.1 | 25.5 | 41.3 | 30.3 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 10 | 1 | - | - | - | 0 | 2 | 2 | 2 | 1 | 2 |
| Less than 15 | 6 | - | 3 | 3 | 3 | 17 | 11 | 5 | 4 | 8 |
| Less than 20 | 18 | 5 | 7 | 6 | 8 | 42 | 27 | 15 | 14 | 21 |
| Less than 25 | 33 | 16 | 12 | 13 | 16 | 59 | 51 | 33 | 28 | 39 |
| Less than 30 | 56 | 26 | 19 | 21 | 26 | 80 | 70 | 53 | 46 | 58 |
| Less than 40 | 81 | 51 | 41 | 45 | 50 | 95 | 93 | 86 | 78 | 86 |
| Less than 50 | 93 | 77 | 69 | 72 | 75 | 99 | 100 | 94 | 93 | 96 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 30 | 41 | 44 | 43 | 41 | 24 | 26 | 30 | 32 | 29 |
| Median | 28 | 39 | 43 | 42 | 40 | 23 | 25 | 29 | 31 | 28 |
| Lower 2.5 percentile | 10 | 19 | 15 | 13 | 15 | 10 | 10 | 11 | 12 | 10 |
| Upper 2.5 percentile | 58 | 83 | 83 | 91 | 83 | 47 | 47 | 59 | 60 | 55 |
| Standard deviation | 11.9 | 18.2 | 16.4 | 17.6 | 17.3 | 10.1 | 8.8 | 11.0 | 11.5 | 11.0 |

## Table 2.31

# Average daily intake of pantothenic acid (mg) by sex and age of respondent

Cumulative percentages

| Pantothenic acid (mg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 2.5 | 2 | 0 | 1 | 1 | 1 | 9 | 4 | 2 | 3 | 3 |
| Less than 3.0 | 6 | 1 | 2 | 2 | 2 | 13 | 11 | 6 | 5 | 8 |
| Less than 3.5 | 8 | 4 | 3 | 2 | 4 | 18 | 18 | 13 | 8 | 13 |
| Less than 4.5 | 28 | 11 | 12 | 6 | 12 | 45 | 43 | 25 | 20 | 30 |
| Less than 5.5 | 46 | 30 | 21 | 19 | 26 | 70 | 66 | 46 | 40 | 52 |
| Less than 6.5 | 66 | 45 | 35 | 31 | 40 | 83 | 85 | 68 | 59 | 71 |
| Less than 7.0 | 72 | 54 | 47 | 37 | 49 | 89 | 86 | 76 | 66 | 77 |
| Less than 7.5 | 78 | 61 | 54 | 48 | 57 | 89 | 89 | 80 | 71 | 81 |
| Less than 8.5 | 86 | 74 | 69 | 65 | 71 | 92 | 93 | 85 | 81 | 87 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 6.0 | 7.9 | 8.1 | 8.2 | 7.8 | 5.2 | 5.1 | 6.4 | 7.9 | 6.4 |
| Median | 5.6 | 6.7 | 7.2 | 7.6 | 7.1 | 4.7 | 4.9 | 5.7 | 6.0 | 5.4 |
| Lower 2.5 percentile | 2.6 | 3.3 | 3.3 | 3.3 | 3.2 | 2.1 | 2.1 | 2.7 | 2.5 | 2.3 |
| Upper 2.5 percentile | 12.2 | 13.8 | 14.8 | 16.2 | 14.5 | 12.7 | 10.0 | 13.2 | 16.0 | 13.2 |
| Standard deviation | 2.31 | 7.14 | 5.61 | 4.56 | 5.51 | 2.35 | 2.04 | 5.76 | 14.59 | 8.73 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 2.5 | 2 | 0 | 1 | 2 | 1 | 9 | 4 | 2 | 3 | 4 |
| Less than 3.0 | 6 | 1 | 2 | 2 | 2 | 13 | 11 | 7 | 5 | 8 |
| Less than 3.5 | 8 | 5 | 3 | 3 | 4 | 18 | 19 | 14 | 8 | 14 |
| Less than 4.5 | 28 | 12 | 12 | 7 | 13 | 45 | 46 | 27 | 23 | 32 |
| Less than 5.5 | 47 | 32 | 21 | 22 | 28 | 75 | 70 | 50 | 46 | 56 |
| Less than 6.5 | 68 | 47 | 35 | 35 | 43 | 88 | 88 | 75 | 68 | 77 |
| Less than 7.0 | 76 | 58 | 47 | 42 | 52 | 92 | 90 | 83 | 74 | 83 |
| Less than 7.5 | 83 | 65 | 55 | 53 | 60 | 93 | 92 | 88 | 81 | 88 |
| Less than 8.5 | 87 | 80 | 70 | 71 | 75 | 99 | 96 | 93 | 90 | 93 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 5.9 | 7.1 | 7.5 | 7.5 | 7.2 | 4.8 | 4.9 | 5.6 | 5.9 | 5.4 |
| Median | 5.6 | 6.6 | 7.2 | 7.4 | 6.9 | 4.7 | 4.8 | 5.5 | 5.7 | 5.2 |
| Lower 2.5 percentile | 2.6 | 3.2 | 3.3 | 3.1 | 3.1 | 2.1 | 2.1 | 2.6 | 2.5 | 2.3 |
| Upper 2.5 percentile | 11.6 | 13.1 | 13.4 | 13.0 | 13.1 | 8.4 | 9.0 | 9.8 | 10.3 | 9.7 |
| Standard deviation | 2.14 | 3.45 | 2.59 | 2.57 | 2.83 | 1.78 | 1.71 | 1.83 | 2.00 | 1.89 |

## Table 2.32

### Average daily intake of vitamin C (mg) by sex and age of respondent

Cumulative percentages

| Vitamin C (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 10 | - | 0 | - | - | 0 | 1 | - | 0 | 0 | 0 |
| Less than 20 | 3 | 1 | 2 | 2 | 2 | 5 | 4 | 5 | 3 | 4 |
| Less than 30 | 17 | 10 | 10 | 7 | 10 | 10 | 13 | 12 | 6 | 10 |
| Less than 40 | 36 | 20 | 18 | 15 | 20 | 23 | 24 | 22 | 11 | 19 |
| Less than 60 | 58 | 47 | 34 | 30 | 39 | 46 | 49 | 38 | 22 | 37 |
| Less than 80 | 75 | 64 | 52 | 40 | 54 | 60 | 67 | 52 | 43 | 54 |
| Less than 100 | 88 | 76 | 66 | 54 | 68 | 69 | 78 | 63 | 55 | 65 |
| Less than 130 | 90 | 83 | 79 | 71 | 79 | 88 | 86 | 75 | 69 | 77 |
| Less than 160 | 91 | 89 | 87 | 82 | 87 | 92 | 89 | 84 | 82 | 85 |
| Less than 180 | 93 | 93 | 89 | 86 | 90 | 92 | 92 | 88 | 85 | 88 |
| Less than 200 | 96 | 94 | 92 | 88 | 92 | 94 | 96 | 90 | 89 | 92 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 67.2 | 83.7 | 107.7 | 125.0 | 101.4 | 96.1 | 85.1 | 123.1 | 126.7 | 112.0 |
| Median | 51.1 | 62.8 | 77.5 | 92.3 | 74.2 | 68.6 | 62.0 | 77.9 | 90.2 | 76.1 |
| Lower 2.5 percentile | 18.5 | 21.1 | 20.0 | 22.4 | 20.8 | 12.5 | 17.2 | 16.4 | 19.0 | 17.2 |
| Upper 2.5 percentile | 241.8 | 319.8 | 303.5 | 588.3 | 329.3 | 400.2 | 272.6 | 476.5 | 592.3 | 473.2 |
| Standard deviation | 55.09 | 65.97 | 208.27 | 142.30 | 145.60 | 133.71 | 85.49 | 299.37 | 161.22 | 208.58 |
| | cum% | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 10 | - | 0 | - | - | 0 | 1 | - | 0 | 0 | 0 |
| Less than 20 | 3 | 1 | 2 | 2 | 2 | 5 | 4 | 6 | 3 | 4 |
| Less than 30 | 17 | 10 | 10 | 7 | 10 | 14 | 14 | 14 | 7 | 12 |
| Less than 40 | 39 | 22 | 19 | 16 | 21 | 25 | 25 | 24 | 12 | 21 |
| Less than 60 | 59 | 51 | 35 | 33 | 42 | 52 | 51 | 44 | 26 | 41 |
| Less than 80 | 75 | 67 | 54 | 44 | 57 | 76 | 71 | 58 | 51 | 61 |
| Less than 100 | 89 | 79 | 69 | 59 | 71 | 83 | 83 | 70 | 62 | 72 |
| Less than 130 | 90 | 87 | 82 | 78 | 83 | 91 | 90 | 83 | 77 | 84 |
| Less than 160 | 93 | 94 | 89 | 88 | 90 | 96 | 92 | 92 | 89 | 92 |
| Less than 180 | 97 | 97 | 92 | 92 | 94 | 96 | 95 | 96 | 93 | 95 |
| Less than 200 | 97 | 97 | 95 | 95 | 96 | 98 | 98 | 98 | 96 | 97 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 64.9 | 74.1 | 88.4 | 94.5 | 83.4 | 67.9 | 72.3 | 80.0 | 94.5 | 81.0 |
| Median | 51.1 | 58.5 | 75.9 | 85.5 | 70.7 | 59.0 | 59.4 | 66.6 | 79.0 | 68.7 |
| Lower 2.5 percentile | 15.3 | 21.0 | 20.0 | 22.4 | 20.8 | 12.5 | 17.2 | 16.1 | 19.0 | 17.2 |
| Upper 2.5 percentile | 228.8 | 208.9 | 221.7 | 226.4 | 216.8 | 180.8 | 198.0 | 199.5 | 217.7 | 205.1 |
| Standard deviation | 52.02 | 48.88 | 57.32 | 53.99 | 54.45 | 42.22 | 47.48 | 49.64 | 52.19 | 49.93 |

## Table 2.33

### Average daily intake of vitamin C as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 168 | 128 | 137.7 | *108* | 162 | 128 | 130.0 | *108* |
| 25–34 | 209 | 157 | 164.9 | *219* | 185 | 146 | 122.2 | *219* |
| 35–49 | 269 | 194 | 520.7 | *253* | 221 | 190 | 143.3 | *253* |
| 50–64 | 313 | 231 | 355.7 | *253* | 236 | 215 | 135.0 | *253* |
| All | 253 | 186 | 364.0 | *833* | 209 | 177 | 136.1 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 240 | 169 | 334.3 | *104* | 170 | 148 | 105.6 | *104* |
| 25–34 | 213 | 155 | 213.7 | *210* | 181 | 148 | 118.7 | *210* |
| 35–49 | 308 | 195 | 748.4 | *318* | 200 | 167 | 124.1 | *318* |
| 50–64 | 317 | 226 | 403.0 | *259* | 236 | 198 | 130.5 | *259* |
| All | 280 | 190 | 521.5 | *891* | 202 | 172 | 124.8 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 2.34

### Percentage contribution of food types to average daily intake of vitamin C by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 6 | 8 | 5 | 4 | 6 | 5 | 5 | 5 | 6 | 5 | 5 |
| Milk & milk products | 4 | 6 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 5 | 5 |
| Eggs & egg dishes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 6 | 6 | 6 | 5 | 5 | 4 | 4 | 4 | 3 | 4 | 4 |
| Fish & fish dishes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Vegetables (excluding potatoes) | 12 | 19 | 20 | 26 | 21 | 14 | 23 | 25 | 25 | 23 | 22 |
| *of which:* | | | | | | | | | | | |
| *salad and other raw vegetables* | *4* | *6* | *7* | *8* | *7* | *5* | *8* | *9* | *8* | *8* | *7* |
| *leafy green vegetables* | *2* | *3* | *5* | *8* | *5* | *3* | *5* | *6* | *8* | *6* | *6* |
| Potatoes and savoury snacks | 24 | 19 | 15 | 15 | 17 | 20 | 14 | 14 | 12 | 14 | 15 |
| *of which:* | | | | | | | | | | | |
| *potato chips* | *13* | *8* | *6* | *5* | *7* | *9* | *6* | *4* | *3* | *5* | *6* |
| Fruit & nuts | 6 | 12 | 17 | 19 | 16 | 13 | 17 | 21 | 28 | 22 | 19 |
| Sugars, preserves & confectionery | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drinks* | 40 | 28 | 30 | 24 | 28 | 40 | 32 | 24 | 21 | 26 | 27 |
| *of which:* | | | | | | | | | | | |
| *fruit juice* | *24* | *17* | *22* | *19* | *20* | *24* | *21* | *17* | *16* | *18* | *19* |
| *soft drinks including low calorie* | *16* | *11* | *8* | *4* | *8* | *16* | *11* | *6* | *4* | *8* | *8* |
| Miscellaneous** | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| **Average daily intake (mg)** | **64.9** | **74.1** | **88.4** | **94.5** | **83.4** | **67.9** | **72.3** | **80.0** | **94.5** | **81.0** | **82.2** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

Table 2.35

## Average daily intake of vitamin D (µg) by sex and age of respondent

Cumulative percentages

| Vitamin D (µg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 0.5 | 1 | 0 | 1 | - | 1 | 5 | 4 | 3 | 0 | 3 |
| Less than 1.0 | 9 | 1 | 4 | 1 | 3 | 13 | 12 | 7 | 3 | 8 |
| Less than 1.5 | 16 | 5 | 9 | 4 | 7 | 30 | 29 | 21 | 12 | 21 |
| Less than 2.0 | 32 | 20 | 19 | 13 | 19 | 44 | 42 | 32 | 21 | 33 |
| Less than 2.5 | 43 | 35 | 32 | 24 | 32 | 56 | 59 | 48 | 30 | 46 |
| Less than 3.0 | 57 | 48 | 42 | 36 | 43 | 62 | 69 | 57 | 39 | 55 |
| Less than 3.5 | 65 | 57 | 52 | 42 | 52 | 73 | 76 | 64 | 48 | 63 |
| Less than 5.0 | 83 | 72 | 74 | 63 | 71 | 86 | 89 | 80 | 63 | 78 |
| Less than 7.0 | 98 | 89 | 87 | 80 | 87 | 94 | 96 | 89 | 75 | 87 |
| Less than 7.5 | 98 | 90 | 89 | 83 | 88 | 94 | 97 | 91 | 78 | 89 |
| Less than 9.0 | 100 | 93 | 93 | 90 | 93 | 97 | 99 | 94 | 85 | 93 |
| All | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 3.0 | 4.1 | 4.2 | 4.9 | 4.2 | 2.9 | 2.7 | 3.5 | 5.1 | 3.7 |
| Median | 2.8 | 3.1 | 3.5 | 4.1 | 3.4 | 2.1 | 2.2 | 2.6 | 3.8 | 2.7 |
| Lower 2.5 percentile | 0.8 | 1.1 | 0.6 | 1.1 | 0.8 | 0.2 | 0.5 | 0.5 | 1.0 | 0.5 |
| Upper 2.5 percentile | 6.5 | 11.7 | 12.6 | 13.4 | 11.8 | 9.2 | 8.2 | 10.2 | 17.1 | 13.7 |
| Standard deviation | 1.59 | 3.19 | 3.08 | 3.25 | 3.06 | 2.47 | 1.96 | 2.89 | 4.11 | 3.23 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 0.5 | 1 | 1 | 2 | - | 1 | 5 | 4 | 3 | 0 | 3 |
| Less than 1.0 | 9 | 2 | 4 | 1 | 3 | 17 | 13 | 8 | 4 | 9 |
| Less than 1.5 | 18 | 6 | 9 | 5 | 8 | 39 | 33 | 23 | 14 | 25 |
| Less than 2.0 | 32 | 22 | 21 | 15 | 21 | 56 | 47 | 38 | 27 | 39 |
| Less than 2.5 | 45 | 37 | 35 | 26 | 34 | 67 | 65 | 56 | 42 | 55 |
| Less than 3.0 | 59 | 51 | 44 | 41 | 47 | 73 | 74 | 68 | 55 | 66 |
| Less than 3.5 | 68 | 65 | 54 | 47 | 56 | 83 | 81 | 75 | 65 | 75 |
| Less than 5.0 | 89 | 82 | 79 | 72 | 79 | 96 | 92 | 91 | 83 | 89 |
| Less than 7.0 | 98 | 95 | 91 | 89 | 92 | 99 | 98 | 96 | 93 | 96 |
| Less than 7.5 | 98 | 95 | 93 | 92 | 94 | 99 | 99 | 97 | 94 | 97 |
| Less than 9.0 | 100 | 97 | 97 | 96 | 97 | 99 | 99 | 98 | 96 | 98 |
| All | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 2.9 | 3.5 | 3.7 | 4.2 | 3.7 | 2.3 | 2.4 | 2.8 | 3.5 | 2.8 |
| Median | 2.8 | 3.0 | 3.3 | 3.7 | 3.1 | 1.8 | 2.1 | 2.3 | 2.8 | 2.3 |
| Lower 2.5 percentile | 0.8 | 1.1 | 0.6 | 1.1 | 0.8 | 0.2 | 0.5 | 0.5 | 1.0 | 0.5 |
| Upper 2.5 percentile | 6.5 | 9.3 | 9.4 | 9.7 | 9.2 | 5.9 | 6.5 | 7.6 | 11.4 | 8.4 |
| Standard deviation | 1.54 | 2.18 | 2.31 | 2.40 | 2.25 | 1.55 | 1.64 | 2.11 | 2.41 | 2.09 |

# Table 2.36

## Percentage contribution of food types to average daily intake of vitamin D by sex and age of respondent

Percentages

| Type of food | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 22 | 22 | 20 | 17 | 20 | 21 | 25 | 22 | 22 | 22 | 21 |
| *of which:* | | | | | | | | | | | |
| *whole grain & high fibre breakfast cereals* | *5* | *9* | *6* | *5* | *6* | *6* | *6* | *6* | *8* | *6* | *6* |
| *other breakfast cereals* | *9* | *6* | *7* | *5* | *6* | *10* | *10* | *7* | *7* | *8* | *7* |
| *buns, cakes & pastries* | *4* | *4* | *4* | *5* | *4* | *1* | *5* | *4* | *4* | *4* | *4* |
| Milk & milk products | 2 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| Eggs & egg dishes | 11 | 10 | 9 | 10 | 10 | 10 | 8 | 9 | 9 | 9 | 9 |
| Fat spreads | 24 | 20 | 17 | 18 | 19 | 16 | 17 | 16 | 13 | 15 | 17 |
| *of which:* | | | | | | | | | | | |
| *soft margarine, not polyunsaturated* | *5* | *3* | *3* | *2* | *3* | *3* | *2* | *2* | *2* | *2* | *3* |
| *low fat spreads* | *4* | *6* | *4* | *6* | *5* | *3* | *7* | *5* | *4* | *5* | *5* |
| *reduced fat spreads* | *13* | *10* | *9* | *9* | *10* | *10* | *7* | *7* | *6* | *7* | *8* |
| Meat & meat products | 33 | 26 | 25 | 20 | 24 | 24 | 20 | 19 | 15 | 18 | 22 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *4* | *3* | *3* | *3* | *3* | *2* | *3* | *2* | *2* | *2* | *3* |
| *beef, veal & dishes* | *5* | *4* | *4* | *3* | *4* | *5* | *3* | *4* | *3* | *3* | *4* |
| *chicken, turkey & dishes including coated* | *6* | *5* | *5* | *3* | *5* | *5* | *6* | *4* | *3* | *4* | *4* |
| *burgers & kebabs* | *5* | *3* | *2* | *0* | *2* | *3* | *1* | *1* | *0* | *1* | *2* |
| *sausages* | *6* | *4* | *4* | *3* | *3* | *3* | *3* | *2* | *1* | *2* | *3* |
| Fish & fish dishes | 3 | 15 | 23 | 28 | 21 | 21 | 22 | 28 | 37 | 30 | 25 |
| *of which:* | | | | | | | | | | | |
| *oily fish* | *3* | *15* | *23* | *27* | *20* | *21* | *22* | *28* | *36* | *29* | *24* |
| Vegetables (excluding potatoes) | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| Potatoes & savoury snacks | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| Fruit & nuts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sugar, preserves & confectionery | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Drinks* | 3 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 0 | 1 | 1 |
| Miscellaneous** | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Average daily intake (µg)** | **2.9** | **3.5** | **3.7** | **4.2** | **3.7** | **2.3** | **2.4** | **2.8** | **3.5** | **2.8** | **3.3** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

Table 2.37

## Average daily intake of vitamin E (α-tocopherol equivalents) (mg) by sex and age of respondent

Cumulative percentages

| Vitamin E (α-tocopherol equivalents) (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 3 | 1 | - | 1 | 1 | 1 | 2 | 3 | 2 | 3 | 3 |
| Less than 4 | 1 | 1 | 3 | 4 | 2 | 12 | 10 | 6 | 5 | 7 |
| Less than 5 | 5 | 3 | 6 | 7 | 5 | 19 | 17 | 13 | 16 | 15 |
| Less than 6 | 10 | 7 | 12 | 13 | 11 | 29 | 26 | 22 | 22 | 24 |
| Less than 7 | 22 | 18 | 16 | 20 | 19 | 46 | 41 | 36 | 33 | 37 |
| Less than 8 | 37 | 31 | 24 | 26 | 28 | 59 | 55 | 48 | 43 | 49 |
| Less than 9 | 54 | 39 | 34 | 34 | 38 | 69 | 65 | 54 | 51 | 58 |
| Less than 10 | 60 | 47 | 45 | 43 | 47 | 76 | 75 | 64 | 61 | 67 |
| Less than 12 | 77 | 67 | 62 | 58 | 64 | 86 | 85 | 75 | 67 | 77 |
| Less than 15 | 88 | 81 | 82 | 75 | 80 | 89 | 93 | 84 | 79 | 85 |
| Less than 18 | 93 | 88 | 91 | 83 | 88 | 91 | 95 | 88 | 85 | 89 |
| Less than 22 | 99 | 95 | 96 | 93 | 95 | 95 | 99 | 92 | 89 | 93 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 10.1 | 11.9 | 14.4 | 15.2 | 13.4 | 9.4 | 8.6 | 14.3 | 23.2 | 15.0 |
| Median | 8.7 | 10.5 | 10.6 | 11.1 | 10.5 | 7.6 | 7.6 | 8.4 | 8.8 | 8.0 |
| Lower 2.5 percentile | 4.5 | 4.9 | 4.0 | 3.6 | 4.1 | 3.0 | 2.7 | 3.1 | 3.0 | 3.0 |
| Upper 2.5 percentile | 20.3 | 30.6 | 29.4 | 35.0 | 29.4 | 24.6 | 20.7 | 38.0 | 285.2 | 42.6 |
| Standard deviation | 4.31 | 7.17 | 27.35 | 27.73 | 21.87 | 9.24 | 4.70 | 40.14 | 60.53 | 41.01 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 3 | 1 | - | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 |
| Less than 4 | 1 | 1 | 3 | 4 | 3 | 12 | 10 | 7 | 7 | 8 |
| Less than 5 | 5 | 6 | 7 | 7 | 6 | 20 | 18 | 15 | 17 | 17 |
| Less than 6 | 10 | 9 | 13 | 14 | 12 | 32 | 27 | 25 | 25 | 26 |
| Less than 7 | 22 | 20 | 17 | 25 | 21 | 50 | 43 | 41 | 38 | 42 |
| Less than 8 | 37 | 33 | 26 | 30 | 30 | 66 | 58 | 55 | 53 | 57 |
| Less than 9 | 54 | 41 | 35 | 38 | 40 | 74 | 70 | 65 | 66 | 68 |
| Less than 10 | 64 | 50 | 46 | 49 | 50 | 81 | 80 | 75 | 77 | 77 |
| Less than 12 | 79 | 72 | 65 | 65 | 69 | 90 | 91 | 87 | 87 | 88 |
| Less than 15 | 90 | 89 | 87 | 84 | 87 | 93 | 97 | 97 | 98 | 97 |
| Less than 18 | 96 | 97 | 94 | 91 | 94 | 97 | 98 | 99 | 100 | 99 |
| Less than 22 | 99 | 98 | 98 | 97 | 98 | 99 | 100 | 100 | | 100 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | | | | |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 9.8 | 10.5 | 10.8 | 11.0 | 10.6 | 7.9 | 7.9 | 8.2 | 8.2 | 8.1 |
| Median | 8.7 | 10.0 | 10.4 | 11.0 | 10.0 | 7.0 | 7.5 | 7.7 | 7.8 | 7.6 |
| Lower 2.5 percentile | 4.5 | 4.3 | 4.0 | 3.6 | 4.0 | 2.5 | 2.7 | 2.6 | 3.0 | 2.8 |
| Upper 2.5 percentile | 18.5 | 19.9 | 20.8 | 24.0 | 21.8 | 19.6 | 15.8 | 15.5 | 15.2 | 15.6 |
| Standard deviation | 4.04 | 4.45 | 4.33 | 5.45 | 4.70 | 4.53 | 3.37 | 3.33 | 3.12 | 3.44 |

## Table 2.38

### Percentage contribution of food types to average daily intake of vitamin E ($\alpha$-tocopherol equivalents) by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 16 | 18 | 17 | 17 | 17 | 16 | 15 | 17 | 19 | 17 | 17 |
| *of which:* | | | | | | | | | | | |
| *pizza* | *4* | *3* | *1* | *1* | *2* | *2* | *2* | *1* | *1* | *1* | *2* |
| *white bread* | *2* | *2* | *2* | *2* | *2* | *5* | *1* | *1* | *1* | *2* | *2* |
| *breakfast cereals* | *1* | *5* | *4* | *5* | *4* | *2* | *4* | *5* | *7* | *5* | *5* |
| *biscuits* | *2* | *2* | *2* | *2* | *2* | *1* | *2* | *2* | *2* | *2* | *2* |
| *buns, cakes & pastries* | *2* | *2* | *3* | *3* | *3* | *1* | *3* | *3* | *3* | *3* | *3* |
| Milk & milk products | 2 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 |
| Eggs & egg dishes | 4 | 4 | 3 | 4 | 4 | 3 | 2 | 3 | 3 | 3 | 3 |
| Fat spreads | 21 | 17 | 19 | 23 | 20 | 10 | 15 | 15 | 16 | 15 | 18 |
| *of which:* | | | | | | | | | | | |
| *polyunsaturated low fat spread* | *3* | *4* | *3* | *5* | *4* | *2* | *3* | *2* | *2* | *3* | *3* |
| *polyunsaturated reduced fat spread* | *10* | *6* | *9* | *11* | *9* | *2* | *7* | *6* | *8* | *6* | *8* |
| *other reduced fat spread* | *3* | *4* | *3* | *2* | *3* | *4* | *2* | *2* | *2* | *2* | *3* |
| Meat & meat products | 15 | 13 | 12 | 9 | 12 | 12 | 10 | 10 | 7 | 9 | 11 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *2* | *2* | *2* | *2* | *2* | *3* | *2* | *2* | *1* | *2* | *2* |
| *chicken, turkey & dishes including coated* | *6* | *5* | *5* | *4* | *5* | *6* | *5* | *5* | *3* | *5* | *5* |
| Fish & fish dishes | 2 | 3 | 4 | 5 | 4 | 4 | 4 | 5 | 8 | 6 | 5 |
| Vegetables (excluding potatoes) | 7 | 10 | 13 | 13 | 12 | 9 | 17 | 16 | 15 | 15 | 13 |
| Potatoes & savoury snacks | 20 | 14 | 12 | 10 | 13 | 21 | 14 | 12 | 8 | 12 | 13 |
| *of which:* | | | | | | | | | | | |
| *potato chips* | *9* | *6* | *6* | *4* | *6* | *10* | *6* | *5* | *4* | *5* | *6* |
| *savoury snacks* | *7* | *5* | *4* | *2* | *4* | *7* | *6* | *4* | *2* | *4* | *4* |
| Fruit & nuts | 1 | 4 | 4 | 5 | 4 | 7 | 5 | 6 | 9 | 7 | 5 |
| Sugar, preserves & confectionery | 4 | 3 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 2 | 2 |
| Drinks* | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 |
| Miscellaneous** | 7 | 9 | 7 | 6 | 7 | 10 | 9 | 9 | 7 | 9 | 8 |
| **Average daily intake (mg)** | **9.8** | **10.5** | **10.8** | **11.0** | **10.6** | **7.9** | **7.9** | **8.2** | **8.2** | **8.1** | **9.3** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 2.39

This table spreads over 2 pages. Altogether there is 1 spread (2 pages).

### Average daily intake of vitamins by sex of respondent and region

| Vitamin (unit of measurement) | Sex of respondent and region | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | | | | | | |
| | Scotland | | | Northern | | | Central, South West and Wales | | | London and the the South East | | |
| | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd |
| **All Sources** | | | | | | | | | | | | |
| Vitamin A (retinol equivalents) (µg) | 1104 | 700 | 1618 | 1000 | 671 | 1069 | 1000 | 721 | 1024 | 1031 | 714 | 1227 |
| Total carotene (β-carotene equivalents) (µg) | 2128 | 1596 | 2041 | 1980 | 1642 | 1360 | 2125 | 1794 | 1664 | 2050 | 1749 | 1326 |
| Thiamin (mg) | 2.32 | 1.87 | 1.940 | 2.20 | 1.81 | 2.516 | 2.25 | 1.92 | 3.085 | 2.18 | 1.80 | 2.229 |
| Riboflavin (mg) | 2.35 | 2.32 | 1.349 | 2.30 | 2.00 | 2.237 | 2.45 | 2.03 | 3.678 | 2.21 | 2.03 | 0.998 |
| Vitamin $B_6$ (mg) | 3.6 | 3.0 | 2.91 | 3.3 | 2.8 | 3.91 | 3.4 | 2.8 | 4.63 | 3.1 | 2.6 | 3.31 |
| Vitamin $B_{12}$ (µg) | 7.7 | 6.3 | 8.52 | 6.6 | 5.3 | 4.50 | 6.9 | 5.7 | 6.59 | 6.5 | 5.5 | 5.43 |
| Folate (µg) | 367 | 345 | 138.7 | 347 | 320 | 191.4 | 365 | 339 | 161.3 | 363 | 340 | 187.3 |
| Vitamin C (mg) | 92.9 | 74.7 | 62.07 | 86.2 | 70.0 | 77.70 | 105.3 | 67.2 | 196.71 | 113.7 | 83.5 | 138.17 |
| Vitamin D (µg) | 4.4 | 3.8 | 2.66 | 4.1 | 3.3 | 2.75 | 4.4 | 3.5 | 3.34 | 4.1 | 3.3 | 3.10 |
| Vitamin E (α-tocopherol equivalents) (mg) | 12.8 | 10.4 | 8.57 | 13.1 | 9.2 | 25.55 | 13.6 | 10.7 | 23.19 | 13.5 | 10.9 | 18.70 |
| *Base* | | *65* | | | *234* | | | *294* | | | *240* | |
| **Food sources** | | | | | | | | | | | | |
| Vitamin A (retinol equivalents) (µg) | 1028 | 666 | 1598 | 897 | 627 | 993 | 883 | 674 | 960 | 927 | 647 | 1141 |
| Total carotene (β-carotene equivalents) (µg) | 2091 | 1596 | 2044 | 1972 | 1637 | 1349 | 2082 | 1794 | 1424 | 2045 | 1749 | 1319 |
| Thiamin (mg) | 2.10 | 1.85 | 1.808 | 2.00 | 1.77 | 1.691 | 1.94 | 1.86 | 0.829 | 2.06 | 1.76 | 2.196 |
| Riboflavin (mg) | 2.22 | 2.09 | 1.107 | 2.07 | 1.95 | 0.841 | 2.14 | 1.98 | 1.055 | 2.08 | 1.98 | 0.824 |
| Vitamin $B_6$ (mg) | 3.1 | 3.0 | 1.06 | 2.8 | 2.8 | 1.00 | 2.9 | 2.8 | 1.10 | 2.8 | 2.6 | 0.94 |
| Vitamin $B_{12}$ (µg) | 7.1 | 6.1 | 6.56 | 6.5 | 5.3 | 4.29 | 6.5 | 5.7 | 4.88 | 6.3 | 5.4 | 4.20 |
| Folate (µg) | 358 | 340 | 128.0 | 332 | 318 | 116.0 | 350 | 333 | 136.9 | 344 | 333 | 123.3 |
| Vitamin C (mg) | 86.4 | 74.3 | 54.11 | 77.1 | 67.8 | 54.49 | 79.4 | 64.0 | 47.78 | 93.8 | 79.6 | 60.59 |
| Vitamin D (µg) | 3.9 | 3.6 | 2.09 | 3.6 | 3.0 | 2.19 | 3.8 | 3.2 | 2.43 | 3.5 | 3.1 | 2.12 |
| Vitamin E (α-tocopherol equivalents) (mg) | 11.4 | 9.9 | 7.04 | 10.1 | 9.2 | 4.37 | 10.8 | 10.2 | 4.62 | 10.7 | 10.5 | 4.30 |
| *Base* | | *65* | | | *234* | | | *294* | | | *240* | |

| Women | | | | | | | | | | | | Vitamin (unit of measurement) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scotland | | | Northern | | | Central, South West and Wales | | | London and the South East | | | |
| Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | |
| | | | | | | | | | | | | **All Sources** |
| 708 | 585 | 508 | 841 | 568 | 932 | 745 | 570 | 643 | 853 | 675 | 669 | Vitamin A (retinol equivalents) (µg) |
| 1818 | 1525 | 1076 | 1778 | 1416 | 1334 | 1908 | 1521 | 1744 | 2229 | 1899 | 1673 | Total carotene (β-carotene equivalents) (µg) |
| 1.51 | 1.34 | 0.760 | 1.71 | 1.47 | 1.225 | 2.20 | 1.48 | 6.921 | 1.94 | 1.47 | 4.667 | Thiamin (mg) |
| 1.67 | 1.56 | 0.732 | 1.83 | 1.66 | 1.160 | 2.25 | 1.66 | 6.884 | 1.97 | 1.57 | 4.390 | Riboflavin (mg) |
| 2.2 | 2.1 | 1.04 | 3.2 | 2.0 | 8.98 | 3.1 | 2.1 | 8.77 | 2.7 | 2.1 | 5.16 | Vitamin $B_6$ (mg) |
| 4.8 | 4.1 | 2.32 | 5.2 | 4.5 | 3.51 | 5.1 | 4.3 | 6.24 | 5.3 | 4.7 | 3.18 | Vitamin $B_{12}$ (µg) |
| 249 | 229 | 89.2 | 267 | 255 | 120.5 | 282 | 254 | 238.9 | 336 | 260 | 873.1 | Folate (µg) |
| 104.1 | 82.5 | 85.94 | 101.5 | 69.0 | 162.65 | 125.4 | 75.2 | 300.07 | 106.5 | 80.4 | 100.94 | Vitamin C (mg) |
| 3.1 | 2.4 | 2.28 | 3.6 | 2.6 | 2.98 | 3.3 | 2.5 | 2.57 | 4.4 | 3.1 | 4.12 | Vitamin D (µg) |
| 16.0 | 7.4 | 44.51 | 15.6 | 7.7 | 50.62 | 13.8 | 7.9 | 35.62 | 15.5 | 9.1 | 37.12 | Vitamin E (α-tocopherol equivalents) (mg) |
| | *66* | | | *229* | | | *327* | | | *268* | | *Base* |
| | | | | | | | | | | | | **Food sources** |
| 616 | 542 | 478 | 699 | 516 | 864 | 624 | 528 | 500 | 718 | 603 | 574 | Vitamin A (retinol equivalents) (µg) |
| 1818 | 1525 | 1076 | 1741 | 1403 | 1240 | 1815 | 1478 | 1274 | 2206 | 1892 | 1657 | Total carotene (β-carotene equivalents) (µg) |
| 1.41 | 1.24 | 0.651 | 1.51 | 1.42 | 0.730 | 1.58 | 1.40 | 1.233 | 1.56 | 1.41 | 0.976 | Thiamin (mg) |
| 1.55 | 1.45 | 0.625 | 1.64 | 1.59 | 0.684 | 1.61 | 1.53 | 0.622 | 1.58 | 1.51 | 0.623 | Riboflavin (mg) |
| 2.0 | 2.0 | 0.60 | 2.0 | 2.0 | 0.73 | 2.0 | 2.0 | 0.63 | 2.1 | 2.0 | 0.73 | Vitamin $B_6$ (mg) |
| 4.7 | 4.0 | 2.24 | 4.9 | 4.3 | 3.22 | 4.5 | 4.1 | 2.15 | 5.0 | 4.5 | 2.88 | Vitamin $B_{12}$ (µg) |
| 232 | 229 | 72.3 | 249 | 251 | 95.0 | 252 | 245 | 87.0 | 256 | 250 | 92.6 | Folate (µg) |
| 87.8 | 79.7 | 49.12 | 77.5 | 65.6 | 50.53 | 77.6 | 65.6 | 46.15 | 86.3 | 73.0 | 53.56 | Vitamin C (mg) |
| 2.4 | 2.1 | 1.34 | 2.8 | 2.3 | 1.95 | 2.6 | 2.2 | 1.47 | 3.3 | 2.6 | 2.81 | Vitamin D (µg) |
| 7.7 | 7.0 | 3.22 | 7.7 | 7.4 | 3.31 | 7.9 | 7.5 | 3.45 | 8.7 | 8.0 | 3.53 | Vitamin E (α-tocopherol equivalents) (mg) |
| | *66* | | | *229* | | | *327* | | | *268* | | *Base* |

Table 2.40

## Average daily intake of vitamins as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and region

| Vitamin (unit of measurement) | Sex of respondent and region | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Men | | | | Women | | | |
| | Scotland* | Northern | Central, South West and Wales | London and the South East | Scotland* | Northern | Central, South West and Wales | London and the South East |
| **All sources** | | | | | | | | |
| Vitamin A (µg) | | | | | | | | |
| mean daily intake as % RNI | 158 | 143 | 143 | 147 | 118 | 140 | 124 | 142 |
| % with intakes below LRNI | 4 | 7 | 5 | 6 | 3 | 9 | 10 | 5 |
| Thiamin (mg)** | | | | | | | | |
| mean daily intake as % RNI | | | | | 189 | 213 | 275 | 243 |
| 19 to 50 years | 220 | 228 | 212 | 210 | | | | |
| over 50 years | [21] | 218 | 286 | 262 | | | | |
| % with intakes below LRNI | | | | | - | 2 | 1 | 0 |
| 19 to 50 years | - | 1 | - | 1 | | | | |
| over 50 years | [-] | - | 1 | 1 | | | | |
| Riboflavin (mg) | | | | | | | | |
| mean daily intake as % RNI | 181 | 177 | 189 | 170 | 152 | 167 | 205 | 180 |
| % with intakes below LRNI | - | 3 | 2 | 4 | 12 | 9 | 6 | 7 |
| Niacin equivalents (mg)** | | | | | | | | |
| mean daily intake as % RNI | | | | | | | | |
| 19 to 50 years | 275 | 276 | 278 | 268 | 257 | 265 | 266 | 273 |
| over 50 years | [21] | 279 | 287 | 284 | [16] | 285 | 297 | 288 |
| % with intakes below LRNI | | | | | | | | |
| 19 to 50 years | - | 0 | - | - | - | 1 | 0 | 1 |
| over 50 years | [-] | - | - | 1 | [-] | - | - | 1 |
| Vitamin $B_6$ (mg) | | | | | | | | |
| mean daily intake as % RNI | 259 | 235 | 243 | 219 | 181 | 270 | 258 | 225 |
| % with intakes below LRNI | 2 | 0 | 1 | 1 | - | 4 | 1 | 2 |
| Vitamin $B_{12}$ (µg) | | | | | | | | |
| mean daily intake as % RNI | 510 | 438 | 460 | 434 | 317 | 344 | 340 | 350 |
| % with intakes below LRNI | - | - | - | 1 | - | 1 | - | 1 |
| Folate (µg) | | | | | | | | |
| mean daily intake as % RNI | 184 | 173 | 182 | 181 | 124 | 133 | 141 | 168 |
| % with intakes below LRNI | - | 0 | 0 | 1 | 2 | 3 | 2 | 2 |
| Vitamin C (mg) | | | | | | | | |
| mean daily intake as % RNI | 232 | 215 | 263 | 284 | 260 | 254 | 314 | 266 |
| % with intakes below LRNI | - | - | 0 | - | 1 | 1 | - | 0 |

## Table 2.40 continued

### Average daily intake of vitamins as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and region

| Vitamin (unit of measurement) | Sex of respondent and region | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Men | | | | Women | | | |
| | Scotland* | Northern | Central, South West and Wales | London and the South East | Scotland* | Northern | Central, South West and Wales | London and the South East |
| **Food sources** | | | | | | | | |
| Vitamin A (µg) | | | | | | | | |
| mean daily intake as % RNI | 147 | 128 | 126 | 132 | 103 | 117 | 104 | 120 |
| % with intakes below LRNI | 7 | 7 | 6 | 7 | 7 | 10 | 11 | 6 |
| Thiamin (mg)** | | | | | | | | |
| mean daily intake as % RNI | | | | | 189 | 213 | 275 | 243 |
| 19 to 50 years | 220 | 228 | 212 | 210 | | | | |
| over 50 years | [21] | 218 | 286 | 262 | | | | |
| % with intakes below LRNI | | | | | - | 2 | 1 | 0 |
| 19 to 50 years | - | 1 | - | 1 | | | | |
| over 50 years | [-] | - | 1 | 1 | | | | |
| Riboflavin (mg) | | | | | | | | |
| mean daily intake as % RNI | 170 | 159 | 165 | 160 | 141 | 149 | 147 | 143 |
| % with intakes below LRNI | - | 3 | 2 | 4 | 13 | 9 | 6 | 8 |
| Niacin equivalents (mg)** | | | | | | | | |
| mean daily intake as % RNI | | | | | | | | |
| 19 to 50 years | 267 | 264 | 268 | 259 | 253 | 254 | 250 | 258 |
| over 50 years | [21] | 272 | 271 | 277 | [16] | 264 | 273 | 267 |
| % with intakes below LRNI | | | | | | | | |
| 19 to 50 years | - | 0 | - | 0 | - | 1 | 0 | 1 |
| over 50 years | [-] | - | - | 1 | [-] | - | - | 1 |
| Vitamin $B_6$ (mg) | | | | | | | | |
| mean daily intake as % RNI | 220 | 203 | 205 | 198 | 165 | 168 | 168 | 171 |
| % with intakes below LRNI | 2 | 0 | 1 | 1 | - | 4 | 1 | 2 |
| Vitamin $B_{12}$ (µg) | | | | | | | | |
| mean daily intake as % RNI | 476 | 430 | 432 | 418 | 311 | 328 | 303 | 333 |
| % with intakes below LRNI | - | - | - | 1 | - | 1 | 0 | 1 |
| Folate (µg) | | | | | | | | |
| mean daily intake as % RNI | 179 | 166 | 175 | 172 | 116 | 125 | 126 | 128 |
| % with intakes below LRNI | - | 0 | 0 | 1 | 2 | 3 | 2 | 2 |
| Vitamin C (mg) | | | | | | | | |
| mean daily intake as % RNI | 216 | 193 | 198 | 235 | 219 | 194 | 194 | 216 |
| % with intakes below LRNI | - | - | 0 | - | 1 | 1 | - | 0 |
| *Base – respondents aged 19 to 50 years* | *44* | *178* | *209* | *173* | *50* | *158* | *245* | *196* |
| *Base – respondents aged over 50 years* | *21* | *56* | *84* | *67* | *16* | *71* | *83* | *73* |

*Note: * Square brackets enclosing numbers denote the actual number of cases, when the base is fewer than 30. The number of men and women aged over 50 years living in Scotland is less than 30 and mean values and percentages are not, therefore, presented for niacin equivalents or, for men, thiamin.*

*** For niacin equivalents, and thiamin for men, RNI and LRNI values are different for 19 to 50 year olds and over 50 year olds, so data for these vitamins are presented separately by age.*

## Table 2.41

### Average daily intake of vitamins by sex of respondent and whether someone in the respondent's household was receiving certain benefits

| Vitamin (unit of measurement) | Whether receiving benefits | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | Women | | | | | |
| | Receiving benefits | | | Not receiving benefits | | | Receiving benefits | | | Not receiving benefits | | |
| | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd |
| **All sources** | | | | | | | | | | | | |
| Vitamin A (retinol equivalents) (µg) | 829 | 558 | 994 | 1046 | 727 | 1171 | 585 | 435 | 469 | 843 | 636 | 764 |
| Total carotene (β-carotene equivalents) (µg) | 1770 | 1451 | 1345 | 2107 | 1774 | 1546 | 1417 | 1089 | 1348 | 2075 | 1768 | 1614 |
| Thiamin (mg) | 1.83 | 1.69 | 2.410 | 2.28 | 1.90 | 2.642 | 1.84 | 1.23 | 6.069 | 1.97 | 1.51 | 4.706 |
| Riboflavin (mg) | 1.95 | 1.62 | 2.462 | 2.39 | 2.05 | 2.580 | 1.88 | 1.31 | 5.980 | 2.05 | 1.67 | 4.600 |
| Vitamin $B_6$ (mg) | 3.1 | 2.2 | 5.76 | 3.3 | 2.9 | 3.61 | 2.7 | 1.7 | 7.17 | 3.0 | 2.1 | 7.64 |
| Vitamin $B_{12}$ (µg) | 5.5 | 5.1 | 2.91 | 6.9 | 5.8 | 6.24 | 4.4 | 3.8 | 2.99 | 5.3 | 4.6 | 4.82 |
| Folate (µg) | 291 | 266 | 132.7 | 370 | 341 | 179.7 | 249 | 207 | 329.6 | 300 | 262 | 533.6 |
| Vitamin C (mg) | 64.9 | 49.2 | 46.35 | 106.9 | 76.8 | 154.48 | 66.6 | 48.4 | 53.12 | 121.2 | 79.9 | 226.39 |
| Vitamin D (µg) | 3.5 | 2.6 | 2.76 | 4.3 | 3.5 | 3.09 | 2.7 | 2.1 | 2.28 | 3.9 | 2.9 | 3.35 |
| Vitamin E (α-tocopherol equivalents) (mg) | 10.6 | 8.4 | 15.65 | 13.8 | 10.8 | 22.64 | 10.3 | 6.9 | 38.62 | 15.9 | 8.4 | 41.44 |
| *Base* | | *110* | | | *723* | | | *150* | | | *741* | |
| **Food sources** | | | | | | | | | | | | |
| Vitamin A (retinol equivalents) (µg) | 777 | 543 | 939 | 931 | 670 | 1102 | 506 | 404 | 409 | 704 | 567 | 664 |
| Total carotene (β-carotene equivalents) (µg) | 1755 | 1451 | 1320 | 2084 | 1774 | 1443 | 1406 | 1089 | 1342 | 2017 | 1743 | 1380 |
| Thiamin (mg) | 1.62 | 1.66 | 0.655 | 2.06 | 1.83 | 1.732 | 1.34 | 1.21 | 1.117 | 1.58 | 1.43 | 0.979 |
| Riboflavin (mg) | 1.73 | 1.62 | 0.758 | 2.17 | 2.02 | 0.951 | 1.40 | 1.30 | 0.650 | 1.64 | 1.58 | 0.629 |
| Vitamin $B_6$ (mg) | 2.4 | 2.2 | 1.03 | 2.9 | 2.8 | 1.01 | 1.8 | 1.7 | 0.70 | 2.1 | 2.1 | 0.67 |
| Vitamin $B_{12}$ (µg) | 5.4 | 5.1 | 2.88 | 6.6 | 5.6 | 4.88 | 4.1 | 3.8 | 2.53 | 4.9 | 4.4 | 2.71 |
| Folate (µg) | 285 | 265 | 122.1 | 353 | 333 | 125.1 | 220 | 204 | 96.2 | 257 | 252 | 87.4 |
| Vitamin C (mg) | 62.7 | 48.7 | 44.27 | 86.6 | 73.5 | 55.18 | 60.4 | 44.9 | 43.83 | 85.1 | 73.3 | 50.09 |
| Vitamin D (µg) | 3.2 | 2.6 | 2.22 | 3.8 | 3.2 | 2.25 | 2.2 | 1.9 | 1.45 | 3.0 | 2.4 | 2.18 |
| Vitamin E (α-tocopherol equivalents) (mg) | 9.2 | 8.4 | 4.33 | 10.9 | 10.2 | 4.72 | 7.0 | 6.7 | 3.86 | 8.3 | 7.8 | 3.31 |
| *Base* | | *110* | | | *723* | | | *150* | | | *741* | |

## Table 2.42

**Average daily intake of vitamins as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and whether someone in the respondent's household was receiving certain benefits**

| Vitamin (unit of measurement) | Whether receiving benefits | | | |
|---|---|---|---|---|
| | Men | | Women | |
| | Receiving benefits* | Not receiving benefits | Receiving benefits* | Not receiving benefits |
| **All sources** | | | | |
| Vitamin A (µg) | | | | |
| mean daily intake as % RNI | 118 | 149 | 97 | 141 |
| % with intakes below LRNI | 12 | 5 | 20 | 5 |
| Thiamin (mg)** | | | | |
| mean daily intake as % RNI | | | 230 | 246 |
| 19 to 50 years | 181 | 223 | | |
| over 50 years | [23] | 268 | | |
| % with intakes below LRNI | | | 6 | 1 |
| 19 to 50 years | 1 | 1 | | |
| over 50 years | [1] | - | | |
| Riboflavin (mg) | | | | |
| mean daily intake as % RNI | 150 | 184 | 171 | 186 |
| % with intakes below LRNI | 7 | 2 | 18 | 5 |
| Niacin equivalents (mg)** | | | | |
| mean daily intake as % RNI | | | | |
| 19 to 50 years | 225 | 283 | 237 | 274 |
| over 50 years | [23] | 291 | [25] | 294 |
| % with intakes below LRNI | | | | |
| 19 to 50 years | - | 0 | 1 | 1 |
| over 50 years | [1] | - | [-] | 0 |
| Vitamin $B_6$ (mg) | | | | |
| mean daily intake as % RNI | 224 | 237 | 221 | 250 |
| % with intakes below LRNI | 3 | 0 | 6 | 1 |
| Vitamin $B_{12}$ (µg) | | | | |
| mean daily intake as % RNI | 363 | 463 | 292 | 353 |
| % with intakes below LRNI | 1 | 0 | 2 | 0 |
| Folate (µg) | | | | |
| mean daily intake as % RNI | 146 | 185 | 125 | 150 |
| % with intakes below LRNI | 1 | 0 | 6 | 1 |
| Vitamin C (mg) | | | | |
| mean daily intake as % RNI | 162 | 267 | 166 | 303 |
| % with intakes below LRNI | 1 | - | 1 | 0 |

## Table 2.42 continued

### Average daily intake of vitamins as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and whether someone in the respondent's household was receiving certain benefits

| Vitamin (unit of measurement) | Whether receiving benefits | | | |
|---|---|---|---|---|
| | Men | | Women | |
| | Receiving benefits* | Not receiving benefits | Receiving benefits* | Not receiving benefits |
| **Food sources** | | | | |
| Vitamin A (µg) | | | | |
| mean daily intake as % RNI | 111 | 133 | 84 | 117 |
| % with intakes below LRNI | 13 | 6 | 22 | 6 |
| Thiamin (mg)** | | | | |
| mean daily intake as % RNI | | | 230 | 246 |
| 19 to 50 years | 181 | 223 | | |
| over 50 years | [23] | 268 | | |
| % with intakes below LRNI | | | 6 | 1 |
| 19 to 50 years | 1 | 1 | | |
| over 50 years | [1] | - | | |
| Riboflavin (mg) | | | | |
| mean daily intake as % RNI | 133 | 167 | 127 | 149 |
| % with intakes below LRNI | 8 | 2 | 19 | 5 |
| Niacin equivalents (mg)** | | | | |
| mean daily intake as % RNI | | | | |
| 19 to 50 years | 222 | 272 | 227 | 260 |
| over 50 years | [23] | 281 | [25] | 272 |
| % with intakes below LRNI | | | | |
| 19 to 50 years | 0 | 0 | 1 | 1 |
| over 50 years | [1] | - | [-] | 0 |
| Vitamin $B_6$ (mg) | | | | |
| mean daily intake as % RNI | 170 | 209 | 147 | 173 |
| % with intakes below LRNI | 2 | 0 | 6 | 1 |
| Vitamin $B_{12}$ (µg) | | | | |
| mean daily intake as % RNI | 359 | 442 | 276 | 328 |
| % with intakes below LRNI | 1 | 0 | 3 | 1 |
| Folate (µg) | | | | |
| mean daily intake as % RNI | 142 | 176 | 110 | 129 |
| % with intakes below LRNI | 1 | 0 | 6 | 1 |
| Vitamin C (mg) | | | | |
| mean daily intake as % RNI | 157 | 216 | 151 | 213 |
| % with intakes below LRNI | 1 | - | 1 | 0 |
| *Base – respondents aged 19 to 50 years* | *87* | *23* | *125* | *523* |
| *Base – respondents aged over 50 years* | *518* | *206* | *25* | *218* |

*Note: * Square brackets enclosing numbers denote the actual number of cases, when the base is fewer than 30. The number of men and women aged over 50 years living in benefit households is less than 30 and mean values and percentages are not, therefore, presented for niacin equivalents or for men, thiamin.*

*** For niacin equivalents, and thiamin for men, RNI and LRNI values are different for 19 to 50 year olds and over 50 year olds, so data for these vitamins are presented separately by age.*

# Table 2.43(a)

## Comparison of average daily vitamin intakes from food sources by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19 to 64 years (present survey): men

| Vitamin (unit of measurement) | Men aged (years): | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey* | | | | All men | 2000/01 NDNS | | | | All men |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| Vitamin A (retinol equivalents) (µg) | | | | | | | | | | |
| mean | 1164 | 1552 | 1759 | 1897 | 1628 | 560 | 724 | 989 | 1145 | 911 |
| median | 786 | 965 | 1084 | 1132 | 1012 | 489 | 585 | 670 | 789 | 660 |
| se/sd** | 86 | 127 | 99 | 119 | 56 | 351 | 525 | 1353 | 1269 | 1083 |
| Pre-formed retinol (µg) | | | | | | | | | | |
| mean | 848 | 1184 | 1333 | 1425 | 1226 | 315 | 424 | 643 | 735 | 571 |
| median | 487 | 584 | 633 | 670 | 602 | 252 | 297 | 350 | 380 | 327 |
| se/sd** | 82 | 119 | 96 | 114 | 53 | 296 | 435 | 1327 | 1221 | 1034 |
| Thiamin (mg) | | | | | | | | | | |
| mean | 1.72 | 1.66 | 1.71 | 1.70 | 1.70 | 1.60 | 2.08 | 2.04 | 2.07 | 2.00 |
| median | 1.68 | 1.57 | 1.65 | 1.69 | 1.65 | 1.67 | 1.69 | 1.89 | 1.89 | 1.78 |
| se/sd** | 0.04 | 0.03 | 0.03 | 0.03 | 0.02 | 0.555 | 2.263 | 1.620 | 1.263 | 1.638 |
| Riboflavin (mg) | | | | | | | | | | |
| mean | 1.96 | 2.08 | 2.14 | 2.11 | 2.08 | 1.68 | 2.12 | 2.19 | 2.20 | 2.11 |
| median | 1.91 | 1.95 | 2.03 | 2.08 | 2.00 | 1.56 | 1.91 | 2.07 | 2.06 | 1.98 |
| se/sd** | 0.05 | 0.04 | 0.04 | 0.04 | 0.02 | 0.780 | 1.097 | 0.894 | 0.847 | 0.939 |
| Niacin equivalents (mg) | | | | | | | | | | |
| mean | 39.0 | 40.2 | 40.5 | 39.5 | 39.9 | 39.4 | 46.2 | 45.9 | 44.6 | 44.7 |
| median | 38.3 | 39.8 | 39.7 | 38.9 | 39.2 | 37.9 | 44.5 | 46.2 | 44.2 | 44.2 |
| se/sd** | 0.77 | 0.67 | 0.58 | 0.62 | 0.33 | 11.46 | 18.17 | 13.40 | 13.43 | 14.73 |
| Vitamin $B_6$ (mg) | | | | | | | | | | |
| mean | 2.6 | 2.5 | 2.5 | 2.3 | 2.5 | 2.6 | 3.0 | 2.9 | 2.8 | 2.9 |
| median | 2.5 | 2.5 | 2.4 | 2.2 | 2.4 | 2.7 | 2.7 | 2.7 | 2.8 | 2.7 |
| se/sd** | 0.07 | 0.05 | 0.05 | 0.05 | 0.03 | 0.94 | 1.16 | 1.00 | 0.95 | 1.03 |
| Vitamin $B_{12}$ (µg) | | | | | | | | | | |
| mean | 6.2 | 7.1 | 7.6 | 7.8 | 7.2 | 4.4 | 5.9 | 7.0 | 7.3 | 6.5 |
| median | 5.1 | 5.7 | 5.9 | 5.9 | 5.7 | 4.3 | 5.1 | 5.9 | 6.2 | 5.5 |
| se/sd** | 0.29 | 0.34 | 0.31 | 0.35 | 0.17 | 1.62 | 3.42 | 5.42 | 5.40 | 4.69 |
| Folate (µg) | | | | | | | | | | |
| mean | 302 | 317 | 321 | 300 | 311 | 301 | 346 | 343 | 361 | 344 |
| median | 285 | 303 | 308 | 289 | 300 | 275 | 326 | 327 | 349 | 327 |
| se/sd** | 7.6 | 6.4 | 5.6 | 5.7 | 3.1 | 108.4 | 128.1 | 118.5 | 137.0 | 126.8 |
| Pantothenic acid (mg) | | | | | | | | | | |
| mean | 6.3 | 6.4 | 6.4 | 6.1 | 6.3 | 5.9 | 7.1 | 7.5 | 7.5 | 7.2 |
| median | 6.0 | 6.1 | 6.2 | 5.8 | 6.1 | 5.6 | 6.6 | 7.2 | 7.4 | 6.9 |
| se/sd** | 0.17 | 0.15 | 0.10 | 0.10 | 0.06 | 2.14 | 3.45 | 2.59 | 2.57 | 2.83 |
| Biotin (µg) | | | | | | | | | | |
| mean | 35 | 40 | 41 | 39 | 39 | 30 | 41 | 44 | 43 | 41 |
| median | 34 | 39 | 39 | 37 | 38 | 28 | 39 | 43 | 42 | 40 |
| se/sd** | 1.0 | 1.1 | 0.8 | 0.8 | 0.4 | 11.9 | 18.2 | 16.4 | 17.6 | 17.3 |
| Vitamin C (mg) | | | | | | | | | | |
| mean | 64.9 | 69.7 | 65.0 | 66.5 | 66.5 | 64.9 | 74.1 | 88.4 | 94.5 | 83.4 |
| median | 52.6 | 59.3 | 58.3 | 60.2 | 57.6 | 51.1 | 58.5 | 75.9 | 85.5 | 70.7 |
| se/sd** | 3.26 | 2.64 | 1.97 | 2.04 | 1.20 | 52.02 | 48.88 | 57.32 | 53.99 | 54.45 |
| Vitamin D (µg) | | | | | | | | | | |
| mean | 2.8 | 3.2 | 3.7 | 3.8 | 3.4 | 2.9 | 3.5 | 3.7 | 4.2 | 3.7 |
| median | 2.4 | 2.6 | 3.2 | 3.2 | 2.9 | 2.8 | 3.0 | 3.3 | 3.7 | 3.1 |
| se/sd** | 0.14 | 0.15 | 0.14 | 0.17 | 0.08 | 1.54 | 2.18 | 2.31 | 2.40 | 2.25 |
| Vitamin E (α–tocopherol equivalents) (mg) | | | | | | | | | | |
| mean | 9.7 | 10.2 | 10.4 | 9.2 | 9.9 | 9.8 | 10.5 | 10.8 | 11.0 | 10.6 |
| median | 9.2 | 9.6 | 9.4 | 8.8 | 9.3 | 8.7 | 10.0 | 10.4 | 11.0 | 10.0 |
| se/sd** | 0.26 | 0.26 | 0.31 | 0.25 | 0.14 | 4.04 | 4.45 | 4.33 | 5.45 | 4.70 |
| *Base – number of respondents* | *214* | *254* | *346* | *273* | *1087* | *108* | *219* | *253* | *253* | *833* |

*Note: * Gregory J, Foster K, Tyler H, Wiseman M. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*
*** 1986/87 survey reported standard errors; present survey reports standard deviations.*

Table 2.43(b)

## Comparison of average daily vitamin intakes from food sources by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19 to 64 years (present survey): women

| Vitamin (unit of measurement) | Women aged (years): | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey* | | | | All women | 2000/01 NDNS | | | | All women |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| Vitamin A (retinol equivalents) (µg) | | | | | | | | | | |
| mean | 1051 | 1234 | 1531 | 1655 | 1413 | 467 | 587 | 675 | 816 | 671 |
| median | 633 | 719 | 884 | 951 | 810 | 393 | 510 | 571 | 635 | 549 |
| se/sd** | 99 | 102 | 86 | 101 | 49 | 347 | 692 | 507 | 766 | 633 |
| Pre–formed retinol (µg) | | | | | | | | | | |
| mean | 788 | 906 | 1140 | 1263 | 1058 | 251 | 302 | 339 | 449 | 352 |
| median | 389 | 438 | 481 | 516 | 463 | 187 | 230 | 248 | 267 | 241 |
| se/sd** | 98 | 98 | 83 | 99 | 48 | 323 | 654 | 445 | 726 | 584 |
| Thiamin (mg) | | | | | | | | | | |
| mean | 1.26 | 1.21 | 1.25 | 1.25 | 1.24 | 1.45 | 1.55 | 1.52 | 1.60 | 1.54 |
| median | 1.23 | 1.18 | 1.24 | 1.23 | 1.22 | 1.25 | 1.32 | 1.47 | 1.44 | 1.40 |
| se/sd** | 0.03 | 0.03 | 0.02 | 0.02 | 0.01 | 0.781 | 1.288 | 0.970 | 0.864 | 1.007 |
| Riboflavin (mg) | | | | | | | | | | |
| mean | 1.45 | 1.50 | 1.64 | 1.63 | 1.57 | 1.39 | 1.44 | 1.66 | 1.75 | 1.60 |
| median | 1.33 | 1.41 | 1.54 | 1.59 | 1.50 | 1.25 | 1.35 | 1.60 | 1.68 | 1.54 |
| se/sd** | 0.04 | 0.04 | 0.03 | 0.03 | 0.02 | 0.636 | 0.546 | 0.614 | 0.688 | 0.638 |
| Niacin equivalents (mg) | | | | | | | | | | |
| mean | 27.3 | 27.7 | 29.5 | 28.7 | 28.5 | 29.5 | 28.8 | 31.5 | 32.3 | 30.9 |
| median | 27.1 | 27.3 | 28.9 | 28.3 | 28.1 | 29.3 | 27.9 | 31.1 | 31.9 | 30.4 |
| se/sd** | 0.54 | 0.49 | 0.42 | 0.48 | 0.24 | 9.61 | 9.16 | 9.09 | 8.85 | 9.20 |
| Vitamin $B_6$ (mg) | | | | | | | | | | |
| mean | 1.6 | 1.5 | 1.6 | 1.5 | 1.6 | 2.0 | 1.9 | 2.0 | 2.1 | 2.0 |
| median | 1.6 | 1.5 | 1.6 | 1.5 | 1.5 | 1.9 | 1.9 | 2.0 | 2.1 | 2.0 |
| se/sd** | 0.04 | 0.03 | 0.03 | 0.03 | 0.02 | 0.73 | 0.64 | 0.66 | 0.73 | 0.69 |
| Vitamin $B_{12}$ (µg) | | | | | | | | | | |
| mean | 4.4 | 4.5 | 5.6 | 5.8 | 5.2 | 4.0 | 4.0 | 4.9 | 5.7 | 4.8 |
| median | 3.4 | 3.5 | 4.1 | 4.3 | 3.9 | 3.7 | 3.4 | 4.5 | 5.1 | 4.3 |
| se/sd** | 0.28 | 0.25 | 0.24 | 0.28 | 0.13 | 2.00 | 2.17 | 2.50 | 3.22 | 2.69 |
| Folate (µg) | | | | | | | | | | |
| mean | 198 | 206 | 220 | 218 | 213 | 229 | 233 | 255 | 268 | 251 |
| median | 194 | 198 | 212 | 214 | 208 | 225 | 229 | 251 | 267 | 245 |
| se/sd** | 4.7 | 4.4 | 3.7 | 3.9 | 2.1 | 91.6 | 80.6 | 87.3 | 95.7 | 89.9 |
| Pantothenic acid (mg) | | | | | | | | | | |
| mean | 4.4 | 4.5 | 4.7 | 4.4 | 4.5 | 4.8 | 4.9 | 5.6 | 5.9 | 5.4 |
| median | 4.3 | 4.5 | 4.5 | 4.3 | 4.4 | 4.7 | 4.8 | 5.5 | 5.7 | 5.2 |
| se/sd** | 0.10 | 0.09 | 0.08 | 0.08 | 0.04 | 1.78 | 1.71 | 1.83 | 2.00 | 1.89 |
| Biotin (µg) | | | | | | | | | | |
| mean | 24 | 27 | 31 | 29 | 28 | 24 | 26 | 30 | 32 | 29 |
| median | 24 | 25 | 29 | 27 | 26 | 23 | 25 | 29 | 31 | 28 |
| se/sd** | 0.7 | 0.7 | 0.9 | 0.7 | 0.4 | 10.1 | 8.8 | 11.0 | 11.5 | 11.0 |
| Vitamin C (mg) | | | | | | | | | | |
| mean | 60.4 | 55.9 | 62.7 | 67.6 | 62.0 | 67.9 | 72.3 | 80.0 | 94.4 | 81.0 |
| median | 48.8 | 48.5 | 54.8 | 58.8 | 52.6 | 59.0 | 59.4 | 66.6 | 79.0 | 68.7 |
| se/sd** | 3.27 | 2.08 | 1.96 | 2.42 | 1.18 | 42.22 | 47.48 | 49.64 | 52.19 | 49.93 |
| Vitamin D (µg) | | | | | | | | | | |
| mean | 2.1 | 2.3 | 2.6 | 2.8 | 2.5 | 2.3 | 2.4 | 2.8 | 3.5 | 2.8 |
| median | 1.9 | 2.1 | 2.2 | 2.3 | 2.2 | 1.8 | 2.1 | 2.3 | 2.8 | 2.3 |
| se/sd** | 0.09 | 0.10 | 0.09 | 0.12 | 0.05 | 1.55 | 1.64 | 2.11 | 2.41 | 2.09 |
| Vitamin E (α–tocopherol equivalents) (mg) | | | | | | | | | | |
| mean | 6.8 | 7.3 | 7.6 | 7.0 | 7.2 | 7.9 | 7.9 | 8.2 | 8.2 | 8.1 |
| median | 6.1 | 7.0 | 7.0 | 6.6 | 6.7 | 7.0 | 7.5 | 7.7 | 7.8 | 7.6 |
| se/sd** | 0.22 | 0.22 | 0.17 | 0.18 | 0.10 | 4.53 | 3.37 | 3.33 | 3.12 | 3.44 |
| *Base – number of respondents* | *189* | *253* | *385* | *283* | *1110* | *104* | *210* | *318* | *259* | *891* |

*Note: * Gregory J, Foster K, Tyler H, Wiseman M. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*

*** 1986/87 survey reported standard errors; present survey reports standard deviations.*

# Table 2.44(a)

## Comparison of average daily vitamin intakes from all sources by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19 to 64 years (present survey): men

| Vitamin (unit of measurement) | Men aged (years): | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey* | | | | All men | 2000/01 NDNS | | | | All men |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| Vitamin A (retinol equivalents) (µg) | | | | | | | | | | |
| mean | 1192 | 1585 | 1834 | 1953 | 1679 | 579 | 852 | 1069 | 1296 | 1017 |
| median | 805 | 995 | 1118 | 1144 | 1033 | 489 | 643 | 715 | 865 | 697 |
| se/sd** | 86 | 127 | 102 | 122 | 57 | 361 | 711 | 1380 | 1339 | 1151 |
| Pre–formed retinol (µg) | | | | | | | | | | |
| mean | 877 | 1216 | 1408 | 1481 | 1277 | 334 | 551 | 721 | 877 | 673 |
| median | 494 | 600 | 647 | 683 | 618 | 280 | 332 | 367 | 444 | 363 |
| se/sd** | 82 | 120 | 99 | 117 | 54 | 305 | 647 | 1350 | 1278 | 1095 |
| Total carotene (µg) | | | | | | | | | | |
| mean | 1893 | 2211 | 2555 | 2833 | 2414 | 1470 | 1806 | 2088 | 2514 | 2063 |
| median | 1229 | 1676 | 1999 | 2360 | 1895 | 1392 | 1474 | 1853 | 1936 | 1716 |
| se/sd** | 118 | 122 | 102 | 132 | 60 | 970 | 1258 | 1276 | 1965 | 1524 |
| Thiamin (mg) | | | | | | | | | | |
| mean | 1.93 | 2.28 | 1.95 | 1.87 | 2.01 | 1.62 | 2.32 | 2.26 | 2.35 | 2.22 |
| median | 1.72 | 1.62 | 1.65 | 1.69 | 1.67 | 1.67 | 1.78 | 1.92 | 1.96 | 1.86 |
| se/sd** | 0.13 | 0.57 | 0.18 | 0.15 | 0.15 | 0.570 | 2.624 | 2.551 | 3.132 | 2.615 |
| Riboflavin (mg) | | | | | | | | | | |
| mean | 2.18 | 2.43 | 2.24 | 2.33 | 2.29 | 1.71 | 2.40 | 2.35 | 2.51 | 2.33 |
| median | 1.93 | 2.00 | 2.05 | 2.08 | 2.03 | 1.56 | 2.03 | 2.11 | 2.16 | 2.02 |
| se/sd** | 0.14 | 0.29 | 0.05 | 0.19 | 0.09 | 0.803 | 2.216 | 1.838 | 3.698 | 2.568 |
| Niacin equivalents (mg) | | | | | | | | | | |
| mean | 40.0 | 41.0 | 42.0 | 39.9 | 40.9 | 39.7 | 49.2 | 47.0 | 46.2 | 46.4 |
| median | 38.7 | 40.1 | 40.0 | 38.9 | 39.6 | 39.8 | 45.0 | 46.5 | 44.7 | 44.5 |
| se/sd** | 0.93 | 0.76 | 0.99 | 0.68 | 0.44 | 11.73 | 29.50 | 15.76 | 14.54 | 19.83 |
| Vitamin $B_6$ (mg) | | | | | | | | | | |
| mean | 2.8 | 2.9 | 2.6 | 2.5 | 2.7 | 2.7 | 3.3 | 3.5 | 3.4 | 3.3 |
| median | 2.5 | 2.5 | 2.4 | 2.2 | 2.4 | 2.7 | 2.8 | 2.8 | 2.8 | 2.8 |
| se/sd** | 0.14 | 0.30 | 0.06 | 0.16 | 0.09 | 0.96 | 2.23 | 5.05 | 4.62 | 3.96 |
| Vitamin $B_{12}$ (µg) | | | | | | | | | | |
| mean | 6.3 | 7.1 | 7.7 | 8.0 | 7.3 | 4.5 | 6.2 | 7.4 | 7.6 | 6.8 |
| median | 5.1 | 5.7 | 6.0 | 5.9 | 5.7 | 4.3 | 5.2 | 6.0 | 6.4 | 5.6 |
| se/sd** | 0.29 | 0.34 | 0.31 | 0.41 | 0.17 | 1.67 | 4.26 | 7.25 | 6.55 | 5.93 |
| Folate (µg) | | | | | | | | | | |
| mean | 302 | 319 | 322 | 301 | 312 | 305 | 376 | 355 | 373 | 359 |
| median | 285 | 303 | 310 | 289 | 300 | 275 | 341 | 330 | 354 | 333 |
| se/sd** | 7.6 | 6.7 | 5.7 | 5.9 | 3.2 | 113.7 | 223.6 | 171.2 | 150.8 | 176.2 |
| Pantothenic acid (mg) | | | | | | | | | | |
| mean | 6.5 | 6.9 | 6.6 | 6.3 | 6.6 | 6.0 | 7.9 | 8.1 | 8.2 | 7.8 |
| median | 6.1 | 6.1 | 6.2 | 5.8 | 6.1 | 5.6 | 6.7 | 7.2 | 7.6 | 7.1 |
| se/sd** | 0.25 | 0.45 | 0.13 | 0.22 | 0.14 | 2.31 | 7.14 | 5.61 | 4.56 | 5.51 |
| Biotin (µg) | | | | | | | | | | |
| mean | 35 | 40 | 41 | 39 | 39 | 31 | 45 | 47 | 46 | 44 |
| median | 34 | 39 | 40 | 37 | 38 | 29 | 40 | 43 | 42 | 41 |
| se/sd** | 1.1 | 1.1 | 0.8 | 0.8 | 0.5 | 12.3 | 27.4 | 38.5 | 24.8 | 29.6 |
| Vitamin C (mg) | | | | | | | | | | |
| mean | 70.9 | 79.8 | 77.9 | 68.5 | 74.6 | 67.2 | 83.7 | 107.7 | 125.0 | 101.4 |
| median | 53.1 | 60.5 | 59.0 | 60.2 | 58.5 | 51.1 | 62.8 | 77.5 | 92.3 | 74.2 |
| se/sd** | 4.45 | 5.94 | 5.38 | 2.42 | 2.45 | 55.09 | 65.97 | 208.27 | 142.30 | 145.60 |
| Vitamin D (µg) | | | | | | | | | | |
| mean | 3.0 | 3.4 | 4.2 | 4.2 | 3.8 | 3.0 | 4.1 | 4.2 | 4.9 | 4.2 |
| median | 2.5 | 2.7 | 3.4 | 3.3 | 3.0 | 2.8 | 3.1 | 3.5 | 4.1 | 3.4 |
| se/sd** | 0.17 | 0.16 | 0.20 | 0.23 | 0.10 | 1.59 | 3.19 | 3.08 | 3.25 | 3.06 |
| Vitamin E (α–tocopherol equivalents) (mg) | | | | | | | | | | |
| mean | 10.7 | 13.0 | 12.2 | 10.6 | 11.7 | 10.1 | 11.9 | 14.4 | 15.2 | 13.4 |
| median | 9.2 | 9.6 | 9.4 | 8.9 | 9.3 | 8.7 | 10.5 | 10.6 | 11.1 | 10.5 |
| se/sd** | 0.91 | 2.42 | 1.17 | 0.90 | 0.74 | 4.31 | 7.17 | 27.35 | 27.73 | 21.87 |
| *Base – number of respondents* | *214* | *254* | *346* | *273* | *1087* | *108* | *219* | *253* | *253* | *833* |

*Note: * Gregory J, Foster K, Tyler H, Wiseman M. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*

*** 1986/87 survey reported standard errors; present survey reports standard deviations.*

Table 2.44(b)

## Comparison of average daily vitamin intakes from all sources by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19 to 64 years (present survey): women

| Vitamin (unit of measurement) | Women aged (years): | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey* | | | | All women | 2000/01 NDNS | | | | All women |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| Vitamin A (retinol equivalents) (µg) | | | | | | | | | | |
| mean | 1091 | 1273 | 1606 | 1784 | 1488 | 590 | 634 | 803 | 1015 | 800 |
| median | 658 | 738 | 926 | 1024 | 849 | 418 | 534 | 624 | 754 | 606 |
| se/sd** | 99 | 102 | 88 | 104 | 50 | 595 | 718 | 629 | 838 | 729 |
| Pre–formed retinol (µg) | | | | | | | | | | |
| mean | 829 | 945 | 1215 | 1391 | 1133 | 341 | 341 | 462 | 645 | 472 |
| median | 401 | 456 | 519 | 562 | 491 | 201 | 257 | 285 | 331 | 277 |
| se/sd** | 98 | 98 | 85 | 102 | 48 | 402 | 668 | 541 | 800 | 654 |
| Total carotene (µg) | | | | | | | | | | |
| mean | 1576 | 1965 | 2344 | 2353 | 2129 | 1498 | 1754 | 2047 | 2222 | 1964 |
| median | 1179 | 1567 | 1934 | 1848 | 1696 | 1054 | 1428 | 1753 | 2019 | 1608 |
| se/sd** | 102 | 105 | 98 | 119 | 55 | 1936 | 1357 | 1710 | 1395 | 1591 |
| Thiamin (mg) | | | | | | | | | | |
| mean | 1.46 | 1.32 | 1.56 | 2.05 | 1.61 | 1.58 | 1.62 | 1.97 | 2.33 | 1.94 |
| median | 1.26 | 1.21 | 1.29 | 1.27 | 1.26 | 1.29 | 1.36 | 1.52 | 1.62 | 1.46 |
| se/sd** | 0.16 | 0.04 | 0.12 | 0.54 | 0.15 | 0.961 | 1.344 | 5.688 | 6.560 | 4.958 |
| Riboflavin (mg) | | | | | | | | | | |
| mean | 1.53 | 1.67 | 1.98 | 2.00 | 1.84 | 1.53 | 1.52 | 2.13 | 2.48 | 2.02 |
| median | 1.37 | 1.47 | 1.61 | 1.63 | 1.56 | 1.31 | 1.41 | 1.69 | 1.85 | 1.62 |
| se/sd** | 0.05 | 0.10 | 0.14 | 0.11 | 0.06 | 0.806 | 0.636 | 5.486 | 6.585 | 4.856 |
| Niacin equivalents (mg) | | | | | | | | | | |
| mean | 28.4 | 28.5 | 30.9 | 32.2 | 30.3 | 31.1 | 29.3 | 33.7 | 35.1 | 32.8 |
| median | 27.3 | 27.7 | 29.8 | 28.8 | 28.6 | 32.1 | 28.8 | 32.8 | 33.9 | 32.1 |
| se/sd** | 0.85 | 0.54 | 0.53 | 2.24 | 0.63 | 10.49 | 9.48 | 12.22 | 12.35 | 11.67 |
| Vitamin $B_6$ (mg) | | | | | | | | | | |
| mean | 1.7 | 2.9 | 3.5 | 2.7 | 2.8 | 2.1 | 2.3 | 3.4 | 3.3 | 2.9 |
| median | 1.6 | 1.6 | 1.6 | 1.5 | 1.6 | 2.0 | 1.9 | 2.1 | 2.2 | 2.1 |
| se/sd** | 0.05 | 0.60 | 0.62 | 0.42 | 0.28 | 0.92 | 3.20 | 9.80 | 8.34 | 7.56 |
| Vitamin $B_{12}$ (µg) | | | | | | | | | | |
| mean | 4.4 | 4.6 | 5.9 | 5.9 | 5.4 | 4.1 | 4.0 | 5.5 | 6.1 | 5.1 |
| median | 3.4 | 3.5 | 4.1 | 4.4 | 3.9 | 3.7 | 3.6 | 4.6 | 5.4 | 4.4 |
| se/sd** | 0.28 | 0.25 | 0.27 | 0.28 | 0.14 | 2.09 | 2.17 | 6.43 | 3.66 | 4.57 |
| Folate (µg) | | | | | | | | | | |
| mean | 217 | 208 | 224 | 222 | 219 | 248 | 249 | 280 | 359 | 292 |
| median | 198 | 198 | 213 | 214 | 209 | 232 | 233 | 258 | 275 | 255 |
| se/sd** | 17.0 | 4.6 | 4.1 | 4.2 | 3.6 | 109.2 | 113.2 | 123.4 | 916.9 | 505.2 |
| Pantothenic acid (mg) | | | | | | | | | | |
| mean | 4.4 | 4.7 | 5.3 | 5.6 | 5.1 | 5.2 | 5.1 | 6.4 | 7.9 | 6.4 |
| median | 4.3 | 4.6 | 4.6 | 4.4 | 4.5 | 4.7 | 4.9 | 5.7 | 6.0 | 5.4 |
| se/sd** | 0.10 | 0.15 | 0.25 | 0.69 | 0.20 | 2.35 | 2.04 | 5.76 | 14.59 | 8.73 |
| Biotin (µg) | | | | | | | | | | |
| mean | 24 | 27 | 32 | 29 | 29 | 27 | 28 | 34 | 37 | 33 |
| median | 24 | 25 | 29 | 27 | 26 | 23 | 25 | 30 | 32 | 28 |
| se/sd** | 0.7 | 0.7 | 1.0 | 0.8 | 0.4 | 22.7 | 22.1 | 25.5 | 41.3 | 30.3 |
| Vitamin C (mg) | | | | | | | | | | |
| mean | 61.5 | 66.0 | 81.8 | 75.5 | 73.1 | 96.1 | 85.1 | 123.1 | 126.7 | 112.0 |
| median | 49.2 | 50.0 | 56.8 | 62.0 | 54.1 | 68.6 | 62.0 | 77.9 | 90.2 | 76.1 |
| se/sd** | 3.34 | 6.71 | 6.42 | 3.59 | 2.91 | 133.71 | 85.49 | 299.37 | 161.22 | 208.58 |
| Vitamin D (µg) | | | | | | | | | | |
| mean | 2.4 | 2.6 | 3.2 | 3.8 | 3.1 | 2.9 | 2.7 | 3.5 | 5.1 | 3.7 |
| median | 1.9 | 2.1 | 2.3 | 2.6 | 2.3 | 2.1 | 2.2 | 2.6 | 3.8 | 2.7 |
| se/sd** | 0.16 | 0.14 | 0.16 | 0.22 | 0.09 | 2.47 | 1.96 | 2.89 | 4.11 | 3.23 |
| Vitamin E (α–tocopherol equivalents) (mg) | | | | | | | | | | |
| mean | 7.0 | 8.1 | 8.5 | 10.2 | 8.6 | 9.4 | 8.6 | 14.3 | 23.2 | 15.0 |
| median | 6.1 | 7.0 | 7.1 | 6.8 | 6.8 | 7.6 | 7.6 | 8.4 | 8.8 | 8.0 |
| se/sd** | 0.24 | 0.51 | 0.48 | 1.16 | 0.36 | 9.24 | 4.70 | 40.14 | 60.53 | 41.01 |
| *Base – number of respondents* | *189* | *253* | *385* | *283* | *1110* | *104* | *210* | *318* | *259* | *891* |

*Note: * Gregory J, Foster K, Tyler H, Wiseman M. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*
*** 1986/87 survey reported standard errors; present survey reports standard deviations.*

# 3 Minerals

## 3.1 Introduction

Minerals are inorganic elements. Some minerals are required for the body's normal function and these essential minerals are derived from the diet; they include iron, calcium, phosphorus, potassium, magnesium, sodium and chloride. Trace elements are required in minute amounts, and include zinc, copper, iodine and manganese.

Data are presented in this chapter for average daily intakes of the above minerals, which were derived from the records of the 1,724 respondents in the survey who completed a full seven-day dietary record. No attempt has been made to adjust the intakes to take account of under-reporting.

For all minerals other than haem iron, dietary supplements made some contribution to intake and thus data are presented from *all sources*, including dietary supplements, and from *food sources* alone. For haem iron, intakes are presented from food sources only.

For those minerals where UK Reference Nutrient Intake values (RNIs) and Lower Reference Nutrient Intake values (LRNIs) have been published for adults in the appropriate sex and age groups, the proportion of respondents with intakes below the LRNIs are shown, and mean daily intakes are compared with current RNIs. Current RNIs and LRNIs are shown in Table 3.1[1]. Table 3.2 shows the proportion of respondents with intakes below the LRNIs for those vitamins where LRNIs have been published. A further explanation of RNIs and LRNIs can be found in Chapter 2, section 2.1.1.

(Tables 3.1 and 3.2)

## 3.2 Total iron, haem and non-haem iron

Dietary iron occurs in two forms. About 90% of iron in the average British diet is in the form of iron salts and is referred to as *non-haem iron*[2]. The extent to which this type of iron is absorbed is highly variable and depends both on the individual's iron status and on other components of the diet. The other 10% of dietary iron is in the form of *haem iron* and comes mainly from the haemoglobin and myoglobin of meat. Haem iron is well absorbed, and its absorption is less strongly influenced by the individual's iron stores or other constituents of the diet.

Meat, poultry and fish, and ascorbic acid (vitamin C) are major enhancers of non-haem iron absorption. Meat, poultry and fish contain haem iron, which itself is relatively well absorbed but also enhances non-haem iron absorption from other foods consumed at the same time. Similarly, ascorbic acid (vitamin C) enhances non-haem iron absorption when consumed as part of a meal. The strongest inhibitors of non-haem iron are phytates, present in cereal grains, vegetables, seeds and nuts, and also polyphenols which are found particularly in tea and coffee. Current research, focusing on measuring absorption of non-haem iron from the diet as a whole, suggests that there may be interactions between the various enhancers and inhibitors and an adaptive response over time[3].

Table 3.3 shows the mean daily intake of total iron and Tables 3.4 and 3.5 mean daily intake of haem and non-haem iron respectively. The mean daily intake of total iron from food sources was 13.2mg for men and, significantly lower, 10.0mg for women ($p<0.01$). Haem iron contributed a mean of 0.8mg and 0.5mg towards total iron intake for men and women respectively, while non-haem iron contributed a mean of 12.3mg and 9.5mg respectively.

Women had a significantly lower mean daily intake of haem and non-haem iron than men (p<0.01). For women, intakes of total iron, haem iron and non-haem iron were significantly lower than for men in each age group (19 to 24 years for total iron and non-haem iron: p<0.05; all others: p<0.01).

The youngest group of men and women had significantly lower mean daily intakes of total and non-haem iron from food sources than those aged 35 to 64 years (women aged 19 to 24 compared with 50 to 64: p<0.01; all other women and men: p<0.05). For example, for men and women aged 19 to 24 years mean daily intake of total iron from food sources was 11.4mg and 8.8mg respectively compared with 13.6mg and 10.9mg for those aged 50 to 64 years. In addition, women aged 25 to 34 years had significantly lower mean daily intakes of total and non-haem iron than women aged 35 to 64 years (35 to 49 years: p<0.05; 50 to 64 years: p<0.01). Women aged 25 to 34 years had significantly lower mean daily intakes of haem iron, 0.4mg, than those aged 50 to 64 years, 0.6mg (p<0.05). There were no significant differences in mean daily intake of haem iron by age for men.

Dietary supplements providing iron increased the mean intake of total iron from food sources, overall, by 6% for men, from 13.2mg to 14.0mg, and by 16% for women, from 10.0mg to 11.6mg. The effect of dietary supplements on mean intakes was most marked for the oldest group of men and for women aged 35 to 49 years. Mean intakes for men aged 50 to 64 years increased by 12%, from 13.6mg to 15.2mg, and for women aged 35 to 49 years by 26%, from 10.2mg to 12.9mg.

Table 3.6 shows mean daily intake of total iron as a percentage of the RNI for men and women by age. For men, mean daily intake of total iron from food sources was 151% of the RNI and was above the RNI in each age group[4]. For women aged 19 to 50 years the RNI is set higher than for older women, 14.8mg/day compared with 8.7mg/day for women aged over 50 years, to take account of menstrual losses. As the table shows, for women, mean daily intake from food sources was 82% of the RNI overall, and was below the RNI for all age groups except the oldest group of women. Dietary supplements increased mean daily intakes of total iron as a percentage of the RNI for all sex/age groups, but mean intakes including supplements for women aged 19 to 49 years were still well below the RNI.

Table 3.2 shows that overall 1% of men and, a significantly higher proportion of women, 25%, had a mean daily intake of total iron from food sources below the LRNI (p<0.01). No more than 3% of men in any age group had a mean daily intake of total iron from food sources below the LRNI. The proportion of women aged 19 to 49 years with intakes below the LRNI was significantly higher than for those aged 50 to 64 years, 42% of those aged 19 to 24 years, 41% of those aged 25 to 34 years, and 27% of those aged 35 to 49 years compared with 4% of those aged 50 to 64 years (p<0.01). In addition, a significantly higher proportion of women aged 25 to 34 years had intakes of iron below the LRNI than those aged 35 to 49 years (p<0.05). The inclusion of dietary supplements providing iron had little effect on the proportions with mean daily intakes below the LRNI.

(Tables 3.3 to 3.6 and 3.2)

## Food sources of total iron, haem and non haem iron

Some foods are fortified with iron, for example flour and many breakfast cereals. All wheat flour, other than wholemeal flour, is fortified with iron by law; other foods are not subject to compulsory fortification but are fortified voluntarily by manufacturers. Thus cereals & cereal products were found to be the major source of iron for respondents in this survey. Indeed as Table 3.7 shows, respondents obtained over two-fifths, 44%, of mean daily intake of total iron from cereals & cereal products. Within this group the major sources were breakfast cereals, providing 20% of mean total iron intake overall, and white bread, contributing 9% overall.

The two other main sources of iron in the diets of respondents were meat & meat products and vegetables (excluding potatoes). Meat & meat products contributed 17% to total iron intake overall, including 5% which came from beef, veal & dishes and 4% from chicken, turkey & dishes, including coated chicken. On average, liver, liver products & dishes contributed less than 1% to total iron intake. Vegetables (excluding potatoes) provided 10% of intake overall.

Tables 3.8 and 3.9 show the food sources of haem and non-haem iron in the diets of respondents in the survey. Haem iron is found mainly in the haemoglobin and myoglobin of meat, and overall 85% of haem iron in the diets of the respondents came from meat & meat products. Men obtained a significantly higher proportion of their haem iron intake from meat & meat products, 87%, than women, 82% (p<0.05). Within this group the major sources were beef, veal & dishes, 24%, followed by chicken, turkey & dishes, including coated chicken, 14%. Compared with men aged 50 to 64 years, men aged 19 to 34 years obtained a significantly lower proportion of their haem iron intake from liver, liver products & dishes, and men aged 19 to 49 years a significantly higher proportion from burgers & kebabs (all: p<0.05). Other meat & meat products, including game, haggis and corned beef, provided a significantly lower proportion of haem iron intake for women aged 19 to 49 years than for women aged 50 to 64 years (p<0.01).

Fish & fish products provided a further 9% of haem iron intake for men and 15% for women (p<0.05). For men the contribution to haem iron intake from fish & fish dishes was significantly lower for those aged 19 to 24 years, 3%, than for men aged 35 to 49 years, 12% (p<0.05).

In contrast, meat & meat products contributed only 13% to mean daily intake of non-haem iron. Nearly half, 47%, of mean daily intake of non-haem iron came from cereals & cereal products, including 20% from breakfast cereals and 10% from white bread. A further 11% overall came from vegetables (excluding potatoes).

(Tables 3.7 to 3.9)

## 3.3 Calcium

Calcium is the most abundant mineral in the body. Of the 1000g or so in the human adult body, about 99% is in the bones and teeth where its primary role is structural.

Table 3.10 shows average daily intake of calcium. Men in the survey had a significantly higher mean daily intake of calcium from food sources, 1007mg, than women, 777mg (p<0.01). Intakes were significantly lower for the youngest group of men and women than for the two oldest age groups (men aged 19 to 24 compared with 35 to 49: p<0.01; all others: p<0.05). For example, men and women aged 19 to 24 years had mean daily calcium intakes of 860mg and 694mg respectively, compared with 1027mg for men and 823mg for women aged 50 to 64 years. In addition, women aged 25 to 34 years had a significantly lower mean daily intake of calcium than women aged 35 to 64 years (35 to 49 years: p<0.05; 50 to 64 years: p<0.01).

The contribution of dietary supplements to calcium intakes was very small, except for the oldest group of women, where supplements providing calcium increased mean intake from food sources alone by about 10% from 823mg to 903mg.

Overall, mean daily intake of calcium from food sources was 144% and 111% of the RNI for men and women respectively[4]. Mean intakes were above the RNI for all age and sex groups apart from the youngest group of women, where mean intake was 99% of the RNI. Dietary supplements increased mean daily calcium intake to above the RNI for women aged 19 to 24 years.

Table 3.2 shows that 2% of men and, a significantly higher proportion of women, 5%, had a mean daily intake of calcium from food sources which was below the LRNI (p<0.05). Dietary supplements providing calcium had a negligible effect on these proportions.

(Tables 3.10, 3.11 and 3.2)

### *Food sources of calcium[5]*

Table 3.12 shows that the main source of calcium for the respondents in the survey was milk & milk products, contributing 43% to mean intake overall. Within this group, semi-skimmed milk and cheese were the main contributors, providing 17% and 11% respectively.

White flour is fortified with calcium, and cereals & cereal products were therefore another main source of calcium in the diets of the respondents, contributing 30% to mean intake overall. Over a third of the contribution from cereals & cereal products came from white bread, 13%.

There were no significant differences by sex or age in the proportion of mean daily calcium intake accounted for by the different food groups.

(Table 3.12)

## 3.4 Phosphorus

Phosphorus is the second most abundant mineral in the body and has a variety of functions. About 80% of the phosphorus in the human body is present in bones as a calcium salt that gives rigidity to the skeleton.

Table 3.13 shows that the mean daily intake of phosphorus from food sources for men, 1493mg, was significantly higher than for women, 1112mg (p<0.01). For women, intakes were significantly lower than for men in each age group (p<0.01). The youngest group of men had a significantly lower mean daily intake of phosphorus than men in any other age group (35 to 49 years: p<0.01; all others: p<0.05). For example, men aged 19 to 24 years had a mean daily phosphorus intake of 1335mg compared with 1527mg for men aged 25 to 34 years. Women aged 19 to 24 years had a significantly lower mean daily intake than those aged 50 to 64 years, 1046mg and 1176mg respectively (p<0.05). In addition, women aged 25 to 34 years had a significantly lower mean daily phosphorus intake than those aged 35 to 64 years (35 to 49 years: $p<0.05$; 50 to 64: $p<0.01$).

Dietary supplements made a negligible contribution to mean daily phosphorus intakes.

Table 3.14 shows mean daily intakes of phosphorus as a percentage of the RNI. Mean daily intakes from food sources were 272% and 202% of the RNI for men and women respectively, and were above the RNI for each age group[4]. Overall, no men and less than 0.5% of women had an intake of phosphorus below the appropriate LRNI (*see* Table 3.2).

(Tables 3.13, 3.14 and 3.2)

### Food sources of phosphorus

Table 3.15 shows the contribution made by the different food groups to intakes of phosphorus. The three main sources of phosphorus in the diets of respondents in the survey were cereals & cereal products, milk & milk products and meat & meat products. There were no significant differences by age in the contribution of food groups to mean daily intake of phosphorus.

Cereals & cereal products contributed 23% to the intake of phosphorus for both men and women, including 9% which came from bread and 5% from breakfast cereals.

Overall, milk & milk products contributed 24% to the mean daily intake of phosphorus. Within this group the main contributor was semi-skimmed milk which provided 9% of the phosphorus intake overall. Cheese contributed a further 5%.

Overall, respondents derived 21% of their mean daily intake of phosphorus from meat & meat products, a third of which, 7%, came from chicken, turkey & dishes, including coated chicken.

For men a further 10%, and for women 6%, of intake came from drinks ($p<0.05$). For men, half of the contribution made by drinks came from beer & lager, 5% compared with 1% for women ($p<0.01$).

(Table 3.15)

## 3.5 Magnesium

As shown in Table 3.16, the mean daily intake of magnesium from food sources for men, 308mg, was over one third higher than that for women, 229mg ($p<0.01$). As with phosphorus, the youngest group of men had a significantly lower mean daily magnesium intake than men in any other age group ($p<0.01$). For example, mean daily intake of magnesium for men aged 19 to 24 years was 258mg compared with 318mg for men aged 50 to 64 years. Women aged 19 to 34 years had significantly lower mean daily magnesium intakes than those aged 35 to 64 years (19 to 24 compared with 35 to 49: $p<0.05$; all others: $p<0.01$).

Dietary supplements providing magnesium increased mean intakes from food sources alone by no more than about 2.5%.

Table 3.17 shows that overall, mean daily intakes of magnesium from food sources for men and women in the survey were, respectively, 103% and 85% of the RNI and were below the RNI for women in all age groups and men in the youngest age group[4]. For men aged 19 to 24 years mean intake was 86% of the RNI. For women intakes ranged from 76% of the RNI for those aged 19 to 24 years to 91% for those aged 50 to 64 years. Dietary supplements providing magnesium had little effect on mean daily intake as a percentage of the RNI.

Overall, about one in ten men and one in seven women had mean daily intakes of magnesium from food sources below the LRNI (*see* Table 3.2). A significantly higher proportion of women in the two youngest age groups, 22% and 20%, had intakes of magnesium below the LRNI than those aged 50 to 64 years, 7% (19 to 24: $p<0.05$; 25 to 34: $p<0.01$). In addition, women aged 25 to 34 years were significantly more likely than those aged 35 to 49 years to have a mean daily intake of magnesium below the LRNI, 20% compared with 10% ($p<0.05$). Dietary supplements providing magnesium made a negligible difference to the proportions with intakes below the LRNI.

(Tables 3.16, 3.17 and 3.2)

### Food sources of magnesium

Table 3.18 shows that cereals & cereal products were the main source of magnesium, providing just over one quarter, 27%, of mean intake overall, about half of which, 13%, came from bread, mainly as white bread, 6%. A further 7% came from breakfast cereals.

The other main source of magnesium in the diets of respondents was drinks, contributing 20% to mean intake of magnesium for men and, significantly lower, 13% for women ($p<0.01$). For men, half of the contribution made by drinks came from beer & lager, 10% compared with 2% for women ($p<0.01$). Coffee contributed 4% to magnesium intake for men and women.

Meat & meat products contributed 12% overall to mean daily magnesium intake, with about half of this, 5%, coming from the consumption of chicken, turkey & dishes, including coated chicken.

Overall milk & milk products contributed 11% to the mean daily intake of magnesium, about half of which, 5%, came from semi-skimmed milk. Potatoes & savoury snacks contributed a further 10% to the intake for both sexes.

There were no significant differences by age in the contribution of food groups to mean daily intake of magnesium.

(Table 3.18)

## 3.6 Sodium and chloride

Sodium and chloride are the principal cation and anion respectively in extracellular fluid in the body. Both sodium and chloride are required in small amounts in the diet and their concentrations are maintained by a variety of regulatory mechanisms.

Sodium and chloride are not generally found in high concentrations in unprocessed foods, but tend to be added to many foods, in the form of salt, during processing as well as in the home during cooking or at the table. About 75% of salt intake is estimated to come from processed food. Although the average intake of sodium and chloride from foods was assessed, it was not possible to measure the amount of salt added to the respondent's food during cooking or at the table. Thus intakes of both sodium and chloride are based on average values attributed to foods eaten and do not allow for additions in cooking and at the table. The results are therefore underestimates of total sodium and chloride intake. Sodium intake can, however, be estimated from urinary sodium excretion and this is discussed in Chapter 4, section 4.3.

Questions on the habitual use of salt in cooking the respondent's food and on the addition of salt at the table were asked in the dietary interview. These questions asked about frequency of use, and did not ask how much salt was used.

Table 3.19 presents data on the use of salt in cooking and at the table. In the dietary interview, 73% of respondents, overall, reported that salt was usually added to their food during cooking[6] , and 61% of men and 51% of women said that salt was added to food at the table, either usually or occasionally (men compared with women: $p<0.01$). There was no significant difference between men and women in the likelihood of salt being used in cooking. However, a significantly higher proportion of men than women said they usually added salt to their food at the table, 37% compared with 28% ($p<0.01$); while women were more likely to say that they never added salt at the table, 30% compared with 24% ($p<0.05$). There were no clear age patterns in the use of salt in cooking or at the table. However, the youngest group of men were less likely than those aged 35 to 64 years to report using a salt alternative in cooking ($p<0.01$). The oldest group of women were more likely to report using a salt alternative in cooking than those aged 25 to 34 years, and less likely to report not adding salt in cooking than those aged 25 to 49 years ($p<0.05$).

The use of salt in cooking and the addition of salt to food at the table are to some extent related. Table 3.20 shows that for 41% of men and 30% of women who reported adding salt in cooking, salt was also usually added to their food at the table, and 54% and 57% of men and women who did not add salt in cooking, rarely or never added salt at the table.

(Tables 3.19 and 3.20)

Table 3.21 shows mean daily intake of sodium from all and food sources, excluding additions in cooking or at the table. Mean daily intake from food sources for men in the survey was 3313mg and for women, significantly lower, 2302mg ($p<0.01$). There were no significant differences by age for men or women.

Dietary supplements made a negligible contribution to mean sodium intakes.

Mean daily intake of sodium from food sources, excluding additions in cooking or at the table, was well above the RNI for each sex and age group, and overall was over twice the RNI for men, 207%, and 144% of the RNI for women[4]. Less than 0.5% of men or women had an intake below the LRNI (*see* Table 3.2). Mean daily intakes at the upper 2.5 percentile for men were about $3^1/_2$ times the RNI and for women about $2^1/_2$ times the RNI.

(Tables 3.21, 3.22 and 3.2)

The average daily intake of chloride was, like the intake of sodium, several grams per day. Mean daily intake for men was 4995mg and significantly lower for women, 3481mg ($p<0.01$), representing 200% and 139% of the RNI.

As with sodium, dietary supplements made a negligible contribution to mean chloride intakes.

(Tables 3.23 and 3.24)

### *Food sources of sodium and chloride*[7]

The main food sources of sodium and chloride in the diets of adults are very similar, since these two minerals are generally found together in foods in the form of salt. Only the food sources of sodium are discussed here, but Table 3.26 shows the percentage contribution made by food types to mean daily intake of chloride.

Over one third, 35%, of the mean intake of sodium came from cereals & cereal products, with white bread alone providing 14% of mean daily intake. Breakfast cereals contributed 5% to the mean daily intake of sodium overall, and biscuits, buns, cakes & pastries 4%.

Meat & meat products contributed 26% to the mean intake of sodium overall. Within this group the main source was bacon & ham, contributing 8%, with chicken, turkey & dishes, including coated chicken, providing 5%.

Milk & milk products contributed a further 8% to mean intake of sodium, and vegetables (excluding potatoes) an additional 7%.

There were no significant sex or age differences in the contribution of food groups to mean daily intake of sodium or chloride.

(Tables 3.25 and 3.26)

## 3.7 Potassium

Table 3.27 shows that the mean daily intake of potassium from food sources for men in the survey was 3367mg and for women, significantly lower, 2653mg (p<0.01). The youngest group of men had a significantly lower mean daily potassium intake than men in any other age group (25 to 34 years: p<0.05; all others: p<0.01). For example, men aged 19 to 24 years had a mean daily intake of potassium of 2841mg compared with 3552mg for men aged 50 to 64 years. For women, mean intakes were significantly lower for the two youngest age groups than for the two oldest age groups (p<0.01). For example, women aged 19 to 24 years had a mean daily potassium intake of 2362mg compared with 2884mg for women aged 50 to 64 years.

Dietary supplements made a negligible contribution to mean potassium intakes.

Table 3.28 shows mean daily intake of potassium as a percentage of the RNI[4]. Mean daily potassium intake from food sources for men in the survey provided 96% of the RNI, and 76% for women. Only for the oldest group of men was mean intake above the RNI. Mean daily intake as a percentage of the RNI ranged from 81% and 67% for men and women aged 19 to 24 years respectively, to 101% and 82% for men and women aged 50 to 64 years. When intakes from food sources are compared with LRNIs (*see* Table 3.2) the data show that 6% of men and, a significantly higher proportion of women, 19% had intakes below the LRNI (p<0.01). Compared with men aged 25 to 34 years, a significantly higher proportion of men aged 19 to 24 years had an mean daily intake of potassium lower than the LRNI, 18% compared with 3% (p<0.05). The two youngest groups of women were significantly more likely than the oldest group of women to have a potassium intake below the LRNI, 30% of women aged 19 to 24 years and 25 to 34 years compared with 10% of women aged 50 to 64 years (19 to 24: p<0.05; 25 to 34: p<0.01). In addition, women aged 25 to 34 years were significantly more likely than those aged 35 to 49 years to have a mean daily intake of potassium below the LRNI, 30% compared with 16% (p<0.05).

(Tables 3.27, 3.28 and 3.2)

### Food sources of potassium

Table 3.29 shows the percentage contribution of food types to mean daily intake of potassium. The main contributor to potassium intake was potatoes & savoury snacks, with respondents, overall, obtaining 18% of their mean intake of potassium from this source, about a third of which, 7%, came from potato chips.

Overall, drinks contributed 15% to mean intake of potassium, including 5% for men and 1% for women from beer & lager (beer & lager: p<0.01). Meat & meat products contributed 15% to mean potassium intake, a third of which, 5%, came from chicken, turkey & dishes, including coated chicken, and a fifth of which, 3%, came from beef, veal & dishes.

Milk & milk products contributed a further 13% to mean intake of potassium overall, about half of which, 6%, came from semi-skimmed milk. Cereals & cereal products contributed 13% to mean intake of potassium. This was principally in the form of white bread and breakfast cereals, each contributing 3%. A further 10% of potassium intake came from vegetables (excluding potatoes).

There were no significant differences by age in the proportion of mean daily potassium intake accounted for by the different food groups.

(Table 3.29)

## 3.8 Trace elements

### 3.8.1 Zinc

Table 3.30 shows that the mean daily intake of zinc from food sources for men in the survey was 10.2mg and for women, significantly lower, 7.4mg ($p<0.01$). Men aged 19 to 24 years had significantly lower mean daily intakes of zinc than men in any other age group (25 to 34 years: $p<0.05$; all others: $p<0.01$). For example, mean daily intake of zinc was 9.0mg for the youngest group of men compared with 10.6mg for men aged 35 to 49 years. For women, mean intakes were significantly lower for the youngest age group, 6.8mg, than for the oldest age group, 7.8mg ($p<0.05$). In addition, women aged 25 to 34 years had significantly lower mean zinc intakes than the two oldest age groups ($p<0.01$).

Dietary supplements providing zinc increased mean intakes from food sources alone by 5% for men, from 10.2mg to 10.7mg, and 7% for women, from 7.4mg to 7.9mg. For men the effect of supplements on mean intake was most marked for those aged 35 to 49 years, where intake of zinc from all sources was 8% higher than from food sources alone, 11.4mg and 10.6mg respectively; for the youngest group of men supplements increased mean intake by 2%, from 9.0mg to 9.2mg. Among women the effect was most marked for the oldest group, where intake from all sources was 10% higher than from food sources alone, 8.6mg and 7.8mg respectively; for the youngest group of women supplements increased mean intake by 4%, from 6.8mg to 7.1mg.

Mean daily intake of zinc from food sources was 107% of the RNI for men and 105% for women, and fell below the RNI for the youngest age group of men (at 95% of the RNI) and for women aged 19 to 24 years and 25 to 34 years (98% and 96% of the RNI respectively)[4]. Dietary supplements providing zinc increased mean daily intake for women aged 19 to 24 years and 25 to 34 years to above the RNI. The data in Table 3.2 show that 4% of both men and women had an intake of zinc from food sources which was below the LRNI. Dietary supplements made a negligible difference to the proportions with intakes below the LRNI.

(Tables 3.30, 3.31 and 3.2)

#### Food sources of zinc

Table 3.32 shows that the main source of zinc in the diets of respondents was meat & meat products. About a third, 34%, of the mean daily intake of zinc came from this source, with beef, veal & dishes contributing 11% overall, and chicken, turkey & dishes, including coated chicken, 5%.

One quarter of zinc intake, 25%, came from cereals & cereal products. This was chiefly in the form of white bread, 6%, and breakfast cereals, 5%. Milk & milk products contributed a further 17% to mean daily intake of zinc, about a third of which, 6%, came from cheese and a further third, 6%, from semi-skimmed milk.

There were no significant sex or age differences in the contribution of food groups to mean daily intake of zinc.

(Table 3.32)

### 3.8.2 Copper

The mean daily intake of copper from food sources was 1.43mg for men and for women, significantly lower, 1.03mg ($p<0.01$). Mean daily intake was significantly lower for the youngest group of men than for men in any other age group ($p<0.01$). For example, men aged 19 to 24 years had a mean daily copper intake of 1.14mg compared with 1.53mg for men aged 35 to 49 years. For women, mean daily intake was significantly lower for those aged 19 to 24 years, 0.91mg, than for those aged 35 to 49 years, 1.05mg, and those aged 50 to 64 years, 1.07mg ($p<0.05$).

Supplements providing copper increased mean intakes from food sources alone by 3% for men, from 1.43mg to 1.48mg, and by 4% for women, from 1.03mg to 1.07mg.

Table 3.34 shows mean daily intake of copper as a percentage of the RNI. For men, overall, mean daily intake of copper from food sources exceeded the RNI, providing 119% of the reference value[4]. Mean intakes were above the RNI for all age groups apart from the youngest, where intakes from food sources and all sources provided 95% and 97% of the RNI respectively. Mean daily intake for women, overall, was 86% of the RNI, and mean intakes for all age groups, from both food and all sources, were below the RNI.

There are no LRNIs for copper.

(Tables 3.33 and 3.34)

#### Food sources of copper

Table 3.35 shows that the main contributor to mean daily copper intake was cereals & cereal products, 31% came from this source, about a quarter of which, 8%, came from white bread.

Meat & meat products contributed 17% to mean copper intake for men and 12% for women ($p<0.05$). Potatoes & savoury snacks, drinks and fruit & nuts each contributed about 10% to mean copper intake.

There were no significant differences by age in the contribution of food groups to mean daily copper intake.

(Table 3.35)

### 3.8.3 Iodine

The mean daily intake of iodine from food sources for men in the survey was 215µg; mean intake for women was significantly lower, 159µg ($p<0.01$). As with zinc and copper, the youngest group of men had significantly lower mean daily iodine intakes than men in any other age group (25 to 34 years: $p<0.05$; all others: $p<0.01$). For example, men aged 19 to 24 years had a mean daily intake of iodine of 166µg compared with 230µg for those aged 50 to 64 years. For women, mean daily intake was significantly lower for the two youngest age groups than for the two oldest age groups (25 to 34 compared with 35 to 49: $p<0.05$; all others: $p<0.01$). For example, mean daily intake was 130µg for women aged 19 to 24 years compared with 178µg for those aged 50 to 64 years.

Dietary supplements providing iodine taken by respondents in the survey increased mean intake from food sources alone by 2% for men, from 215µg to 220µg, and by 5% for women, from 159µg to 167µg.

As Table 3.37 shows, mean daily intakes of iodine from food sources were in excess of the RNI for both men and women, providing 154% and 114% of the reference value respectively[4]. However, mean daily intakes for women in the youngest age group were below the reference value, providing 93% of the RNI. Dietary supplements increased mean daily intake as a percentage of the RNI for all sex/age groups except for the youngest men. The mean intake of iodine for the youngest group of women from all sources was still below the RNI, 97%, when supplements were included.

Table 3.2 shows that overall 2% of men and a significantly higher proportion of women, 4%, had an intake of iodine from food sources below the LRNI ($p<0.05$). A significantly higher proportion of the youngest group of women, 12%, had a mean daily intake of iodine below the LRNI than the oldest group of women, 1% ($p<0.05$). Dietary supplements made no difference to the proportion with intakes below the LRNI.

(Tables 3.36, 3.37 and 3.2)

#### Food sources of iodine

Milk & milk products were clearly the most important source of iodine in the diets of respondents in the survey; providing 35% of the mean daily intake of iodine for men, and 42% for women ($p<0.05$). For both sexes about half of the contribution made by milk & milk products came from semi-skimmed milk, 18%.

The other major source of iodine for men was from drinks, which contributed 19% to iodine intake, including 15% from beer & lager. Drinks overall and beer & lager accounted for a significantly lower proportion of iodine intake for women, 9% and 3% respectively, compared with men ($p<0.01$).

Other food groups contributing more than 10% to iodine intake were cereals & cereal products contributing 12% overall, and fish & fish dishes. Fish & fish dishes, which are a rich source of iodine, contributed 11% to intake overall.

(Table 3.38)

### 3.8.4 Manganese

The mean daily intake of manganese from food sources was 3.32mg for men, and significantly lower for women, 2.69mg ($p<0.01$). The youngest group of men had significantly lower mean intakes of manganese than men in any other age group. In addition those aged 25 to 34 years had significantly lower intakes than men aged 50 to 64 years (25 to 34 compared with 50 to 64: $p<0.05$; all others: $p<0.01$). For example, men aged 19 to 24 years had a mean daily manganese intake of 2.45mg compared with 3.70mg for men aged 50 to 64 years. As with iodine, mean intakes were significantly lower for women aged 19 to 34 years than for those aged 35 to 64 years (25 to 34 compared with 35 to 49: $p<0.05$: all others: $p<0.01$). For example, mean daily intake of manganese was 2.12mg for women aged 19 to 24 years compared with 3.01mg for women aged 50 to 64 years.

Dietary supplements providing manganese had little effect on mean intakes, increasing intakes from food sources alone by 3% for both men and women.

There are no RNIs for manganese but safe intakes are believed to lie above 1.4mg/day for adults[1]. Mean daily intakes were above the safe level for each age and sex group. However, 4% of men and, a significantly higher proportion of women, 9%, had intakes from food sources below this level ($p<0.05$). A significantly higher proportion of women aged 19 to 24 years, 22%, had a mean daily intake of manganese below 1.4mg/day than women aged 50 to 64 years, 6% (p<0.05). Dietary supplements had little effect on the proportions with intakes below 1.4mg/day.

(Table 3.39)

### Food sources of manganese

The principal source of manganese in the diets of respondents in this survey was cereals & cereal products, contributing 50% overall to mean daily intake. About half the contribution from cereals & cereal products, 26%, came from bread, mainly white. Breakfast cereals contributed 11% to intake overall, and biscuits, buns, cakes & pastries an additional 5%.

The other main sources of manganese in the diets of respondents were vegetables (excluding potatoes) and drinks. Vegetables (excluding potatoes) contributed 10% to intake overall and drinks 17%. Tea, which is a rich source of manganese, contributed 12%.

There were no significant sex or age differences in the proportion of mean daily manganese intake accounted for by the different food groups.

(Table 3.40)

## 3.9 Variations in mineral intake

In this section, variation in the average daily intake of minerals from *food sources* and *all sources* in relation to the region in which the respondent lives and household receipt of benefits is considered. (see caveat to section 2.7). Variation in average daily intake as a percentage of the RNI, and in the proportion of respondents with intakes below the LRNI, by these characteristics, is also considered for *food sources* and *all sources*.

### 3.9.1 Region

Table 3.41 shows the average daily intake of minerals from food sources and all sources for men and women in the sample living in different regions[8]. There were no significant regional differences in mean daily intake of minerals from food sources for men or women. The same is true when dietary supplements are included.

For those minerals where mean daily intakes were below the RNI for the group as a whole, the same was true for all regions (*see* Table 3.42). Including dietary supplements had little effect on mean daily intakes as a proportion of the RNI of any mineral except for iron. Including supplements increased mean daily intakes of iron for women aged 19 to 50 years, but these remained below the RNI in all regions.

Table 3.42 also shows the proportion of men and women in the four regions with intakes of minerals from food sources below the LRNI. For men there were no significant regional differences in the proportion with intakes of minerals below the LRNI. A significantly higher proportion of women in the Northern region, 6%, than women in Scotland, 1%, had intakes of zinc that were below the LRNI (p<0.05). In addition, women in the Northern region, Central and South West regions of England and in Wales and women in London and the South East were significantly more likely to have an iodine intake which was below the LRNI than women in Scotland (p<0.05).

Within each region, dietary supplements made a negligible difference to the proportions of men or women with intakes below the LRNI.

(Tables 3.41 and 3.42)

### 3.9.2 Household receipt of benefits

Table 3.43 shows average daily intakes of minerals from food sources and all sources for men and women according to whether or not they were living in a household where someone was receiving state benefits[9].

Mean daily intakes from food sources of all minerals, apart from haem iron and sodium, were significantly lower for men living in benefit households than for those in households not receiving benefits (chloride and zinc: p<0.05; all others: p<0.01). For example, mean daily intake of calcium was 883mg for men in benefit households compared with 1025mg for those in non-benefit households. Among women, mean daily intakes from food sources of all minerals, apart from haem iron, were significantly lower for those living in benefit households than for those in households not receiving benefits (sodium and chloride: p<0.05; all others: p<0.01). For example, mean daily total iron intake was 8.8mg for women in households in receipt of benefits compared with 10.3mg for women in non-benefit households.

When dietary supplements are included, there is no longer a significant difference in mean daily intakes of non-haem iron for women by household benefit status. All other differences remain significant when dietary supplements are included[10].

Table 3.44 shows mean daily intake of minerals from food sources and all sources as a percentage of the RNI. For all minerals, mean daily intakes from food sources as a percentage of the RNI were lower for men and women living in benefit households than for those in non-benefit households.

For both men and women, mean daily intakes of potassium, and additionally for women mean daily intakes of iron, magnesium and copper were below the RNI for both those in benefit and those in non-benefit households. For example, mean daily intakes of potassium were 84% of the RNI for men and 65% of the RNI for women in benefit households and 98% of the RNI for men and 78% of the RNI for women in non-benefit households. Mean daily iron intake was 58% of the RNI for women aged 19 to 50 years living in benefit households and 67% for those in non-benefit households. Mean daily intakes of zinc and magnesium for men and calcium, zinc and iodine for women were below the RNI for those in benefit households but above the RNI for those in non-benefit households. For example, mean intake of zinc was 98% of the RNI for men and 93% of the RNI for women in benefit households compared with 109% for men and 108% for women in non-benefit households.

Irrespective of household benefit status, including dietary supplements made no difference to mean daily intakes of potassium for men and women as a percentage of the RNI, and no difference to intakes of magnesium for men. However, including dietary supplements did increase mean daily intakes of zinc for men, and calcium and iodine for women, in benefit households to at or above the RNI. Mean daily intakes of zinc increased for women in benefit households when dietary supplements were included, but remained below the RNI, 95%. Dietary supplements increased mean daily intakes of copper and magnesium for women in benefit and non-benefit households, but intakes remained below the RNI. Mean daily intake of iron for women aged 19 to 50 years increased to 66% of the RNI for women in benefit households, and to 80% of the RNI for women in non-benefit households, when supplements were included.

Table 3.44 also shows the proportions of men and women with intakes of minerals from food sources below the LRNI. A significantly higher proportion of men in benefit households than those in non-benefit households had an intake, from food sources, of magnesium and potassium below the LRNI (potassium: $p<0.05$; magnesium: $p<0.01$). For example, 27% of men in benefit households had an intake of magnesium, and 16% an intake of potassium, below the appropriate LRNI, compared with 7% and 5% respectively of men in non-benefit households.

For all minerals, except sodium, chloride and phosphorus, a significantly higher proportion of women living in benefit households than in non-benefit households had intakes from food sources that were below the LRNI (calcium, zinc and iodine: $p<0.05$; all others: $p<0.01$). For example, 34% of women in benefit households had an intake of potassium below the LRNI compared with 16% of women in non-benefit households. More than half, 53%, of women aged 19 to 50 years living in benefit households had an iron intake below the LRNI, compared with about a third, 29%, of those in non-benefit households.

Dietary supplements made a negligible difference to the proportions of men or women in either benefit or non-benefit households with intakes below the LRNI for any mineral except iron. The proportion of women aged 19 to 50 years with an average daily intake of iron below the LRNI decreased to 50% of those in benefit households and 28% of those in non-benefit households when dietary supplements were included.

(Tables 3.43 and 3.44)

## 3.10 Comparison of mineral intakes between the 1986/87 Adults Survey and present NDNS

Tables 3.45 and 3.46(a) and (b) compare data from this present survey of adults with data on average daily intakes of minerals from the Dietary and Nutritional Survey of British Adults aged 16 to 64 years carried out in 1986/87 (1986/87 Adults Survey)[11]. Data are presented for men and women by age. Comparisons are made between comparable age groups in the two surveys; no attempt is made to use the data to undertake cohort analysis[12]. It should be noted that in the 1986/87 Adults Survey the youngest age group was adults aged 16 to 24 years, while in the current NDNS the youngest age group is adults aged 19 to 24 years. This should be borne in mind where there are differences between these groups. A summary of the methodology and findings from the 1986/87 Adults Survey is given in Appendix S of the Technical Report[13]. Table 3.45 presents data on absolute intakes from food sources and Tables 3.46(a) and (b) present data on absolute intakes from all sources for men and women respectively. Comparisons do not take into account differences in energy intake.

Data from the 1986/87 Adults Survey on intakes from food sources is only available for total iron, calcium, copper and iodine, and the following discussion focuses firstly on differences between the two surveys in intakes of these minerals from food sources alone. The effect of dietary supplements on intakes between the two surveys is then commented on.

For both sexes and all age groups there were no significant differences between the two sets of survey data for mean daily intakes from food sources of total iron. Overall, men and women had significantly higher mean daily intakes of calcium in the present survey than in the 1986/87 Adults Survey ($p<0.01$). Men aged 35 to 64 years and women aged 50 to 64 years had significantly higher intakes of calcium in the present survey than the equivalent age groups in the 1986/87 Adults Survey (women 50 to 64: $p<0.01$; all others: $p<0.01$).

Overall men and women in the present survey had significantly lower mean daily intakes from food sources of the trace elements, copper and iodine than those in the 1986/87 Adults Survey ($p<0.01$). Men aged 19 to 34 years and women in all age groups had significantly lower mean copper intakes in the present survey than the equivalent age groups in the 1986/87 Adults Survey (women 16/19 to 24, men 19 to 24 and 25 to 34: $p<0.05$; all others: $p<0.01$). Mean daily intakes of iodine were significantly lower in the present survey for men aged 19 to 24 years and 35 to 49 years and for women aged 19 to 49 years than the equivalent age groups in the 1986/87 Adults Survey (men 16/19 to 24: $p<0.05$; all others: $p<0.01$).

Many of the differences in mean daily intakes from food sources between the two sets of survey data are still evident when dietary supplements are included (*see* Table 3.46)[10]. When dietary supplements are included significant differences between the two sets of survey data remain, overall, for both men and women for intakes of calcium, for men for intakes of iodine and for women for intakes of copper. There are no consistent patterns by age for men or women in the significant differences that remain when dietary supplements are included.

Tables 3.46(a) and (b) also present data on intakes of sodium, chloride, potassium, magnesium, phosphorus and zinc from all sources for men and women by age for the two sets of survey data.

For both sexes and all age groups there were no significant differences between the two sets of survey data for mean daily intakes of sodium and chloride from all sources.

For two minerals, potassium and phosphorus, mean daily intakes from all sources were higher in the present survey compared with the 1986/87 Adults Survey. Potassium intake was significantly higher for both men and women overall, and phosphorus significantly higher for women in the present survey than in the 1986/87 Adults Survey (women, phosphorus: $p<0.05$; all others: $p<0.01$). For example, mean daily intakes of potassium were 3371mg for men and 2655mg for women in the present survey compared with 3187mg for men and 2434mg for women in the earlier survey. Mean daily intake of phosphorus was 1116mg for women in the present survey compared with 1072mg for women in the earlier survey. There were few significant differences by age. In the present survey, men and women aged 35 to 49 years and 50 to 64 years had significantly higher mean intakes of potassium, and women aged 50 to 64 years significantly higher phosphorus intakes than equivalent age groups in the 1986/87 Adults Survey (potassium for men and women 35 to 49: $p<0.01$; all others: $p<0.01$).

In the present survey, for two minerals, magnesium and zinc, mean daily intakes from all sources for some age and sex groups were significantly lower in the present survey compared with the 1986/87 Adults Survey. Mean daily intakes of zinc were significantly lower for both men and women, 10.7mg and 7.9mg, respectively, in the present survey compared with 11.4mg for men and 8.4mg for women in the earlier survey ($p<0.05$). In the present survey, men aged 19 to 24 years and women aged 25 to 34 years had significantly lower intakes of magnesium and zinc than the equivalent age groups in the 1986/87 Adults Survey (zinc, women aged 25 to 34: $p<0.01$; all others: $p<0.05$).

As noted in Chapter 2, section 2.8, the extent to which these differences reflect changes in the diets of adults over the period is not clear. Many factors contribute to any differences, including changes in nutrient composition and, as noted previously, new analytical methods, changes in fortification practices, as well as in food consumption patterns and increased use of dietary supplements.

(Tables 3.45, 3.46(a) and 3.46(b))

## References and endnotes

1 Department of Health. Report on Health and Social Subjects: 41. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom*. HMSO (London, 1991).

2 Bull NI, Buss DH. Haem and Non-haem Iron in British Diets. *J Hum Nutr* 1980; **34:** 141-145.

3 Cook JD, Reddy MB. Effect of ascorbic acid intake on non-haem iron absorption from a complete diet. *Am J Clin Nutr* 2001; **73**: 93-98.

4 Intakes as a percentage of the RNI were calculated for each respondent, taking the appropriate RNI for each sex/age group. The values for all respondents in each age group were then pooled to give a mean, median and standard deviation.

5 Hard water typically provides 200mg calcium daily, while in soft water areas it provides none. Due to regional differences it was not possible to ascertain the contribution of water to calcium intake. In addition, it was not possible to distinguish whether tap water consumed had been filtered, which would reduce, for example, the levels of calcium, chloride and heavy metals found in tap water.

6 Includes the use of a salt alternative in cooking.

7 Excludes the use of salt added in cooking or at the table.

8 The areas included in each of the four analysis 'regions' are given in the response chapter, Chapter 2 of the Technical Report, online at http://www.food.gov.uk/science. Definitions of 'regions' are given in the glossary (*see* Appendix C).

9 Households receiving benefits are those where someone in the respondent's household was currently receiving Working Families Tax Credit or had, in the previous 14 days, drawn Income Support or (Income-related) Job Seeker's Allowance. Definitions of 'household' and 'benefits (receiving)' are given in the glossary (*see* Appendix C).

10 Where there are no longer significant differences once dietary supplements are included this does not necessarily mean that dietary supplements reduce differences between sub-groups, as the inclusion of dietary supplements is likely to increase the variance and skew the distribution.

11 Gregory J, Foster K, Tyler H, Wiseman M. *The Dietary and Nutritional Survey of British Adults.* HMSO (London, 1990).

12 Due to the number of years between the two surveys it would only be possible to undertake cohort analysis for those who were aged 16 to 40 years in the 1986/87 Adults Survey. The numbers available to undertake this form of analysis are therefore limited.

13 The Technical Report is available online at http://www.food.gov.uk/science.

## Table 3.1

### Reference Nutrient Intakes (RNIs) and Lower Reference Nutrient Intakes (LRNIs) for minerals*

| RNI and LRNI by age (years)** and sex | | Minerals | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Iron | Calcium | Phosphorus*** | Magnesium | Sodium | Chloride**** | Potassium | Zinc | Copper | Iodine |
| **Men** | | mg/d | mg/d | mg/d | mg/d | mg/d | mg/d | mg/d | mg/d | mg/d | µg/d |
| 19 to 50 | RNI | 8.7 | 700 | 550 | 300 | 1600 | 2500 | 3500 | 9.5 | 1.2 | 140 |
| | LRNI | 4.7 | 400 | 310 | 190 | 575 | 890 | 2000 | 5.5 | n/a | 70 |
| 51 to 64 | RNI | 8.7 | 700 | 550 | 300 | 1600 | 2500 | 3500 | 9.5 | 1.2 | 140 |
| | LRNI | 4.7 | 400 | 310 | 190 | 575 | 890 | 2000 | 5.5 | n/a | 70 |
| **Women** | | | | | | | | | | | |
| 19 to 50 | RNI | 14.8 | 700 | 550 | 270 | 1600 | 2500 | 3500 | 7.0 | 1.2 | 140 |
| | LRNI | 8.0 | 400 | 310 | 150 | 575 | 890 | 2000 | 4.0 | n/a | 70 |
| 51 to 64 | RNI | 8.7 | 700 | 550 | 270 | 1600 | 2500 | 3500 | 7.0 | 1.2 | 140 |
| | LRNI | 4.7 | 400 | 310 | 150 | 575 | 890 | 2000 | 4.0 | n/a | 70 |

*Note:* * *Source: Department of Health. Report on Health and Social Subjects: 41. Dietary Reference Values for Food Energy and Nutrients for the United Kingdom. HMSO (London, 1991).*
** *The age groups presented represent those for which different RNI and LRNI values are calculated.*
*** *RNIs and LRNIs for phosphorus are set equal to the RNI and LRNI for calcium in molar terms.*
**** *RNIs and LRNIs for chloride correspond to those for sodium in molar terms.*
*n/a no reference value set.*

## Table 3.2

### Proportion of respondents with average daily intakes of minerals below the Lower Reference Nutrient Intake (LRNI) by sex and age of respondent

Percentages

| Mineral | % with average daily intake below LRNI | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | % | % | % | % | % | % | % | % | % | % |
| **All sources** | | | | | | | | | | |
| Total iron | 3 | 0 | 1 | 1 | 1 | 40 | 40 | 25 | 4 | 24 |
| Calcium | 5 | 2 | 2 | 2 | 2 | 8 | 6 | 6 | 3 | 5 |
| Phosphorus | - | - | - | - | - | - | - | 0 | 0 | 0 |
| Magnesium | 17 | 9 | 7 | 8 | 9 | 22 | 20 | 10 | 7 | 13 |
| Sodium* | - | - | - | 0 | 0 | - | - | 0 | 0 | 0 |
| Chloride* | - | - | - | 0 | 0 | - | - | 0 | 0 | 0 |
| Potassium | 18 | 3 | 4 | 5 | 6 | 30 | 30 | 16 | 10 | 19 |
| Zinc | 7 | 2 | 4 | 3 | 4 | 5 | 5 | 3 | 3 | 4 |
| Iodine | 2 | 1 | 2 | 1 | 2 | 12 | 5 | 4 | 1 | 4 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| **Food sources** | | | | | | | | | | |
| Total iron | 3 | 0 | 1 | 1 | 1 | 42 | 41 | 27 | 4 | 25 |
| Calcium | 5 | 2 | 2 | 2 | 2 | 8 | 6 | 6 | 3 | 5 |
| Phosphorus | - | - | - | - | - | - | - | 0 | 0 | 0 |
| Magnesium | 17 | 9 | 7 | 9 | 9 | 22 | 20 | 10 | 7 | 13 |
| Sodium* | - | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 |
| Chloride* | - | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 |
| Potassium | 18 | 3 | 5 | 5 | 6 | 30 | 30 | 16 | 10 | 19 |
| Zinc | 7 | 2 | 4 | 3 | 4 | 5 | 5 | 4 | 3 | 4 |
| Iodine | 2 | 1 | 2 | 1 | 2 | 12 | 5 | 4 | 1 | 4 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |

*Note: * Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

## Table 3.3

# Average daily intake of total iron (mg) by sex and age of respondent

Cumulative percentages

| Total iron (mg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 4.7 | 3 | 0 | 1 | 1 | 1 | 8 | 4 | 4 | 3 | 4 |
| Less than 6.0 | 11 | 0 | 4 | 2 | 3 | 16 | 17 | 9 | 8 | 11 |
| Less than 8.0 | 18 | 11 | 11 | 10 | 12 | 40 | 40 | 25 | 20 | 29 |
| Less than 8.7 | 25 | 15 | 14 | 12 | 15 | 44 | 46 | 32 | 26 | 35 |
| Less than 10.0 | 38 | 26 | 20 | 20 | 24 | 63 | 64 | 44 | 39 | 50 |
| Less than 12.0 | 63 | 45 | 34 | 37 | 42 | 78 | 81 | 67 | 63 | 71 |
| Less than 14.0 | 78 | 63 | 58 | 54 | 61 | 86 | 90 | 80 | 74 | 81 |
| Less than 14.8 | 84 | 71 | 63 | 61 | 67 | 87 | 91 | 83 | 79 | 84 |
| Less than 16.0 | 87 | 78 | 71 | 68 | 74 | 89 | 93 | 88 | 85 | 88 |
| Less than 18.0 | 92 | 84 | 80 | 79 | 82 | 91 | 96 | 90 | 90 | 92 |
| Less than 20.0 | 92 | 87 | 86 | 86 | 87 | 93 | 97 | 93 | 91 | 93 |
| Less than 22.0 | 93 | 93 | 93 | 92 | 93 | 96 | 98 | 95 | 92 | 95 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 11.5 | 13.9 | 14.1 | 15.2 | 14.0 | 10.0 | 9.8 | 12.9 | 12.3 | 11.6 |
| Median | 11.3 | 12.8 | 13.2 | 13.6 | 12.9 | 9.3 | 9.0 | 10.5 | 11.0 | 10.0 |
| Lower 2.5 percentile | 4.5 | 6.9 | 5.4 | 6.1 | 5.4 | 4.2 | 4.0 | 4.1 | 4.5 | 4.2 |
| Upper 2.5 percentile | 23.5 | 27.7 | 28.1 | 29.1 | 27.5 | 23.5 | 20.1 | 28.8 | 28.7 | 26.7 |
| Standard deviation | 4.60 | 7.50 | 5.63 | 13.21 | 9.00 | 4.88 | 5.98 | 23.30 | 8.00 | 14.99 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 4.7 | 3 | 0 | 1 | 1 | 1 | 9 | 4 | 4 | 3 | 4 |
| Less than 6.0 | 11 | 0 | 4 | 2 | 3 | 16 | 17 | 10 | 8 | 12 |
| Less than 8.0 | 18 | 11 | 11 | 11 | 12 | 42 | 41 | 27 | 21 | 30 |
| Less than 8.7 | 25 | 15 | 15 | 14 | 16 | 48 | 47 | 35 | 28 | 38 |
| Less than 10.0 | 42 | 28 | 21 | 21 | 26 | 73 | 65 | 49 | 43 | 54 |
| Less than 12.0 | 63 | 49 | 35 | 39 | 44 | 87 | 83 | 73 | 67 | 75 |
| Less than 14.0 | 78 | 66 | 59 | 58 | 63 | 95 | 92 | 87 | 81 | 88 |
| Less than 14.8 | 84 | 75 | 65 | 65 | 70 | 96 | 93 | 90 | 88 | 91 |
| Less than 16.0 | 87 | 81 | 73 | 72 | 77 | 97 | 96 | 95 | 93 | 95 |
| Less than 18.0 | 92 | 89 | 83 | 83 | 86 | 99 | 97 | 98 | 96 | 97 |
| Less than 20.0 | 94 | 92 | 89 | 90 | 91 | 99 | 99 | 99 | 97 | 98 |
| Less than 22.0 | 96 | 95 | 95 | 96 | 96 | 99 | 99 | 99 | 98 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 11.4 | 13.0 | 13.7 | 13.6 | 13.2 | 8.8 | 9.2 | 10.2 | 10.9 | 10.0 |
| Median | 11.2 | 12.5 | 13.1 | 13.3 | 12.6 | 9.1 | 9.0 | 10.1 | 10.6 | 9.6 |
| Lower 2.5 percentile | 4.5 | 6.9 | 5.4 | 5.9 | 5.4 | 4.2 | 4.0 | 3.8 | 4.5 | 4.1 |
| Upper 2.5 percentile | 22.8 | 24.5 | 23.7 | 23.2 | 23.4 | 16.5 | 18.5 | 17.4 | 20.9 | 18.1 |
| Standard deviation | 4.40 | 5.13 | 4.75 | 4.58 | 4.81 | 3.12 | 3.37 | 3.58 | 3.91 | 3.65 |

Table 3.4

## Average daily intake of haem iron (mg) from food sources by sex and age of respondent

Cumulative percentages

| Haem iron (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **Intakes from *food sources**** | | | | | | | | | | |
| Zero | 2 | – | 1 | 0 | 1 | 7 | 3 | 2 | 2 | 3 |
| Less than 0.1 | 2 | 1 | 4 | 2 | 2 | 10 | 15 | 9 | 5 | 10 |
| Less than 0.2 | 2 | 3 | 6 | 6 | 5 | 23 | 25 | 17 | 11 | 18 |
| Less than 0.3 | 11 | 9 | 11 | 10 | 10 | 37 | 37 | 32 | 25 | 32 |
| Less than 0.4 | 21 | 16 | 18 | 19 | 18 | 50 | 55 | 44 | 41 | 46 |
| Less than 0.5 | 37 | 28 | 27 | 28 | 29 | 60 | 74 | 58 | 55 | 61 |
| Less than 0.6 | 45 | 42 | 37 | 41 | 41 | 78 | 86 | 74 | 71 | 76 |
| Less than 0.8 | 60 | 54 | 50 | 54 | 54 | 84 | 94 | 82 | 78 | 84 |
| Less than 1.0 | 83 | 73 | 68 | 70 | 72 | 89 | 96 | 91 | 88 | 91 |
| Less than 1.2 | 92 | 84 | 81 | 80 | 83 | 95 | 98 | 96 | 92 | 95 |
| Less than 1.5 | 95 | 96 | 89 | 89 | 91 | 100 | 99 | 99 | 95 | 98 |
| All | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 0.7 | 0.8 | 0.9 | 0.9 | 0.8 | 0.5 | 0.4 | 0.5 | 0.6 | 0.5 |
| Median | 0.7 | 0.7 | 0.8 | 0.7 | 0.7 | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 |
| Lower 2.5 percentile | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upper 2.5 percentile | 1.6 | 1.6 | 2.5 | 2.4 | 2.3 | 1.3 | 1.1 | 1.3 | 1.8 | 1.4 |
| Standard deviation | 0.37 | 0.40 | 0.58 | 0.58 | 0.52 | 0.32 | 0.44 | 0.33 | 0.51 | 0.42 |

*Note: * None of the dietary supplements taken by respondents in this survey provided any haem iron.*

## Table 3.5

### Average daily intake of non-haem iron (mg) by sex and age of respondent

Cumulative percentages

| Non-haem iron (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 4.0 | 2 | - | 0 | 1 | 1 | 5 | 3 | 3 | 2 | 3 |
| Less than 6.0 | 14 | 1 | 6 | 5 | 5 | 20 | 19 | 12 | 9 | 14 |
| Less than 8.0 | 26 | 17 | 13 | 12 | 16 | 44 | 44 | 32 | 27 | 35 |
| Less than 10.0 | 43 | 34 | 26 | 25 | 30 | 66 | 68 | 50 | 47 | 55 |
| Less than 12.0 | 70 | 51 | 45 | 44 | 50 | 80 | 83 | 70 | 69 | 74 |
| Less than 14.0 | 84 | 72 | 63 | 61 | 68 | 87 | 91 | 81 | 78 | 83 |
| Less than 16.0 | 90 | 81 | 76 | 74 | 79 | 89 | 95 | 89 | 87 | 90 |
| Less than 18.0 | 92 | 84 | 83 | 84 | 85 | 93 | 97 | 91 | 90 | 92 |
| Less than 20.0 | 92 | 90 | 91 | 91 | 91 | 93 | 98 | 94 | 91 | 94 |
| Less than 22.0 | 96 | 94 | 95 | 94 | 95 | 97 | 99 | 95 | 95 | 96 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 10.8 | 13.1 | 13.3 | 14.3 | 13.2 | 9.5 | 9.4 | 12.4 | 11.7 | 11.1 |
| Median | 10.4 | 12.0 | 12.3 | 12.6 | 12.0 | 8.8 | 8.5 | 10.0 | 10.4 | 9.5 |
| Lower 2.5 percentile | 4.2 | 6.2 | 4.7 | 5.8 | 5.1 | 3.5 | 3.6 | 3.9 | 4.3 | 3.8 |
| Upper 2.5 percentile | 23.1 | 26.4 | 27.4 | 28.7 | 26.4 | 22.9 | 19.4 | 27.9 | 27.8 | 25.8 |
| Standard deviation | 4.60 | 7.41 | 5.53 | 13.15 | 8.93 | 4.85 | 5.93 | 23.31 | 7.92 | 14.97 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 4.0 | 2 | - | 0 | 1 | 1 | 5 | 3 | 4 | 2 | 3 |
| Less than 6.0 | 14 | 1 | 6 | 5 | 5 | 22 | 20 | 13 | 9 | 15 |
| Less than 8.0 | 26 | 18 | 14 | 13 | 16 | 50 | 45 | 34 | 28 | 37 |
| Less than 10.0 | 46 | 37 | 27 | 27 | 32 | 75 | 69 | 55 | 51 | 59 |
| Less than 12.0 | 70 | 54 | 46 | 47 | 52 | 89 | 84 | 76 | 74 | 79 |
| Less than 14.0 | 84 | 76 | 66 | 65 | 71 | 96 | 93 | 89 | 87 | 90 |
| Less than 16.0 | 90 | 84 | 78 | 78 | 81 | 97 | 98 | 96 | 94 | 96 |
| Less than 18.0 | 92 | 90 | 85 | 88 | 88 | 99 | 98 | 98 | 97 | 98 |
| Less than 20.0 | 94 | 94 | 93 | 95 | 94 | 99 | 99 | 99 | 97 | 99 |
| Less than 22.0 | 98 | 97 | 97 | 98 | 97 | 99 | 100 | 99 | 99 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 10.7 | 12.2 | 12.8 | 12.7 | 12.3 | 8.3 | 8.8 | 9.7 | 10.3 | 9.5 |
| Median | 10.2 | 11.7 | 12.3 | 12.3 | 11.8 | 8.2 | 8.4 | 9.5 | 10.0 | 9.2 |
| Lower 2.5 percentile | 4.2 | 6.2 | 4.7 | 5.8 | 5.1 | 3.5 | 3.6 | 3.6 | 4.3 | 3.7 |
| Upper 2.5 percentile | 22.2 | 23.1 | 22.2 | 23.1 | 22.2 | 16.3 | 15.7 | 16.9 | 20.4 | 17.0 |
| Standard deviation | 4.39 | 5.01 | 4.65 | 4.41 | 4.69 | 3.10 | 3.22 | 3.54 | 3.72 | 3.54 |

## Table 3.6

### Average daily intake of total iron as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* (a) All sources Mean | Median | sd | *Base* | (b) Food sources Mean | Median | sd | *Base* |
|---|---|---|---|---|---|---|---|---|
| **Men aged (years):** | | | | | | | | |
| 19–24 | 133 | 130 | 52.8 | *108* | 131 | 128 | 50.6 | *108* |
| 25–34 | 160 | 146 | 86.2 | *219* | 150 | 143 | 58.9 | *219* |
| 35–49 | 163 | 152 | 64.7 | *253* | 157 | 151 | 54.7 | *253* |
| 50–64 | 174 | 156 | 151.8 | *253* | 156 | 152 | 52.6 | *253* |
| All | 161 | 148 | 103.5 | *833* | 151 | 145 | 55.3 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 68 | 63 | 32.9 | *104* | 60 | 61 | 21.1 | *104* |
| 25–34 | 66 | 61 | 40.4 | *210* | 62 | 61 | 22.8 | *210* |
| 35–49 | 87 | 71 | 157.4 | *318* | 69 | 68 | 24.2 | *318* |
| 50–64 | 137 | 123 | 92.5 | *259* | 122 | 119 | 45.0 | *259* |
| All | 94 | 75 | 112.4 | *891* | 82 | 72 | 40.4 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 3.7

### Percentage contribution of food types to average daily intake of total iron by sex and age of respondent

Percentages

| Type of food | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 42 | 46 | 43 | 44 | 44 | 44 | 45 | 45 | 44 | 45 | 44 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *11* | *10* | *10* | *9* | *10* | *11* | *9* | *8* | *7* | *8* | *9* |
| *wholemeal bread* | *2* | *3* | *3* | *4* | *3* | *1* | *3* | *3* | *4* | *3* | *3* |
| *soft grain and other bread* | *2* | *3* | *3* | *3* | *3* | *4* | *4* | *3* | *3* | *3* | *3* |
| *whole grain and high fibre breakfast cereals* | *6* | *14* | *12* | *13* | *12* | *10* | *10* | *14* | *16* | *13* | *13* |
| *other breakfast cereals* | *9* | *5* | *6* | *6* | *6* | *9* | *9* | *7* | *7* | *7* | *7* |
| *biscuits, buns, cakes & pastries* | *3* | *4* | *4* | *5* | *4* | *3* | *5* | *5* | *5* | *5* | *5* |
| Milk & milk products | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 1 |
| Eggs & egg dishes | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 22 | 20 | 19 | 18 | 19 | 17 | 14 | 15 | 14 | 15 | 17 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *6* | *5* | *5* | *4* | *5* | *5* | *4* | *4* | *4* | *4* | *5* |
| *chicken, turkey & dishes, including coated* | *5* | *4* | *5* | *3* | *4* | *4* | *4* | *4* | *3* | *4* | *4* |
| *liver, liver products & dishes* | *0* | *1* | *1* | *2* | *1* | *0* | *1* | *1* | *1* | *1* | *1* |
| *burgers & kebabs* | *4* | *2* | *1* | *0* | *2* | *3* | *1* | *1* | *0* | *1* | *1* |
| Fish & fish dishes | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 4 | 3 | 3 |
| Vegetables (excluding potatoes) | 8 | 9 | 10 | 10 | 9 | 10 | 13 | 11 | 10 | 11 | 10 |
| Potatoes & savoury snacks | 10 | 7 | 7 | 7 | 7 | 10 | 8 | 7 | 7 | 8 | 7 |
| Fruit & nuts | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 5 | 3 | 3 |
| Sugars, preserves & confectionery | 4 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Drinks* | 5 | 6 | 8 | 7 | 7 | 6 | 6 | 7 | 7 | 6 | 7 |
| Miscellaneous** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |
| **Average daily intake (mg)** | **11.4** | **13.0** | **13.7** | **13.6** | **13.2** | **8.8** | **9.2** | **10.2** | **10.9** | **10.0** | **11.5** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 3.8

## Percentage contribution of food types to average daily intake of haem iron by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Meat & meat products | 92 | 90 | 85 | 86 | 87 | 87 | 81 | 82 | 80 | 82 | 85 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *7* | *7* | *6* | *7* | *7* | *5* | *7* | *6* | *6* | *6* | *6* |
| *beef, veal & dishes* | *26* | *26* | *22* | *23* | *24* | *31* | *22* | *28* | *22* | *25* | *24* |
| *lamb & lamb dishes* | *6* | *5* | *5* | *6* | *6* | *4* | *6* | *6* | *8* | *6* | *6* |
| *pork & pork dishes* | *2* | *4* | *5* | *5* | *4* | *3* | *4* | *4* | *4* | *4* | *4* |
| *chicken, turkey & dishes including coated* | *16* | *16* | *14* | *11* | *14* | *18* | *18* | *16* | *12* | *16* | *14* |
| *liver, liver products & dishes* | *2* | *4* | *9* | *11* | *8* | *2* | *5* | *5* | *8* | *6* | *7* |
| *burgers & kebabs* | *16* | *12* | *7* | *1* | *7* | *14* | *8* | *5* | *2* | *5* | *7* |
| *sausages* | *6* | *4* | *4* | *3* | *4* | *4* | *4* | *3* | *2* | *3* | *3* |
| *meat pies & pastries* | *5* | *4* | *4* | *4* | *4* | *3* | *3* | *4* | *3* | *3* | *4* |
| *other meat & meat products* | *5* | *9* | *9* | *14* | *10* | *3* | *4* | *5* | *14* | *7* | *9* |
| Fish and fish products | 3 | 6 | 12 | 10 | 9 | 10 | 15 | 14 | 17 | 15 | 11 |
| *of which:* | | | | | | | | | | | |
| *shellfish* | *1* | *1* | *5* | *2* | *3* | *3* | *7* | *3* | *5* | *5* | *3* |
| *oily fish* | *1* | *4* | *6* | *7* | *6* | *7* | *7* | *9* | *10* | *9* | *7* |
| **Average daily intake (mg)** | **0.7** | **0.8** | **0.9** | **0.9** | **0.8** | **0.5** | **0.4** | **0.5** | **0.6** | **0.5** | **0.7** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

## Table 3.9

# Percentage contribution of food types to average daily intake of non-haem iron by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 44 | 49 | 46 | 46 | 47 | 46 | 47 | 47 | 47 | 47 | 47 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *12* | *10* | *11* | *10* | *11* | *11* | *9* | *8* | *7* | *8* | *10* |
| *wholemeal bread* | *2* | *4* | *4* | *4* | *4* | *1* | *3* | *4* | *4* | *3* | *3* |
| *soft grain and other bread* | *3* | *4* | *3* | *4* | *3* | *4* | *4* | *3* | *3* | *4* | *4* |
| *whole grain & high fibre breakfast cereals* | *7* | *15* | *13* | *13* | *13* | *10* | *10* | *15* | *17* | *14* | *13* |
| *other breakfast cereals* | *10* | *6* | *6* | *6* | *6* | *9* | *9* | *7* | *7* | *8* | *7* |
| *biscuits, buns, cakes & pastries* | *4* | *4* | *5* | *6* | *5* | *3* | *5* | *5* | *6* | *5* | *5* |
| Milk & milk products | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 |
| Eggs & egg dishes | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 18 | 16 | 15 | 13 | 15 | 13 | 11 | 12 | 10 | 11 | 13 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *4* | *4* | *3* | *3* | *4* | *4* | *3* | *3* | *3* | *3* | *3* |
| *chicken, turkey & dishes including coated* | *4* | *4* | *4* | *3* | *4* | *4* | *3* | *3* | *2* | *3* | *3* |
| *burgers & kebabs* | *3* | *2* | *1* | *0* | *1* | *2* | *1* | *1* | *0* | *1* | *1* |
| Fish & fish dishes | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Vegetables (excluding potatoes) | 9 | 9 | 10 | 10 | 10 | 11 | 13 | 12 | 11 | 12 | 11 |
| Potatoes & savoury snacks | 10 | 8 | 7 | 8 | 8 | 11 | 8 | 7 | 8 | 8 | 8 |
| Fruit & nuts | 1 | 2 | 2 | 3 | 2 | 2 | 3 | 3 | 5 | 4 | 3 |
| Sugars, preserves & confectionery | 4 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Drinks* | 5 | 6 | 8 | 8 | 7 | 6 | 7 | 7 | 7 | 7 | 7 |
| Miscellaneous** | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 |
| **Average daily intake (mg)** | **10.7** | **12.2** | **12.8** | **12.7** | **12.3** | **8.3** | **8.8** | **9.7** | **10.3** | **9.5** | **10.9** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 3.10

## Average daily intake of calcuim (mg) by sex and age of respondent

Cumulative percentages

| Calcuim (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 300 | 4 | - | 0 | 0 | 1 | 4 | 2 | 2 | 1 | 2 |
| Less than 400 | 5 | 2 | 2 | 2 | 2 | 8 | 6 | 6 | 3 | 5 |
| Less than 500 | 12 | 4 | 4 | 4 | 5 | 21 | 14 | 12 | 11 | 13 |
| Less than 600 | 22 | 11 | 9 | 7 | 11 | 36 | 29 | 24 | 20 | 26 |
| Less than 700 | 34 | 20 | 14 | 14 | 18 | 55 | 47 | 37 | 32 | 40 |
| Less than 800 | 46 | 31 | 23 | 21 | 28 | 69 | 67 | 52 | 45 | 56 |
| Less than 900 | 58 | 42 | 35 | 36 | 40 | 79 | 79 | 65 | 57 | 67 |
| Less than 1000 | 61 | 56 | 48 | 49 | 52 | 89 | 86 | 75 | 69 | 77 |
| Less than 1250 | 88 | 82 | 77 | 79 | 80 | 96 | 96 | 93 | 86 | 92 |
| Less than 1500 | 96 | 91 | 90 | 92 | 92 | 98 | 100 | 98 | 93 | 97 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 867 | 1030 | 1049 | 1035 | 1016 | 706 | 736 | 814 | 903 | 809 |
| Median | 825 | 951 | 1017 | 1002 | 987 | 669 | 718 | 789 | 850 | 763 |
| Lower 2.5 percentile | 261 | 401 | 429 | 459 | 410 | 248 | 337 | 316 | 373 | 324 |
| Upper 2.5 percentile | 1516 | 2017 | 1783 | 1762 | 1794 | 1304 | 1279 | 1444 | 1833 | 1550 |
| Standard deviation | 324.6 | 606.3 | 358.7 | 331.0 | 430.7 | 263.9 | 232.6 | 292.8 | 381.7 | 314.0 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 300 | 4 | - | 0 | 0 | 1 | 4 | 2 | 2 | 2 | 2 |
| Less than 400 | 5 | 2 | 2 | 2 | 2 | 8 | 6 | 6 | 3 | 5 |
| Less than 500 | 12 | 4 | 4 | 4 | 5 | 21 | 14 | 12 | 12 | 14 |
| Less than 600 | 23 | 12 | 9 | 7 | 11 | 37 | 30 | 24 | 25 | 27 |
| Less than 700 | 34 | 20 | 14 | 14 | 18 | 56 | 47 | 38 | 36 | 42 |
| Less than 800 | 46 | 31 | 23 | 23 | 28 | 69 | 68 | 54 | 50 | 58 |
| Less than 900 | 58 | 43 | 35 | 37 | 41 | 84 | 79 | 68 | 63 | 71 |
| Less than 1000 | 61 | 58 | 49 | 49 | 53 | 92 | 87 | 77 | 77 | 81 |
| Less than 1250 | 90 | 83 | 78 | 79 | 81 | 96 | 97 | 95 | 92 | 95 |
| Less than 1500 | 99 | 92 | 91 | 93 | 93 | 98 | 100 | 99 | 97 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 860 | 1017 | 1040 | 1027 | 1007 | 694 | 731 | 796 | 823 | 777 |
| Median | 825 | 934 | 1014 | 1002 | 979 | 661 | 709 | 777 | 810 | 752 |
| Lower 2.5 percentile | 261 | 401 | 418 | 459 | 409 | 248 | 337 | 300 | 372 | 320 |
| Upper 2.5 percentile | 1418 | 2017 | 1775 | 1671 | 1783 | 1304 | 1272 | 1384 | 1509 | 1372 |
| Standard deviation | 316.4 | 564.8 | 351.9 | 323.9 | 411.2 | 256.8 | 228.9 | 271.9 | 287.2 | 268.7 |

## Table 3.11

### Average daily intake of calcuim as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| **Sex and age of respondent** | **Average daily intake as % of RNI*** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 124 | 119 | 46.4 | *108* | 123 | 119 | 45.2 | *108* |
| 25–34 | 147 | 136 | 86.6 | *219* | 145 | 133 | 80.7 | *219* |
| 35–49 | 150 | 145 | 51.2 | *253* | 149 | 145 | 50.3 | *253* |
| 50–64 | 148 | 143 | 47.3 | *253* | 147 | 143 | 46.3 | *253* |
| All | 145 | 141 | 61.5 | *833* | 144 | 140 | 58.7 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 101 | 96 | 37.7 | *104* | 99 | 95 | 36.7 | *104* |
| 25–34 | 105 | 103 | 33.2 | *210* | 104 | 101 | 32.7 | *210* |
| 35–49 | 116 | 113 | 41.8 | *318* | 114 | 111 | 38.8 | *318* |
| 50–64 | 129 | 121 | 54.5 | *259* | 118 | 117 | 41.0 | *259* |
| All | 116 | 109 | 44.9 | *891* | 111 | 107 | 38.4 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 3.12

### Percentage contribution of food types to average daily intake of calcium by sex and age of respondent

Percentages

| **Type of food** | **Men aged (years):** | | | | **All men** | **Women aged (years):** | | | | **All women** | **All** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 35 | 33 | 31 | 30 | 32 | 31 | 30 | 27 | 27 | 28 | 30 |
| *of which:* | | | | | | | | | | | |
| *pizza* | *7* | *3* | *2* | *1* | *3* | *4* | *3* | *2* | *1* | *2* | *2* |
| *white bread* | *16* | *13* | *14* | *14* | *14* | *13* | *12* | *11* | *10* | *11* | *13* |
| *wholemeal bread* | *1* | *2* | *2* | *2* | *2* | *1* | *2* | *2* | *2* | *2* | *2* |
| *soft grain and other bread* | *3* | *4* | *3* | *4* | *4* | *4* | *4* | *3* | *3* | *4* | *4* |
| *breakfast cereals* | *2* | *5* | *3* | *3* | *4* | *4* | *3* | *3* | *4* | *4* | *4* |
| Milk & milk products | 33 | 41 | 42 | 43 | 41 | 42 | 43 | 47 | 48 | 46 | 43 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *3* | *7* | *7* | *6* | *6* | *8* | *7* | *7* | *5* | *6* | *6* |
| *semi-skimmed milk* | *15* | *15* | *18* | *17* | *17* | *13* | *16* | *18* | *19* | *17* | *17* |
| *skimmed milk* | *1* | *4* | *2* | *3* | *3* | *5* | *3* | *6* | *7* | *6* | *4* |
| *cheese* | *11* | *11* | *11* | *11* | *11* | *10* | *11* | *9* | *10* | *10* | *11* |
| *yogurt* | *2* | *2* | *3* | *3* | *3* | *3* | *4* | *4* | *5* | *4* | *3* |
| Eggs & egg dishes | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 9 | 7 | 7 | 6 | 7 | 7 | 6 | 5 | 4 | 5 | 6 |
| Fish & fish dishes | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 |
| Vegetables (excluding potatoes) | 4 | 4 | 4 | 5 | 4 | 4 | 6 | 5 | 5 | 5 | 5 |
| Potatoes & savoury snacks | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 |
| Fruit & nuts | 0 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 1 |
| Sugars, preserves & confectionery | 3 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| Drinks* | 7 | 6 | 5 | 5 | 6 | 6 | 4 | 3 | 3 | 4 | 5 |
| Miscellaneous** | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| **Average daily intake (mg)** | **860** | **1017** | **1040** | **1027** | **1007** | **694** | **731** | **796** | **823** | **777** | **888** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 3.13

## Average daily intake of phosphorus (mg) by sex and age of respondent

Cumulative percentages

| Phosphorus (mg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 550 | - | - | 1 | 1 | 0 | 4 | 2 | 4 | 3 | 3 |
| Less than 750 | 4 | - | 1 | 3 | 2 | 20 | 14 | 8 | 6 | 10 |
| Less than 1000 | 18 | 13 | 8 | 10 | 11 | 42 | 47 | 30 | 29 | 35 |
| Less than 1250 | 38 | 29 | 24 | 27 | 28 | 76 | 79 | 68 | 60 | 69 |
| Less than 1500 | 67 | 52 | 50 | 51 | 53 | 94 | 96 | 90 | 86 | 91 |
| Less than 1750 | 90 | 81 | 75 | 73 | 78 | 99 | 98 | 97 | 96 | 97 |
| Less than 2000 | 99 | 90 | 88 | 89 | 90 | 100 | 99 | 100 | 99 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | | 100 | | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1341 | 1550 | 1524 | 1508 | 1502 | 1050 | 1045 | 1134 | 1180 | 1116 |
| Median | 1287 | 1485 | 1500 | 1499 | 1474 | 1057 | 1017 | 1124 | 1174 | 1107 |
| Lower 2.5 percentile | 582 | 839 | 770 | 654 | 770 | 440 | 577 | 488 | 524 | 522 |
| Upper 2.5 percentile | 1948 | 2856 | 2418 | 2373 | 2406 | 1657 | 1579 | 1776 | 1820 | 1764 |
| Standard deviation | 318.9 | 727.4 | 429.1 | 402.8 | 510.7 | 298.8 | 278.9 | 296.4 | 309.0 | 301.0 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 550 | 1 | - | 1 | 1 | 1 | 4 | 2 | 4 | 3 | 3 |
| Less than 750 | 4 | - | 2 | 3 | 2 | 20 | 14 | 8 | 6 | 10 |
| Less than 1000 | 18 | 13 | 8 | 10 | 11 | 42 | 47 | 31 | 29 | 35 |
| Less than 1250 | 38 | 29 | 24 | 27 | 28 | 80 | 79 | 69 | 61 | 70 |
| Less than 1500 | 67 | 54 | 50 | 51 | 53 | 94 | 96 | 90 | 86 | 91 |
| Less than 1750 | 92 | 82 | 75 | 73 | 78 | 99 | 98 | 97 | 96 | 97 |
| Less than 2000 | 99 | 90 | 88 | 90 | 90 | 100 | 99 | 100 | 99 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | | 100 | | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1335 | 1527 | 1520 | 1505 | 1493 | 1046 | 1041 | 1130 | 1176 | 1112 |
| Median | 1287 | 1461 | 1500 | 1499 | 1466 | 1057 | 1016 | 1119 | 1170 | 1097 |
| Lower 2.5 percentile | 559 | 839 | 767 | 654 | 766 | 440 | 577 | 488 | 524 | 522 |
| Upper 2.5 percentile | 1948 | 2856 | 2415 | 2365 | 2381 | 1657 | 1562 | 1774 | 1820 | 1763 |
| Standard deviation | 313.4 | 574.7 | 428.5 | 402.8 | 455.8 | 296.7 | 275.6 | 295.1 | 309.2 | 299.6 |

# Table 3.14

## Average daily intake of phosphorus as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI*: (a) All sources: Mean | Median | sd | *Base* | (b) Food sources: Mean | Median | sd | *Base* |
|---|---|---|---|---|---|---|---|---|
| **Men aged (years):** | | | | | | | | |
| 19–24 | 244 | 234 | 58.0 | *108* | 243 | 234 | 57.0 | *108* |
| 25–34 | 282 | 270 | 132.3 | *219* | 278 | 266 | 104.5 | *219* |
| 35–49 | 277 | 273 | 78.0 | *253* | 276 | 273 | 77.9 | *253* |
| 50–64 | 274 | 272 | 73.2 | *253* | 274 | 272 | 73.2 | *253* |
| All | 273 | 268 | 92.9 | *833* | 272 | 267 | 82.9 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 191 | 193 | 54.3 | *104* | 190 | 193 | 54.0 | *104* |
| 25–34 | 190 | 185 | 50.7 | *210* | 189 | 185 | 50.1 | *210* |
| 35–49 | 206 | 204 | 53.9 | *318* | 205 | 203 | 53.7 | *318* |
| 50–64 | 215 | 213 | 56.2 | *259* | 214 | 213 | 56.2 | *259* |
| All | 203 | 201 | 54.7 | *891* | 202 | 200 | 54.5 | *891* |

*Note : * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

# Table 3.15

## Percentage contribution of food types to average daily intake of phosphorus by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 22 | 23 | 23 | 23 | 23 | 21 | 24 | 23 | 24 | 23 | 23 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *6* | *5* | *6* | *5* | *5* | *6* | *5* | *4* | *4* | *4* | *5* |
| *wholemeal bread* | *1* | *2* | *3* | *3* | *2* | *1* | *2* | *3* | *3* | *2* | *2* |
| *soft grain and other bread* | *2* | *2* | *2* | *2* | *2* | *3* | *3* | *2* | *2* | *3* | *2* |
| *breakfast cereals* | *2* | *5* | *5* | *5* | *4* | *3* | *4* | *5* | *7* | *5* | *5* |
| *biscuits, buns, cakes & pastries* | *2* | *3* | *3* | *4* | *3* | *2* | *3* | *3* | *4* | *3* | *3* |
| Milk & milk products | 17 | 22 | 23 | 23 | 22 | 23 | 25 | 27 | 27 | 26 | 24 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *1* | *4* | *4* | *3* | *3* | *4* | *4* | *4* | *3* | *4* | *3* |
| *semi-skimmed milk* | *8* | *8* | *10* | *9* | *9* | *7* | *9* | *10* | *10* | *10* | *9* |
| *skimmed milk* | *1* | *2* | *1* | *2* | *2* | *3* | *2* | *3* | *4* | *3* | *2* |
| *cheese* | *5* | *6* | *5* | *6* | *6* | *5* | *6* | *5* | *5* | *5* | *5* |
| *yogurt* | *1* | *1* | *2* | *2* | *2* | *2* | *2* | *3* | *3* | *3* | *2* |
| Eggs & egg dishes | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 26 | 23 | 23 | 21 | 23 | 22 | 19 | 19 | 17 | 19 | 21 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *3* | *3* | *3* | *3* | *3* | *2* | *2* | *2* | *3* | *2* | *3* |
| *beef, veal & dishes* | *4* | *4* | *4* | *4* | *4* | *4* | *3* | *4* | *3* | *3* | *4* |
| *chicken, turkey & dishes including coated* | *9* | *8* | *8* | *6* | *7* | *9* | *8* | *7* | *6* | *7* | *7* |
| *burgers & kebabs* | *4* | *2* | *1* | *0* | *1* | *3* | *1* | *1* | *0* | *1* | *1* |
| Fish & fish dishes | 3 | 3 | 4 | 6 | 4 | 4 | 4 | 5 | 7 | 5 | 5 |
| Vegetables (excluding potatoes) | 5 | 5 | 5 | 6 | 5 | 5 | 7 | 6 | 6 | 6 | 6 |
| Potatoes & savoury snacks | 7 | 5 | 5 | 5 | 5 | 8 | 6 | 5 | 5 | 6 | 5 |
| Fruit & nuts | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Sugars, preserves & confectionery | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 1 |
| Drinks* | 13 | 11 | 9 | 8 | 10 | 10 | 7 | 5 | 4 | 6 | 8 |
| *of which:* | | | | | | | | | | | |
| *carbonated soft drinks* | *5* | *3* | *1* | *1* | *2* | *6* | *4* | *1* | *1* | *2* | *2* |
| *beer & lager* | *6* | *6* | *5* | *4* | *5* | *2* | *1* | *1* | *0* | *1* | *3* |
| Miscellaneous** | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| **Average daily intake (mg)** | **1335** | **1527** | **1520** | **1505** | **1493** | **1046** | **1041** | **1130** | **1176** | **1112** | **1297** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 3.16

### Average daily intake of magnesium (mg) by sex and age of respondent

Cumulative percentages

| Magnesium (mg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 120 | 3 | - | 1 | 0 | 1 | 8 | 4 | 5 | 3 | 4 |
| Less than 150 | 5 | 1 | 2 | 2 | 2 | 22 | 20 | 10 | 7 | 13 |
| Less than 190 | 17 | 9 | 7 | 8 | 9 | 42 | 41 | 24 | 21 | 29 |
| Less than 210 | 23 | 15 | 11 | 15 | 15 | 55 | 56 | 38 | 29 | 42 |
| Less than 240 | 42 | 26 | 21 | 22 | 25 | 73 | 71 | 53 | 49 | 59 |
| Less than 270 | 58 | 36 | 31 | 33 | 36 | 85 | 82 | 68 | 65 | 72 |
| Less than 300 | 74 | 50 | 45 | 44 | 50 | 92 | 90 | 81 | 76 | 83 |
| Less than 350 | 86 | 69 | 65 | 64 | 68 | 97 | 96 | 92 | 90 | 93 |
| Less than 400 | 97 | 85 | 79 | 79 | 83 | 99 | 99 | 97 | 96 | 98 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 260 | 311 | 322 | 320 | 311 | 208 | 211 | 241 | 252 | 233 |
| Median | 251 | 300 | 310 | 314 | 300 | 206 | 203 | 234 | 241 | 223 |
| Lower 2.5 percentile | 115 | 169 | 158 | 139 | 151 | 96 | 107 | 98 | 112 | 102 |
| Upper 2.5 percentile | 413 | 503 | 562 | 529 | 528 | 373 | 371 | 408 | 427 | 399 |
| Standard deviation | 72.8 | 104.8 | 106.3 | 102.8 | 102.9 | 69.9 | 64.9 | 79.3 | 82.4 | 77.9 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 120 | 3 | - | 1 | 0 | 1 | 8 | 4 | 5 | 3 | 4 |
| Less than 150 | 5 | 1 | 2 | 2 | 2 | 22 | 20 | 10 | 7 | 13 |
| Less than 190 | 17 | 9 | 7 | 9 | 9 | 43 | 41 | 24 | 22 | 30 |
| Less than 210 | 23 | 15 | 12 | 16 | 15 | 56 | 57 | 38 | 30 | 42 |
| Less than 240 | 46 | 27 | 22 | 23 | 27 | 73 | 72 | 55 | 50 | 60 |
| Less than 270 | 58 | 37 | 31 | 34 | 37 | 85 | 84 | 71 | 66 | 74 |
| Less than 300 | 76 | 50 | 45 | 44 | 50 | 95 | 92 | 83 | 78 | 85 |
| Less than 350 | 88 | 71 | 66 | 64 | 70 | 99 | 98 | 94 | 91 | 94 |
| Less than 400 | 97 | 86 | 79 | 80 | 84 | 99 | 100 | 98 | 97 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 258 | 308 | 318 | 318 | 308 | 205 | 209 | 235 | 246 | 229 |
| Median | 249 | 298 | 310 | 314 | 300 | 205 | 203 | 230 | 240 | 222 |
| Lower 2.5 percentile | 115 | 169 | 157 | 139 | 151 | 96 | 107 | 98 | 112 | 102 |
| Upper 2.5 percentile | 413 | 503 | 545 | 529 | 527 | 321 | 359 | 386 | 403 | 377 |
| Standard deviation | 71.0 | 101.8 | 97.5 | 102.1 | 99.0 | 65.5 | 61.4 | 69.2 | 72.7 | 69.8 |

# Table 3.17

## Average daily intake of magnesium as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 87 | 84 | 24.3 | *108* | 86 | 83 | 23.7 | *108* |
| 25–34 | 104 | 100 | 34.9 | *219* | 103 | 100 | 33.9 | *219* |
| 35–49 | 107 | 103 | 35.4 | *253* | 106 | 103 | 32.5 | *253* |
| 50–64 | 107 | 105 | 34.3 | *253* | 106 | 105 | 34.0 | *253* |
| All | 104 | 100 | 34.3 | *833* | 103 | 100 | 33.0 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 77 | 76 | 25.9 | *104* | 76 | 76 | 24.3 | *104* |
| 25–34 | 78 | 75 | 24.0 | *210* | 77 | 75 | 22.7 | *210* |
| 35–49 | 89 | 87 | 29.4 | *318* | 87 | 85 | 25.6 | *318* |
| 50–64 | 93 | 89 | 30.5 | *259* | 91 | 89 | 26.9 | *259* |
| All | 86 | 83 | 28.8 | *891* | 85 | 82 | 25.9 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

# Table 3.18

## Percentage contribution of food types to average daily intake of magnesium by sex and age of respondent

Percentages

| Type of food | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 25 | 27 | 27 | 27 | 27 | 24 | 27 | 27 | 28 | 27 | 27 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *7* | *6* | *6* | *6* | *6* | *7* | *6* | *5* | *4* | *5* | *6* |
| *wholemeal bread* | *2* | *4* | *4* | *4* | *4* | *1* | *4* | *4* | *4* | *4* | *4* |
| *soft grain and other bread* | *2* | *3* | *2* | *3* | *3* | *3* | *3* | *3* | *3* | *3* | *3* |
| *breakfast cereals* | *4* | *7* | *7* | *7* | *7* | *5* | *6* | *8* | *10* | *8* | *7* |
| Milk & milk products | 8 | 10 | 11 | 11 | 10 | 12 | 12 | 13 | 13 | 13 | 11 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *1* | *2* | *2* | *2* | *2* | *2* | *2* | *2* | *1* | *2* | *2* |
| *semi-skimmed milk* | *4* | *4* | *5* | *5* | *5* | *4* | *5* | *5* | *5* | *5* | *5* |
| *skimmed milk* | *0* | *1* | *1* | *1* | *1* | *2* | *1* | *2* | *2* | *2* | *1* |
| Eggs & egg dishes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 16 | 14 | 13 | 12 | 13 | 14 | 11 | 11 | 10 | 11 | 12 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *3* | *3* | *3* | *2* | *3* | *3* | *2* | *2* | *2* | *2* | *3* |
| *chicken, turkey & dishes including coated* | *6* | *5* | *5* | *4* | *5* | *5* | *5* | *5* | *4* | *5* | *5* |
| Fish & fish dishes | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 |
| Vegetables (excluding potatoes) | 7 | 6 | 7 | 7 | 7 | 8 | 10 | 9 | 8 | 9 | 8 |
| Potatoes & savoury snacks | 13 | 10 | 9 | 9 | 10 | 15 | 11 | 10 | 9 | 10 | 10 |
| Fruit & nuts | 2 | 5 | 6 | 7 | 5 | 5 | 7 | 8 | 10 | 8 | 7 |
| Sugars, preserves & confectionery | 3 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 2 |
| Drinks* | 20 | 21 | 20 | 20 | 20 | 15 | 13 | 13 | 12 | 13 | 17 |
| *of which:* | | | | | | | | | | | |
| *beer & lager* | *12* | *12* | *9* | *9* | *10* | *4* | *3* | *2* | *1* | *2* | *7* |
| *coffee* | *2* | *3* | *4* | *4* | *4* | *2* | *3* | *4* | *4* | *4* | *4* |
| *tea* | *1* | *1* | *2* | *2* | *2* | *1* | *2* | *2* | *3* | *2* | *2* |
| Miscellaneous** | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 |
| **Average daily intake (mg)** | **258** | **308** | **318** | **318** | **308** | **205** | **209** | **235** | **246** | **229** | **267** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 3.19

### Use of salt in cooking and at the table by sex and age of respondent*

**Responding sample** Percentages

| Use of salt in cooking and at the table** | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Salt added to cooking: | | | | | | | | | | | |
| usually added | 73 | 68 | 70 | 73 | 71 | 67 | 67 | 64 | 73 | 68 | 68 |
| uses salt alternative | – | 4 | 4 | 6 | 4 | 5 | 3 | 6 | 10 | 6 | 5 |
| not usually added | 27 | 29 | 26 | 21 | 26 | 30 | 31 | 30 | 19 | 27 | 27 |
| Salt added at table: | | | | | | | | | | | |
| usually | 39 | 32 | 35 | 41 | 37 | 34 | 24 | 31 | 26 | 28 | 33 |
| occasionally | 30 | 23 | 23 | 22 | 24 | 24 | 24 | 20 | 26 | 23 | 23 |
| rarely | 14 | 17 | 18 | 12 | 15 | 16 | 20 | 21 | 16 | 19 | 17 |
| never | 17 | 28 | 24 | 24 | 24 | 26 | 32 | 28 | 32 | 30 | 27 |
| *Base* | *142* | *287* | *330* | *330* | *1088* | *136* | *275* | *415* | *337* | *1163* | *2251* |

*Note: * As reported in the dietary interview.*
*** Includes cases where salt alternative used.*

## Table 3.20

### Use of salt in cooking and at the table by sex and age of respondent*

**Responding sample** Percentages

| Sex of respondent and use of salt at the table | Use of salt in cooking** and age of respondent (years): Salt added 19–24 | 25–34 | 35–49 | 50–64 | All | No salt added 19–24 | 25–34 | 35–49 | 50–64 | All | All 19–24 | 25–34 | 35–49 | 50–64 | All |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % | % | % | % | % |
| **Men** | | | | | | | | | | | | | | | |
| Use salt at the table: | | | | | | | | | | | | | | | |
| Usually | 47 | 36 | 37 | 45 | 41 | 19 | 21 | 28 | 29 | 25 | 39 | 32 | 35 | 41 | 37 |
| Occasionally | 26 | 24 | 25 | 25 | 25 | 41 | 23 | 18 | 13 | 21 | 30 | 23 | 23 | 22 | 24 |
| Rarely or never | 27 | 41 | 38 | 31 | 35 | 40 | 57 | 54 | 58 | 54 | 31 | 45 | 42 | 36 | 39 |
| *Base* | *103* | *204* | *241* | *260* | *808* | *39* | *83* | *87* | *70* | *278* | *142* | *287* | *327* | *330* | *1086* |
| **Women** | | | | | | | | | | | | | | | |
| Use salt at the table: | | | | | | | | | | | | | | | |
| Usually | 40 | 29 | 32 | 25 | 30 | 20 | 11 | 30 | 27 | 23 | 34 | 24 | 31 | 26 | 28 |
| Occasionally | 27 | 22 | 22 | 28 | 24 | 17 | 29 | 16 | 16 | 20 | 24 | 24 | 20 | 26 | 23 |
| Rarely or never | 34 | 49 | 46 | 46 | 46 | 63 | 60 | 55 | 56 | 57 | 43 | 52 | 49 | 48 | 49 |
| *Base* | *95* | *191* | *289* | *272* | *848* | *40* | *85* | *123* | *64* | *311* | *135* | *275* | *412* | *336* | *1159* |

*Note: * As reported in the dietary interview.*
*** Includes cases where salt alternative used.*

## Table 3.21

### Average daily intake of sodium (mg) by sex and age of respondent*

Cumulative percentages

| Sodium (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 575 | - | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 |
| Less than 1200 | 1 | - | 1 | 1 | 1 | 6 | 4 | 4 | 3 | 4 |
| Less than 1600 | 8 | 2 | 3 | 3 | 3 | 13 | 16 | 13 | 15 | 14 |
| Less than 2000 | 9 | 6 | 6 | 8 | 7 | 32 | 30 | 33 | 35 | 33 |
| Less than 2500 | 24 | 18 | 21 | 18 | 20 | 69 | 61 | 68 | 67 | 66 |
| Less than 3000 | 36 | 37 | 38 | 45 | 40 | 86 | 86 | 84 | 88 | 86 |
| Less than 3500 | 56 | 64 | 60 | 65 | 62 | 93 | 96 | 95 | 95 | 95 |
| Less than 4000 | 71 | 81 | 77 | 77 | 77 | 98 | 99 | 98 | 99 | 98 |
| Less than 4500 | 88 | 89 | 88 | 89 | 89 | 100 | 100 | 99 | 100 | 100 |
| All | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 3342 | 3366 | 3340 | 3249 | 3320 | 2304 | 2325 | 2317 | 2267 | 2303 |
| Median | 3356 | 3187 | 3312 | 3077 | 3255 | 2247 | 2283 | 2241 | 2243 | 2247 |
| Lower 2.5 percentile | 1385 | 1678 | 1517 | 1576 | 1517 | 997 | 953 | 982 | 1060 | 1013 |
| Upper 2.5 percentile | 5505 | 5984 | 5830 | 5397 | 5795 | 3974 | 3648 | 3943 | 3701 | 3767 |
| Standard deviation | 1090.3 | 1077.5 | 1007.6 | 943.6 | 1018.2 | 721.3 | 666.4 | 707.5 | 652.3 | 683.1 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 575 | - | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 |
| Less than 1200 | 1 | - | 1 | 1 | 1 | 6 | 4 | 4 | 3 | 4 |
| Less than 1600 | 8 | 2 | 3 | 3 | 3 | 13 | 16 | 13 | 15 | 14 |
| Less than 2000 | 9 | 6 | 6 | 8 | 7 | 32 | 30 | 33 | 35 | 33 |
| Less than 2500 | 24 | 18 | 21 | 18 | 20 | 69 | 61 | 68 | 67 | 66 |
| Less than 3000 | 36 | 38 | 38 | 45 | 40 | 86 | 86 | 84 | 88 | 86 |
| Less than 3500 | 56 | 65 | 60 | 65 | 62 | 93 | 96 | 95 | 95 | 95 |
| Less than 4000 | 71 | 81 | 77 | 77 | 77 | 98 | 99 | 98 | 99 | 98 |
| Less than 4500 | 88 | 90 | 88 | 89 | 89 | 100 | 100 | 99 | 100 | 100 |
| All | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 3342 | 3347 | 3337 | 3248 | 3313 | 2303 | 2324 | 2316 | 2266 | 2302 |
| Median | 3356 | 3179 | 3312 | 3077 | 3234 | 2247 | 2283 | 2241 | 2243 | 2247 |
| Lower 2.5 percentile | 1385 | 1678 | 1511 | 1576 | 1513 | 997 | 953 | 982 | 1060 | 1013 |
| Upper 2.5 percentile | 5505 | 5984 | 5830 | 5397 | 5623 | 3974 | 3648 | 3943 | 3701 | 3767 |
| Standard deviation | 1091.2 | 1059.7 | 1012.1 | 943.8 | 1014.6 | 722.3 | 666.3 | 706.3 | 653.5 | 683.1 |

*Note: * Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

## Table 3.22

### Average daily intake of sodium as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent*

Percentages

| Sex and age of respondent | Average daily intake as % of RNI** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 209 | 210 | 68.1 | *108* | 209 | 210 | 68.2 | *108* |
| 25–34 | 210 | 199 | 67.3 | *219* | 209 | 199 | 66.2 | *219* |
| 35–49 | 209 | 207 | 63.0 | *253* | 209 | 207 | 63.3 | *253* |
| 50–64 | 203 | 192 | 59.0 | *253* | 203 | 192 | 59.0 | *253* |
| All | 207 | 203 | 63.6 | *833* | 207 | 202 | 63.4 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 144 | 140 | 45.1 | *104* | 144 | 140 | 45.1 | *104* |
| 25–34 | 145 | 143 | 41.6 | *210* | 145 | 143 | 41.6 | *210* |
| 35–49 | 145 | 140 | 44.2 | *318* | 145 | 140 | 44.1 | *318* |
| 50–64 | 142 | 140 | 40.8 | *259* | 142 | 140 | 40.8 | *259* |
| All | 144 | 140 | 42.7 | *891* | 144 | 140 | 42.7 | *891* |

*Note: * Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*
*** Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

Table 3.23

## Average daily intake of chloride (mg) by sex and age of respondent*

Cumulative percentages

| Chloride (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 890 | - | - | - | 0 | 0 | - | - | 0 | 0 | 0 |
| Less than 1500 | - | - | 0 | 1 | 0 | - | 3 | 2 | 1 | 2 |
| Less than 2000 | 2 | - | 2 | 1 | 1 | 8 | 5 | 6 | 6 | 6 |
| Less than 2500 | 8 | 4 | 3 | 3 | 4 | 13 | 17 | 14 | 15 | 15 |
| Less than 3000 | 12 | 5 | 7 | 7 | 7 | 37 | 29 | 31 | 30 | 31 |
| Less than 3500 | 20 | 11 | 15 | 12 | 14 | 59 | 55 | 53 | 52 | 54 |
| Less than 4000 | 31 | 27 | 27 | 25 | 27 | 75 | 71 | 73 | 75 | 73 |
| Less than 4500 | 41 | 38 | 35 | 44 | 39 | 84 | 86 | 85 | 85 | 85 |
| Less than 5000 | 45 | 53 | 50 | 55 | 52 | 93 | 93 | 93 | 92 | 93 |
| Less than 5500 | 63 | 68 | 67 | 67 | 67 | 95 | 99 | 95 | 96 | 96 |
| Less than 6000 | 72 | 81 | 77 | 75 | 77 | 99 | 99 | 98 | 99 | 99 |
| Less than 6500 | 87 | 85 | 86 | 85 | 86 | 100 | 100 | 99 | 100 | 99 |
| Less than 7000 | 89 | 90 | 90 | 95 | 91 | | | 99 | | 100 |
| All | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 4921 | 5135 | 5052 | 4923 | 5018 | 3412 | 3479 | 3514 | 3474 | 3482 |
| Median | 5157 | 4870 | 5011 | 4739 | 4965 | 3342 | 3433 | 3451 | 3443 | 3425 |
| Lower 2.5 percentile | 2036 | 2352 | 2243 | 2492 | 2261 | 1532 | 1404 | 1492 | 1601 | 1515 |
| Upper 2.5 percentile | 7879 | 9084 | 8587 | 7710 | 8306 | 5813 | 5337 | 5977 | 5692 | 5695 |
| Standard deviation | 1554.9 | 1879.6 | 1498.5 | 1385.8 | 1583.3 | 1013.8 | 985.1 | 1051.6 | 991.9 | 1013.3 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 890 | - | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 |
| Less than 1500 | - | - | 0 | 1 | 0 | - | 3 | 2 | 1 | 2 |
| Less than 2000 | 2 | - | 2 | 1 | 1 | 8 | 5 | 6 | 6 | 6 |
| Less than 2500 | 8 | 4 | 3 | 3 | 4 | 13 | 17 | 15 | 15 | 15 |
| Less than 3000 | 12 | 5 | 7 | 7 | 7 | 37 | 29 | 31 | 30 | 31 |
| Less than 3500 | 20 | 11 | 15 | 12 | 14 | 59 | 55 | 53 | 53 | 54 |
| Less than 4000 | 31 | 27 | 27 | 25 | 27 | 75 | 71 | 73 | 75 | 73 |
| Less than 4500 | 41 | 38 | 35 | 44 | 39 | 84 | 86 | 85 | 85 | 85 |
| Less than 5000 | 45 | 54 | 50 | 56 | 52 | 93 | 93 | 93 | 92 | 93 |
| Less than 5500 | 63 | 68 | 67 | 67 | 67 | 95 | 99 | 95 | 96 | 96 |
| Less than 6000 | 72 | 81 | 77 | 75 | 77 | 99 | 99 | 98 | 99 | 99 |
| Less than 6500 | 87 | 86 | 86 | 85 | 86 | 100 | 100 | 99 | 100 | 99 |
| Less than 7000 | 89 | 90 | 90 | 95 | 92 | | | 99 | | 100 |
| All | 100 | 100 | 100 | 100 | 100 | | | 100 | | |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 4921 | 5056 | 5047 | 4922 | 4995 | 3409 | 3478 | 3512 | 3474 | 3481 |
| Median | 5157 | 4845 | 5011 | 4739 | 4940 | 3342 | 3433 | 3451 | 3443 | 3423 |
| Lower 2.5 percentile | 2036 | 2352 | 2243 | 2492 | 2261 | 1532 | 1404 | 1492 | 1601 | 1515 |
| Upper 2.5 percentile | 7879 | 8909 | 8587 | 7710 | 8261 | 5813 | 5337 | 5903 | 5692 | 5695 |
| Standard deviation | 1556.1 | 1621.5 | 1501.9 | 1385.8 | 1506.5 | 1014.1 | 984.6 | 1051.4 | 991.9 | 1013.2 |

*Note: * Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

## Table 3.24

### Average daily intake of chloride as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent*

Percentages

| Sex and age of respondent | Average daily intake as % of RNI** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 197 | 206 | 62.2 | *108* | 197 | 206 | 62.2 | *108* |
| 25–34 | 205 | 195 | 75.2 | *219* | 202 | 194 | 64.9 | *219* |
| 35–49 | 202 | 200 | 59.9 | *253* | 202 | 200 | 60.1 | *253* |
| 50–64 | 197 | 189 | 55.4 | *253* | 197 | 189 | 55.4 | *253* |
| All | 201 | 199 | 63.3 | *833* | 200 | 198 | 60.3 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 136 | 134 | 40.6 | *104* | 136 | 134 | 40.6 | *104* |
| 25–34 | 139 | 137 | 39.4 | *210* | 139 | 137 | 39.4 | *210* |
| 35–49 | 141 | 138 | 42.1 | *318* | 140 | 138 | 42.1 | *318* |
| 50–64 | 139 | 138 | 39.7 | *259* | 139 | 138 | 39.7 | *259* |
| All | 139 | 137 | 40.5 | *891* | 139 | 137 | 40.5 | *891* |

*Note: * Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

*** Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

# Table 3.25

## Percentage contribution of food types to average daily intake of sodium by age and sex of respondent*

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 34 | 35 | 35 | 37 | 35 | 33 | 36 | 35 | 37 | 36 | 35 |
| *of which:* | | | | | | | | | | | |
| *pizza* | *5* | *3* | *2* | *1* | *2* | *3* | *3* | *1* | *1* | *2* | *2* |
| *white bread* | *15* | *15* | *16* | *15* | *15* | *14* | *13* | *13* | *13* | *13* | *14* |
| *wholemeal bread* | *1* | *3* | *3* | *4* | *3* | *1* | *3* | *3* | *4* | *3* | *3* |
| *soft grain and other bread* | *3* | *4* | *4* | *4* | *4* | *5* | *5* | *4* | *4* | *4* | *4* |
| *breakfast cereals* | *3* | *4* | *4* | *6* | *4* | *4* | *4* | *5* | *7* | *6* | *5* |
| *biscuits, buns, cakes & pastries* | *2* | *3* | *3* | *4* | *3* | *2* | *3* | *4* | *5* | *4* | *4* |
| Milk & milk products | 5 | 7 | 7 | 8 | 7 | 7 | 8 | 9 | 9 | 9 | 8 |
| *of which:* | | | | | | | | | | | |
| *milk* | *2* | *3* | *3* | *3* | *3* | *3* | *3* | *4* | *4* | *4* | *3* |
| *cheese* | *3* | *4* | *4* | *4* | *4* | *4* | *4* | *4* | *4* | *4* | *4* |
| Eggs & egg dishes | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Fat spreads | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Meat & meat products | 31 | 29 | 28 | 27 | 28 | 27 | 22 | 23 | 22 | 23 | 26 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *8* | *8* | *9* | *10* | *9* | *6* | *6* | *6* | *8* | *7* | *8* |
| *beef, veal & dishes* | *3* | *3* | *3* | *3* | *3* | *4* | *3* | *3* | *3* | *3* | *3* |
| *chicken, turkey & dishes including coated* | *6* | *5* | *6* | *4* | *5* | *6* | *5* | *6* | *4* | *5* | *5* |
| *burgers & kebabs* | *4* | *3* | *1* | *0* | *2* | *4* | *2* | *1* | *0* | *1* | *2* |
| *sausages* | *5* | *4* | *4* | *3* | *4* | *3* | *3* | *2* | *2* | *3* | *3* |
| *meat pies & pastries* | *3* | *3* | *3* | *3* | *3* | *2* | *2* | *2* | *2* | *2* | *2* |
| Fish & fish dishes | 2 | 2 | 4 | 4 | 3 | 4 | 4 | 5 | 6 | 5 | 4 |
| Vegetables (excluding potatoes) | 7 | 6 | 7 | 5 | 6 | 7 | 9 | 7 | 6 | 7 | 7 |
| Potatoes & savoury snacks | 5 | 4 | 3 | 2 | 3 | 7 | 5 | 4 | 2 | 4 | 4 |
| *of which:* | | | | | | | | | | | |
| *savoury snacks* | *4* | *3* | *2* | *1* | *2* | *5* | *4* | *2* | *1* | *3* | *2* |
| Fruit & nuts | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| Sugars, preserves & confectionery | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Drinks** | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 |
| Miscellaneous*** | 7 | 8 | 8 | 8 | 8 | 8 | 10 | 10 | 10 | 10 | 9 |
| **Average daily intake (mg)** | **3342** | **3347** | **3337** | **3248** | **3313** | **2303** | **2324** | **2316** | **2266** | **2302** | **2791** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note:* * *Data in this table are for intakes from food only and do not include further additions of salt in cooking or at the table.*

** *Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** *Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 3.26

## Percentage contribution of food types to average daily intake of chloride by age and sex of respondent*

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 34 | 35 | 34 | 36 | 35 | 33 | 35 | 35 | 36 | 35 | 35 |
| *of which:* | | | | | | | | | | | |
| *pizza* | *6* | *3* | *2* | *1* | *3* | *4* | *3* | *2* | *1* | *2* | *2* |
| *white bread* | *15* | *14* | *15* | *15* | *15* | *14* | *13* | *13* | *12* | *13* | *14* |
| *wholemeal bread* | *1* | *3* | *3* | *4* | *3* | *1* | *3* | *4* | *4* | *3* | *3* |
| *soft grain and other bread* | *3* | *4* | *3* | *4* | *4* | *4* | *5* | *4* | *4* | *4* | *4* |
| *breakfast cereals* | *3* | *4* | *5* | *6* | *5* | *5* | *5* | *6* | *8* | *6* | *5* |
| *biscuits, buns, cakes & pastries* | *2* | *2* | *3* | *3* | *3* | *2* | *3* | *3* | *4* | *3* | *3* |
| Milk & milk products | 6 | 8 | 9 | 9 | 8 | 9 | 9 | 11 | 11 | 10 | 9 |
| *of which:* | | | | | | | | | | | |
| *milk* | *2* | *4* | *4* | *4* | *4* | *4* | *4* | *5* | *5* | *5* | *4* |
| *cheese* | *3* | *3* | *3* | *4* | *3* | *3* | *4* | *3* | *4* | *4* | *4* |
| Eggs & egg dishes | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 |
| Fat spreads | 3 | 3 | 3 | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| Meat & meat products | 29 | 27 | 26 | 25 | 26 | 25 | 20 | 21 | 20 | 21 | 24 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *8* | *8* | *8* | *9* | *8* | *6* | *6* | *6* | *7* | *6* | *7* |
| *beef, veal & dishes* | *3* | *3* | *3* | *2* | *3* | *3* | *2* | *2* | *2* | *2* | *3* |
| *chicken, turkey & dishes including coated* | *5* | *4* | *5* | *3* | *4* | *6* | *5* | *5* | *3* | *5* | *4* |
| *burgers & kebabs* | *4* | *2* | *1* | *0* | *2* | *3* | *1* | *1* | *0* | *1* | *1* |
| *sausages* | *5* | *4* | *4* | *3* | *4* | *3* | *3* | *2* | *2* | *2* | *3* |
| *meat pies & pastries* | *3* | *3* | *3* | *3* | *3* | *2* | *2* | *2* | *2* | *2* | *2* |
| Fish & fish dishes | 2 | 2 | 4 | 4 | 3 | 4 | 4 | 5 | 6 | 5 | 4 |
| Vegetables (excluding potatoes) | 8 | 6 | 7 | 6 | 6 | 8 | 10 | 8 | 6 | 8 | 7 |
| Potatoes & savoury snacks | 7 | 5 | 5 | 3 | 5 | 9 | 7 | 5 | 4 | 5 | 5 |
| *of which:* | | | | | | | | | | | |
| *savoury snacks* | *4* | *3* | *2* | *1* | *2* | *5* | *4* | *2* | *1* | *3* | *3* |
| Fruit & nuts | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Sugars, preserves & confectionery | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Drinks** | 2 | 3 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 2 |
| Miscellaneous*** | 7 | 7 | 7 | 7 | 7 | 7 | 9 | 9 | 9 | 9 | 8 |
| **Average daily intake (mg)** | **4921** | **5056** | **5047** | **4922** | **4995** | **3409** | **3478** | **3512** | **3474** | **3481** | **4212** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note:* * *Data in this table are for intakes from food only and do not include further additions of salt in cooking or at the table.*
** *Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** *Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 3.27

# Average daily intake of potassium (mg) by sex and age of respondent

Cumulative percentages

| Potassium (mg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 1000 | - | - | - | - | - | 3 | 1 | 1 | 1 | 1 |
| Less than 1500 | 1 | - | 1 | 1 | 1 | 13 | 9 | 4 | 2 | 6 |
| Less than 2000 | 18 | 3 | 4 | 5 | 6 | 30 | 30 | 16 | 10 | 19 |
| Less than 2500 | 33 | 19 | 10 | 15 | 17 | 61 | 60 | 39 | 30 | 44 |
| Less than 3000 | 53 | 42 | 31 | 32 | 37 | 82 | 79 | 63 | 59 | 68 |
| Less than 3500 | 86 | 65 | 51 | 46 | 58 | 94 | 94 | 85 | 80 | 86 |
| Less than 4000 | 93 | 86 | 77 | 66 | 78 | 100 | 100 | 95 | 92 | 96 |
| Less than 4500 | 99 | 92 | 89 | 82 | 89 | | | 99 | 99 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 2847 | 3286 | 3485 | 3553 | 3371 | 2364 | 2398 | 2734 | 2885 | 2655 |
| Median | 2935 | 3194 | 3472 | 3566 | 3304 | 2385 | 2383 | 2692 | 2829 | 2620 |
| Lower 2.5 percentile | 1630 | 1951 | 1833 | 1853 | 1783 | 923 | 1148 | 1194 | 1502 | 1186 |
| Upper 2.5 percentile | 4397 | 5331 | 5770 | 5571 | 5504 | 3756 | 3719 | 4291 | 4342 | 4183 |
| Standard deviation | 712.9 | 1012.9 | 910.8 | 998.2 | 968.9 | 688.9 | 655.4 | 759.5 | 731.3 | 747.9 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 1000 | - | - | - | - | - | 3 | 1 | 1 | 1 | 1 |
| Less than 1500 | 1 | - | 2 | 1 | 1 | 13 | 9 | 4 | 2 | 6 |
| Less than 2000 | 18 | 3 | 5 | 5 | 6 | 30 | 30 | 16 | 10 | 19 |
| Less than 2500 | 33 | 19 | 10 | 15 | 17 | 62 | 60 | 39 | 30 | 44 |
| Less than 3000 | 53 | 42 | 31 | 32 | 37 | 82 | 79 | 63 | 59 | 68 |
| Less than 3500 | 86 | 65 | 51 | 46 | 58 | 94 | 94 | 85 | 80 | 87 |
| Less than 4000 | 93 | 86 | 77 | 66 | 78 | 100 | 100 | 95 | 92 | 96 |
| Less than 4500 | 99 | 92 | 89 | 82 | 89 | | | 99 | 99 | 99 |
| All | 100 | 100 | 100 | 100 | 100 | | | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 2841 | 3284 | 3481 | 3552 | 3367 | 2362 | 2397 | 2731 | 2884 | 2653 |
| Median | 2935 | 3194 | 3472 | 3566 | 3301 | 2385 | 2383 | 2692 | 2828 | 2619 |
| Lower 2.5 percentile | 1630 | 1948 | 1798 | 1853 | 1774 | 923 | 1148 | 1194 | 1502 | 1186 |
| Upper 2.5 percentile | 4397 | 5331 | 5770 | 5571 | 5504 | 3756 | 3719 | 4291 | 4342 | 4183 |
| Standard deviation | 708.1 | 1000.4 | 915.7 | 997.4 | 966.5 | 687.9 | 654.4 | 759.0 | 731.2 | 747.3 |

## Table 3.28

### Average daily intake of potassium as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 81 | 84 | 20.4 | *108* | 81 | 84 | 20.2 | *108* |
| 25–34 | 94 | 91 | 28.9 | *219* | 94 | 91 | 28.6 | *219* |
| 35–49 | 100 | 99 | 26.0 | *253* | 99 | 99 | 26.2 | *253* |
| 50–64 | 102 | 102 | 28.5 | *253* | 101 | 102 | 28.5 | *253* |
| All | 96 | 94 | 27.7 | *833* | 96 | 94 | 27.6 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 68 | 68 | 19.7 | *104* | 67 | 68 | 19.7 | *104* |
| 25–34 | 69 | 68 | 18.7 | *210* | 68 | 68 | 18.7 | *210* |
| 35–49 | 78 | 77 | 21.7 | *318* | 78 | 77 | 21.7 | *318* |
| 50–64 | 82 | 81 | 20.9 | *259* | 82 | 81 | 20.9 | *259* |
| All | 76 | 75 | 21.4 | *891* | 76 | 75 | 21.4 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

Table 3.29

## Percentage contribution of food types to average daily intake of potassium by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 14 | 14 | 13 | 14 | 14 | 12 | 13 | 13 | 13 | 13 | 13 |
| *of which:* | | | | | | | | | | | |
| *white bread* | *4* | *4* | *4* | *3* | *3* | *4* | *3* | *3* | *2* | *3* | *3* |
| *wholemeal bread* | *1* | *1* | *1* | *2* | *1* | *0* | *1* | *1* | *1* | *1* | *1* |
| *soft grain and other bread* | *1* | *1* | *1* | *1* | *1* | *2* | *1* | *1* | *1* | *1* | *1* |
| *breakfast cereals* | *1* | *3* | *3* | *3* | *3* | *2* | *2* | *3* | *4* | *3* | *3* |
| Milk & milk products | 10 | 13 | 13 | 13 | 13 | 13 | 14 | 15 | 15 | 15 | 13 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *1* | *3* | *3* | *2* | *2* | *3* | *3* | *3* | *2* | *2* | *2* |
| *semi-skimmed milk* | *6* | *6* | *7* | *6* | *6* | *5* | *6* | *7* | *7* | *7* | *6* |
| *skimmed milk* | *0* | *2* | *1* | *1* | *1* | *2* | *1* | *2* | *3* | *2* | *2* |
| Eggs & egg dishes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 19 | 17 | 16 | 14 | 16 | 15 | 13 | 13 | 11 | 13 | 15 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *4* | *4* | *4* | *3* | *4* | *4* | *3* | *3* | *3* | *3* | *3* |
| *chicken, turkey & dishes including coated* | *6* | *6* | *6* | *4* | *5* | *6* | *5* | *5* | *4* | *5* | *5* |
| Fish & fish dishes | 2 | 2 | 3 | 4 | 3 | 2 | 2 | 3 | 4 | 3 | 3 |
| Vegetables (excluding potatoes) | 8 | 8 | 9 | 10 | 9 | 9 | 13 | 11 | 11 | 11 | 10 |
| Potatoes & savoury snacks | 25 | 19 | 17 | 16 | 18 | 27 | 20 | 17 | 16 | 18 | 18 |
| *of which:* | | | | | | | | | | | |
| *potato chips* | *13* | *8* | *7* | *5* | *7* | *11* | *8* | *6* | *4* | *6* | *7* |
| *savoury snacks* | *4* | *3* | *2* | *1* | *2* | *4* | *3* | *2* | *1* | *2* | *2* |
| Fruit & nuts | 2 | 5 | 7 | 8 | 6 | 5 | 7 | 9 | 12 | 9 | 7 |
| Sugars, preserves & confectionery | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Drinks* | 15 | 17 | 18 | 17 | 17 | 12 | 12 | 14 | 13 | 13 | 15 |
| *of which:* | | | | | | | | | | | |
| *fruit juice* | *2* | *2* | *2* | *2* | *2* | *3* | *3* | *2* | *2* | *2* | *2* |
| *beer & lager* | *6* | *6* | *5* | *5* | *5* | *2* | *1* | *1* | *0* | *1* | *3* |
| *coffee* | *3* | *4* | *5* | *4* | *4* | *2* | *3* | *4* | *4* | *4* | *4* |
| *tea* | *2* | *2* | *3* | *4* | *3* | *2* | *3* | *4* | *4* | *3* | *3* |
| Miscellaneous** | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 |
| **Average daily intake (mg)** | **2841** | **3284** | **3481** | **3552** | **3367** | **2362** | **2397** | **2731** | **2884** | **2653** | **2998** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 3.30

## Average daily intake of zinc (mg) by sex and age of respondent

Cumulative percentages

| Zinc (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 4.0 | 1 | - | 1 | 1 | 1 | 5 | 5 | 3 | 3 | 4 |
| Less than 5.5 | 7 | 2 | 4 | 3 | 4 | 24 | 25 | 13 | 14 | 18 |
| Less than 6.0 | 9 | 4 | 6 | 5 | 6 | 35 | 37 | 20 | 17 | 25 |
| Less than 6.5 | 17 | 7 | 8 | 7 | 9 | 45 | 46 | 30 | 23 | 33 |
| Less than 7.0 | 17 | 15 | 10 | 9 | 12 | 57 | 58 | 38 | 29 | 42 |
| Less than 8.0 | 35 | 23 | 16 | 17 | 21 | 74 | 73 | 55 | 47 | 59 |
| Less than 9.0 | 46 | 35 | 26 | 29 | 32 | 82 | 86 | 73 | 66 | 75 |
| Less than 9.5 | 57 | 47 | 35 | 38 | 42 | 84 | 88 | 80 | 73 | 80 |
| Less than 10.0 | 63 | 52 | 43 | 46 | 49 | 86 | 92 | 85 | 80 | 85 |
| Less than 12.5 | 94 | 79 | 79 | 75 | 80 | 98 | 96 | 94 | 91 | 94 |
| Less than 15.0 | 99 | 91 | 91 | 91 | 92 | 98 | 97 | 97 | 95 | 97 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 9.2 | 10.7 | 11.4 | 10.8 | 10.7 | 7.1 | 7.1 | 8.2 | 8.6 | 7.9 |
| Median | 9.2 | 9.8 | 10.3 | 10.3 | 10.1 | 6.6 | 6.6 | 7.8 | 8.1 | 7.4 |
| Lower 2.5 percentile | 4.2 | 5.6 | 4.4 | 5.0 | 4.9 | 3.0 | 3.3 | 3.4 | 3.6 | 3.3 |
| Upper 2.5 percentile | 13.7 | 21.4 | 23.0 | 20.2 | 19.6 | 11.0 | 15.1 | 21.6 | 19.4 | 17.3 |
| Standard deviation | 2.49 | 4.36 | 8.41 | 4.22 | 5.75 | 3.17 | 2.88 | 3.79 | 3.66 | 3.54 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 4.0 | 1 | - | 1 | 1 | 1 | 5 | 5 | 4 | 3 | 4 |
| Less than 5.5 | 7 | 2 | 4 | 3 | 4 | 24 | 25 | 14 | 15 | 18 |
| Less than 6.0 | 9 | 4 | 6 | 6 | 6 | 35 | 38 | 20 | 18 | 26 |
| Less than 6.5 | 17 | 7 | 8 | 8 | 9 | 45 | 46 | 32 | 25 | 35 |
| Less than 7.0 | 17 | 15 | 11 | 11 | 13 | 58 | 60 | 39 | 33 | 45 |
| Less than 8.0 | 35 | 23 | 17 | 20 | 22 | 75 | 77 | 58 | 53 | 63 |
| Less than 9.0 | 46 | 37 | 27 | 32 | 34 | 82 | 89 | 78 | 73 | 79 |
| Less than 9.5 | 57 | 49 | 36 | 41 | 43 | 85 | 92 | 84 | 80 | 85 |
| Less than 10.0 | 67 | 58 | 44 | 49 | 52 | 87 | 95 | 90 | 86 | 89 |
| Less than 12.5 | 98 | 82 | 80 | 77 | 82 | 100 | 99 | 99 | 97 | 99 |
| Less than 15.0 | 100 | 92 | 93 | 93 | 94 | | 100 | 100 | 100 | 100 |
| All | | 100 | 100 | 100 | 100 | | | | | |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 9.0 | 10.2 | 10.6 | 10.3 | 10.2 | 6.8 | 6.7 | 7.6 | 7.8 | 7.4 |
| Median | 9.2 | 9.6 | 10.2 | 10.1 | 9.9 | 6.6 | 6.6 | 7.6 | 7.9 | 7.3 |
| Lower 2.5 percentile | 4.2 | 5.6 | 4.3 | 5.0 | 4.8 | 3.0 | 3.3 | 3.4 | 3.6 | 3.3 |
| Upper 2.5 percentile | 12.7 | 19.1 | 18.1 | 15.8 | 17.1 | 10.9 | 10.6 | 11.9 | 12.9 | 11.9 |
| Standard deviation | 2.28 | 3.60 | 3.45 | 2.83 | 3.21 | 2.11 | 1.89 | 2.04 | 2.20 | 2.11 |

Table 3.31

## Average daily intake of zinc as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 96 | 97 | 26.2 | *108* | 95 | 97 | 24.0 | *108* |
| 25–34 | 112 | 103 | 45.9 | *219* | 108 | 101 | 37.9 | *219* |
| 35–49 | 120 | 108 | 88.6 | *253* | 111 | 108 | 36.3 | *253* |
| 50–64 | 114 | 108 | 44.4 | *253* | 109 | 106 | 29.8 | *253* |
| All | 113 | 106 | 60.5 | *833* | 107 | 104 | 33.8 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 102 | 95 | 45.3 | *104* | 98 | 95 | 30.1 | *104* |
| 25–34 | 102 | 95 | 41.2 | *210* | 96 | 95 | 26.9 | *210* |
| 35–49 | 117 | 111 | 54.1 | *318* | 108 | 109 | 29.2 | *318* |
| 50–64 | 123 | 116 | 52.3 | *259* | 112 | 113 | 31.5 | *259* |
| All | 113 | 106 | 50.5 | *891* | 105 | 104 | 30.1 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

## Table 3.32

## Percentage contribution of food types to average daily intake of zinc by sex and age of respondent

Percentages

| Type of food | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 25 | 26 | 24 | 24 | 25 | 24 | 27 | 25 | 26 | 26 | 25 |
| *of which:* | | | | | | | | | | | |
| *pizza* | *5* | *3* | *1* | *1* | *2* | *3* | *2* | *1* | *1* | *2* | *2* |
| *white bread* | *7* | *6* | *7* | *6* | *7* | *7* | *6* | *5* | *5* | *6* | *6* |
| *wholemeal bread* | *1* | *3* | *3* | *3* | *3* | *1* | *3* | *3* | *3* | *3* | *3* |
| *soft grain and other bread* | *2* | *2* | *2* | *3* | *2* | *3* | *3* | *2* | *2* | *3* | *2* |
| *breakfast cereals* | *3* | *5* | *4* | *5* | *4* | *3* | *4* | *5* | *7* | *6* | *5* |
| Milk & milk products | 13 | 16 | 16 | 17 | 16 | 16 | 19 | 19 | 19 | 19 | 17 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *1* | *2* | *2* | *2* | *2* | *3* | *3* | *2* | *2* | *2* | *2* |
| *semi-skimmed milk* | *5* | *5* | *6* | *6* | *5* | *4* | *6* | *6* | *7* | *6* | *6* |
| *skimmed milk* | *0* | *1* | *1* | *1* | *1* | *2* | *1* | *2* | *3* | *2* | *2* |
| *cheese* | *5* | *6* | *6* | *6* | *6* | *5* | *7* | *5* | *6* | *6* | *6* |
| Eggs & egg dishes | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 43 | 37 | 36 | 34 | 36 | 36 | 29 | 31 | 29 | 30 | 34 |
| *of which:* | | | | | | | | | | | |
| *bacon & ham* | *4* | *4* | *4* | *4* | *4* | *2* | *3* | *3* | *3* | *3* | *3* |
| *beef, veal & dishes* | *13* | *12* | *12* | *11* | *12* | *13* | *9* | *12* | *10* | *11* | *11* |
| *chicken, turkey & dishes including coated* | *6* | *6* | *6* | *4* | *5* | *7* | *6* | *6* | *5* | *6* | *5* |
| *burgers & kebabs* | *9* | *5* | *3* | *1* | *4* | *7* | *3* | *2* | *1* | *2* | *3* |
| Fish & fish dishes | 1 | 2 | 4 | 3 | 3 | 2 | 3 | 3 | 4 | 3 | 3 |
| Vegetables (excluding potatoes) | 4 | 5 | 5 | 5 | 5 | 6 | 8 | 6 | 6 | 6 | 6 |
| Potatoes & savoury snacks | 6 | 5 | 5 | 5 | 5 | 7 | 6 | 5 | 5 | 5 | 5 |
| Fruit & nuts | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 |
| Sugars, preserves & confectionery | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Drinks* | 1 | 2 | 3 | 4 | 3 | 1 | 2 | 2 | 2 | 2 | 2 |
| Miscellaneous** | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| **Average daily intake (mg)** | **9.0** | **10.2** | **10.6** | **10.3** | **10.2** | **6.8** | **6.7** | **7.6** | **7.8** | **7.4** | **8.7** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

## Table 3.33

### Average daily intake of copper (mg) by sex and age of respondent

Cumulative percentages

| Copper (mg) | Men aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All men | Women aged (years): 19–24 | 25–34 | 35–49 | 50–64 | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 0.5 | - | - | 1 | 0 | 0 | 8 | 4 | 3 | 3 | 4 |
| Less than 0.6 | 4 | 0 | 1 | 2 | 2 | 16 | 10 | 8 | 6 | 9 |
| Less than 0.7 | 6 | 2 | 3 | 4 | 4 | 35 | 19 | 14 | 12 | 17 |
| Less than 0.8 | 12 | 9 | 7 | 5 | 7 | 45 | 31 | 23 | 22 | 27 |
| Less than 0.9 | 19 | 16 | 12 | 10 | 13 | 54 | 46 | 33 | 32 | 38 |
| Less than 1.0 | 36 | 20 | 17 | 14 | 19 | 70 | 57 | 45 | 48 | 52 |
| Less than 1.2 | 59 | 39 | 32 | 32 | 38 | 78 | 73 | 72 | 68 | 72 |
| Less than 1.4 | 78 | 60 | 52 | 49 | 56 | 87 | 87 | 83 | 81 | 84 |
| Less than 1.6 | 91 | 74 | 66 | 68 | 72 | 88 | 92 | 91 | 89 | 90 |
| Less than 1.8 | 93 | 83 | 78 | 76 | 80 | 93 | 95 | 93 | 93 | 94 |
| Less than 2.0 | 97 | 88 | 84 | 83 | 87 | 95 | 97 | 96 | 95 | 96 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1.16 | 1.43 | 1.58 | 1.56 | 1.48 | 0.97 | 1.02 | 1.11 | 1.11 | 1.07 |
| Median | 1.14 | 1.30 | 1.36 | 1.41 | 1.32 | 0.84 | 0.94 | 1.03 | 1.01 | 0.99 |
| Lower 2.5 percentile | 0.53 | 0.70 | 0.63 | 0.63 | 0.65 | 0.31 | 0.45 | 0.47 | 0.47 | 0.45 |
| Upper 2.5 percentile | 2.09 | 2.91 | 3.56 | 3.33 | 3.20 | 3.00 | 2.10 | 3.02 | 2.24 | 2.25 |
| Standard deviation | 0.338 | 0.673 | 0.972 | 0.882 | 0.820 | 0.523 | 0.416 | 0.514 | 0.433 | 0.473 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 0.5 | - | - | 1 | 0 | 0 | 8 | 4 | 4 | 3 | 4 |
| Less than 0.6 | 4 | 0 | 2 | 2 | 2 | 16 | 10 | 9 | 6 | 9 |
| Less than 0.7 | 6 | 2 | 4 | 4 | 4 | 35 | 19 | 15 | 12 | 17 |
| Less than 0.8 | 12 | 9 | 7 | 6 | 8 | 45 | 32 | 23 | 22 | 27 |
| Less than 0.9 | 19 | 16 | 12 | 11 | 14 | 54 | 47 | 34 | 33 | 39 |
| Less than 1.0 | 39 | 22 | 17 | 15 | 20 | 71 | 57 | 46 | 50 | 53 |
| Less than 1.2 | 62 | 40 | 33 | 34 | 39 | 78 | 74 | 74 | 70 | 73 |
| Less than 1.4 | 78 | 61 | 53 | 51 | 58 | 92 | 88 | 86 | 83 | 86 |
| Less than 1.6 | 91 | 76 | 67 | 70 | 73 | 93 | 93 | 94 | 91 | 93 |
| Less than 1.8 | 95 | 85 | 79 | 77 | 82 | 97 | 97 | 97 | 95 | 96 |
| Less than 2.0 | 100 | 90 | 86 | 84 | 88 | 98 | 99 | 99 | 97 | 98 |
| All | | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 1.14 | 1.37 | 1.53 | 1.51 | 1.43 | 0.91 | 1.00 | 1.05 | 1.07 | 1.03 |
| Median | 1.08 | 1.30 | 1.36 | 1.39 | 1.32 | 0.84 | 0.94 | 1.03 | 1.00 | 0.98 |
| Lower 2.5 percentile | 0.53 | 0.70 | 0.63 | 0.63 | 0.64 | 0.31 | 0.45 | 0.47 | 0.47 | 0.45 |
| Upper 2.5 percentile | 1.89 | 2.54 | 3.30 | 2.94 | 2.93 | 1.81 | 1.82 | 1.88 | 2.01 | 1.92 |
| Standard deviation | 0.316 | 0.517 | 0.864 | 0.751 | 0.705 | 0.376 | 0.374 | 0.375 | 0.376 | 0.378 |

Table 3.34

## Average daily intake of copper as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 97 | 95 | 28.1 | *108* | 95 | 90 | 26.3 | *108* |
| 25–34 | 119 | 108 | 56.1 | *219* | 114 | 108 | 43.1 | 219 |
| 35–49 | 131 | 113 | 81.0 | *253* | 128 | 113 | 72.0 | *253* |
| 50–64 | 130 | 117 | 73.5 | *253* | 126 | 116 | 62.6 | *253* |
| All | 123 | 110 | 68.4 | *833* | 119 | 110 | 58.7 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 81 | 70 | 43.5 | *104* | 76 | 70 | 31.4 | *104* |
| 25–34 | 85 | 79 | 34.7 | *210* | 83 | 78 | 31.2 | *210* |
| 35–49 | 93 | 86 | 42.8 | *318* | 88 | 86 | 31.3 | *318* |
| 50–64 | 92 | 84 | 36.1 | *259* | 89 | 83 | 31.3 | *259* |
| All | 89 | 82 | 39.4 | *891* | 86 | 81 | 31.5 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

# Table 3.35

## Percentage contribution of food types to average daily intake of copper by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 36 | 34 | 30 | 29 | 31 | 34 | 33 | 32 | 31 | 32 | 31 |
| *of which:* | | | | | | | | | | | |
| *pasta* | *4* | *3* | *2* | *2* | *3* | *5* | *3* | *3* | *2* | *3* | *3* |
| *pizza* | *8* | *4* | *2* | *1* | *3* | *4* | *3* | *2* | *1* | *2* | *3* |
| *white bread* | *10* | *9* | *8* | *8* | *8* | *10* | *7* | *7* | *6* | *7* | *8* |
| *wholemeal bread* | *2* | *3* | *3* | *3* | *3* | *1* | *3* | *3* | *3* | *3* | *3* |
| *soft grain and other bread* | *2* | *3* | *2* | *3* | *3* | *5* | *3* | *3* | *3* | *3* | *3* |
| *breakfast cereals* | *3* | *4* | *4* | *4* | *4* | *4* | *4* | *5* | *6* | *5* | *4* |
| *biscuits, buns, cakes & pastries* | *4* | *4* | *5* | *5* | *5* | *3* | *5* | *5* | *6* | *5* | *5* |
| Milk & milk products | 5 | 6 | 5 | 5 | 5 | 5 | 6 | 5 | 5 | 5 | 5 |
| Eggs & egg dishes | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 17 | 16 | 19 | 17 | 17 | 15 | 12 | 13 | 12 | 12 | 15 |
| *of which:* | | | | | | | | | | | |
| *beef, veal & dishes* | *3* | *3* | *2* | *2* | *2* | *3* | *2* | *2* | *2* | *2* | *2* |
| *chicken, turkey & dishes including coated* | *4* | *4* | *4* | *3* | *4* | *4* | *4* | *4* | *3* | *4* | *4* |
| *liver, liver products & dishes* | *0* | *2* | *7* | *6* | *5* | *2* | *1* | *2* | *2* | *2* | *3* |
| *burgers & kebabs* | *3* | *1* | *1* | *0* | *1* | *2* | *1* | *0* | *0* | *1* | *1* |
| Fish & fish dishes | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Vegetables (excluding potatoes) | 4 | 6 | 6 | 6 | 6 | 6 | 9 | 7 | 6 | 7 | 6 |
| Potatoes & savoury snacks | 15 | 10 | 9 | 9 | 10 | 16 | 11 | 10 | 9 | 11 | 10 |
| *of which:* | | | | | | | | | | | |
| *potato chips* | *9* | *5* | *4* | *3* | *5* | *8* | *5* | *4* | *3* | *4* | *5* |
| Fruit & nuts | 4 | 7 | 9 | 11 | 9 | 9 | 11 | 11 | 15 | 12 | 10 |
| *of which:* | | | | | | | | | | | |
| *fruit* | *4* | *5* | *7* | *10* | *7* | *7* | *9* | *10* | *14* | *10* | *9* |
| Sugars, preserves & confectionery | 5 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 4 |
| Drinks* | 6 | 8 | 11 | 12 | 10 | 5 | 7 | 9 | 9 | 8 | 9 |
| *of which:* | | | | | | | | | | | |
| *tea* | *2* | *2* | *3* | *4* | *3* | *2* | *3* | *4* | *5* | *4* | *3* |
| Miscellaneous** | 4 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 4 |
| **Average daily intake (mg)** | **1.14** | **1.37** | **1.53** | **1.51** | **1.43** | **0.91** | **1.00** | **1.05** | **1.07** | **1.03** | **1.22** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

Table 3.36

## Average daily intake of iodine (µg) by sex and age of respondent

Cumulative percentages

| Iodine (µg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 70 | 2 | 1 | 2 | 1 | 2 | 12 | 5 | 4 | 1 | 4 |
| Less than 100 | 17 | 7 | 5 | 3 | 6 | 28 | 21 | 13 | 13 | 17 |
| Less than 120 | 33 | 12 | 9 | 7 | 12 | 45 | 35 | 23 | 20 | 28 |
| Less than 140 | 41 | 16 | 17 | 12 | 18 | 61 | 53 | 37 | 27 | 41 |
| Less than 150 | 50 | 19 | 21 | 14 | 22 | 67 | 56 | 43 | 34 | 46 |
| Less than 200 | 70 | 49 | 41 | 36 | 45 | 84 | 85 | 76 | 60 | 74 |
| Less than 250 | 86 | 71 | 67 | 62 | 69 | 94 | 96 | 88 | 81 | 88 |
| Less than 300 | 93 | 84 | 83 | 80 | 84 | 96 | 99 | 94 | 94 | 95 |
| Less than 350 | 100 | 90 | 92 | 91 | 92 | 100 | 99 | 97 | 97 | 98 |
| All | | 100 | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 167 | 223 | 226 | 235 | 220 | 136 | 148 | 171 | 190 | 167 |
| Median | 152 | 202 | 217 | 227 | 209 | 129 | 138 | 157 | 180 | 155 |
| Lower 2.5 percentile | 65 | 80 | 79 | 91 | 80 | 40 | 57 | 65 | 75 | 58 |
| Upper 2.5 percentile | 314 | 432 | 444 | 442 | 428 | 309 | 267 | 360 | 382 | 340 |
| Standard deviation | 70.1 | 122.4 | 93.0 | 85.0 | 99.1 | 62.3 | 65.4 | 78.4 | 84.2 | 77.8 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 70 | 2 | 1 | 2 | 1 | 2 | 12 | 5 | 4 | 1 | 4 |
| Less than 100 | 21 | 7 | 5 | 3 | 7 | 28 | 22 | 13 | 14 | 17 |
| Less than 120 | 33 | 13 | 9 | 7 | 13 | 45 | 37 | 24 | 21 | 29 |
| Less than 140 | 41 | 16 | 17 | 12 | 18 | 63 | 56 | 38 | 31 | 43 |
| Less than 150 | 50 | 19 | 21 | 14 | 22 | 68 | 58 | 46 | 38 | 49 |
| Less than 200 | 70 | 51 | 42 | 37 | 46 | 88 | 87 | 79 | 66 | 78 |
| Less than 250 | 86 | 75 | 68 | 64 | 71 | 99 | 96 | 91 | 88 | 92 |
| Less than 300 | 93 | 88 | 83 | 83 | 86 | 99 | 99 | 96 | 96 | 97 |
| Less than 350 | 100 | 93 | 94 | 93 | 94 | 100 | 99 | 99 | 99 | 99 |
| All | | 100 | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 166 | 216 | 221 | 230 | 215 | 130 | 145 | 162 | 178 | 159 |
| Median | 152 | 196 | 215 | 223 | 205 | 129 | 135 | 155 | 171 | 151 |
| Lower 2.5 percentile | 65 | 80 | 74 | 91 | 80 | 40 | 57 | 63 | 75 | 58 |
| Upper 2.5 percentile | 314 | 432 | 407 | 405 | 405 | 233 | 263 | 312 | 326 | 305 |
| Standard deviation | 70.9 | 119.6 | 84.3 | 80.2 | 94.3 | 51.2 | 64.1 | 63.7 | 73.7 | 67.4 |

Table 3.37

## Average daily intake of iodine as a percentage of Reference Nutrient Intake (RNI) by sex and age of respondent

Percentages

| Sex and age of respondent | Average daily intake as % of RNI* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (a) All sources | | | *Base* | (b) Food sources | | | *Base* |
| | Mean | Median | sd | | Mean | Median | sd | |
| **Men aged (years):** | | | | | | | | |
| 19–24 | 119 | 109 | 50.1 | *108* | 119 | 109 | 50.6 | *108* |
| 25–34 | 159 | 144 | 87.4 | *219* | 154 | 140 | 85.4 | *219* |
| 35–49 | 161 | 155 | 66.5 | *253* | 158 | 154 | 60.2 | *253* |
| 50–64 | 168 | 162 | 60.7 | *253* | 164 | 160 | 57.3 | *253* |
| All | 157 | 149 | 70.8 | *833* | 154 | 147 | 67.3 | *833* |
| **Women aged (years):** | | | | | | | | |
| 19–24 | 97 | 92 | 44.5 | *104* | 93 | 92 | 36.6 | *104* |
| 25–34 | 106 | 99 | 46.7 | *210* | 103 | 96 | 45.8 | *210* |
| 35–49 | 122 | 112 | 56.0 | *318* | 116 | 111 | 45.5 | *318* |
| 50–64 | 136 | 129 | 60.1 | *259* | 127 | 122 | 52.7 | *259* |
| All | 119 | 111 | 55.5 | *891* | 114 | 108 | 48.1 | *891* |

*Note: * Intake as a percentage of RNI was calculated for each respondent. The values for all respondents in each age group were then pooled to give a mean, median and sd.*

# Table 3.38

## Percentage contribution of food types to average daily intake of iodine by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 14 | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 11 | 12 | 12 |
| *of which:* | | | | | | | | | | | |
| *bread* | *4* | *3* | *3* | *3* | *3* | *4* | *3* | *3* | *2* | *3* | *3* |
| *biscuits, buns, cakes & pastries* | *3* | *2* | *3* | *4* | *3* | *2* | *3* | *3* | *4* | *3* | *3* |
| Milk & milk products | 29 | 36 | 37 | 35 | 35 | 40 | 41 | 44 | 42 | 42 | 38 |
| *of which:* | | | | | | | | | | | |
| *whole milk* | *3* | *8* | *7* | *7* | *7* | *9* | *10* | *8* | *5* | *7* | *7* |
| *semi-skimmed milk* | *17* | *16* | *20* | *17* | *18* | *16* | *18* | *20* | *19* | *19* | *18* |
| *skimmed milk* | *2* | *5* | *3* | *4* | *3* | *5* | *4* | *7* | *8* | *6* | *5* |
| *cheese* | *2* | *2* | *2* | *2* | *2* | *3* | *3* | *2* | *2* | *2* | *2* |
| *yogurt* | *2* | *2* | *3* | *3* | *3* | *3* | *4* | *4* | *5* | *4* | *3* |
| Eggs & egg dishes | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 |
| Fat spreads | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Meat & meat products | 10 | 7 | 7 | 6 | 7 | 9 | 6 | 6 | 5 | 6 | 7 |
| Fish & fish dishes | 7 | 7 | 10 | 14 | 10 | 8 | 10 | 11 | 15 | 12 | 11 |
| *of which:* | | | | | | | | | | | |
| *coated & fried white fish* | *5* | *4* | *5* | *6* | *5* | *5* | *4* | *5* | *7* | *5* | *5* |
| *other white fish* | *1* | *1* | *2* | *4* | *2* | *1* | *3* | *3* | *5* | *4* | *3* |
| *oily fish* | *0* | *1* | *2* | *3* | *2* | *2* | *2* | *2* | *3* | *2* | *2* |
| Vegetables (excluding potatoes) | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 |
| Potatoes & savoury snacks | 4 | 2 | 2 | 2 | 2 | 4 | 3 | 2 | 2 | 3 | 3 |
| Fruit & nuts | 0 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 2 |
| Sugars, preserves & confectionery | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 |
| Drinks* | 22 | 22 | 19 | 17 | 19 | 12 | 10 | 9 | 8 | 9 | 15 |
| *of which:* | | | | | | | | | | | |
| *beer & lager* | *19* | *18* | *14* | *12* | *15* | *8* | *4* | *3* | *1* | *3* | *10* |
| Miscellaneous** | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 3 | 4 | 4 | 3 |
| **Average daily intake (µg)** | **166** | **216** | **221** | **230** | **215** | **130** | **145** | **162** | **178** | **159** | **186** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*

*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

# Table 3.39

## Average daily intake of manganese (mg) by sex and age of respondent

Cumulative percentages

| Manganese (mg) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(a) Intakes from *all sources*** | | | | | | | | | | |
| Less than 1.0 | 1 | 0 | 1 | 0 | 1 | 7 | 2 | 3 | 2 | 3 |
| Less than 1.4 | 6 | 4 | 5 | 3 | 4 | 20 | 9 | 9 | 6 | 9 |
| Less than 1.6 | 14 | 5 | 7 | 4 | 6 | 27 | 18 | 12 | 9 | 14 |
| Less than 2.0 | 33 | 19 | 15 | 7 | 16 | 46 | 34 | 26 | 19 | 28 |
| Less than 2.4 | 53 | 28 | 25 | 15 | 27 | 67 | 54 | 39 | 32 | 44 |
| Less than 2.8 | 70 | 44 | 39 | 27 | 40 | 81 | 73 | 54 | 46 | 60 |
| Less than 3.2 | 81 | 56 | 49 | 39 | 52 | 86 | 81 | 68 | 60 | 71 |
| Less than 3.6 | 88 | 67 | 62 | 52 | 64 | 91 | 91 | 76 | 72 | 80 |
| Less than 4.0 | 91 | 77 | 71 | 64 | 73 | 93 | 93 | 85 | 81 | 87 |
| Less than 4.5 | 99 | 84 | 81 | 74 | 82 | 95 | 94 | 91 | 87 | 91 |
| Less than 5.0 | 99 | 89 | 87 | 86 | 89 | 97 | 97 | 94 | 91 | 94 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 2.48 | 3.22 | 3.63 | 3.77 | 3.42 | 2.19 | 2.48 | 2.86 | 3.11 | 2.77 |
| Median | 2.37 | 3.00 | 3.22 | 3.54 | 3.12 | 2.02 | 2.31 | 2.67 | 2.88 | 2.55 |
| Lower 2.5 percentile | 1.14 | 1.38 | 1.31 | 1.34 | 1.34 | 0.69 | 1.05 | 0.93 | 1.07 | 0.98 |
| Upper 2.5 percentile | 4.15 | 6.24 | 7.75 | 8.11 | 7.06 | 5.22 | 5.47 | 6.07 | 6.05 | 5.63 |
| Standard deviation | 0.840 | 1.342 | 3.080 | 1.513 | 2.074 | 1.009 | 1.030 | 1.249 | 1.456 | 1.278 |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| **(b) Intakes from *food sources*** | | | | | | | | | | |
| Less than 1.0 | 1 | 0 | 1 | 0 | 1 | 7 | 2 | 3 | 2 | 3 |
| Less than 1.4 | 6 | 4 | 5 | 3 | 4 | 22 | 9 | 9 | 6 | 9 |
| Less than 1.6 | 14 | 5 | 7 | 5 | 7 | 29 | 18 | 13 | 9 | 15 |
| Less than 2.0 | 33 | 19 | 15 | 8 | 16 | 48 | 34 | 27 | 19 | 29 |
| Less than 2.4 | 57 | 30 | 26 | 16 | 28 | 67 | 55 | 39 | 32 | 44 |
| Less than 2.8 | 70 | 44 | 39 | 29 | 41 | 81 | 74 | 55 | 47 | 60 |
| Less than 3.2 | 83 | 57 | 50 | 39 | 53 | 89 | 81 | 68 | 60 | 72 |
| Less than 3.6 | 90 | 70 | 62 | 52 | 65 | 94 | 91 | 77 | 74 | 81 |
| Less than 4.0 | 91 | 78 | 72 | 65 | 74 | 96 | 94 | 87 | 82 | 88 |
| Less than 4.5 | 99 | 85 | 82 | 76 | 83 | 98 | 95 | 93 | 89 | 93 |
| Less than 5.0 | 99 | 90 | 88 | 87 | 90 | 100 | 98 | 96 | 93 | 96 |
| All | 100 | 100 | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| *Base* | *108* | *219* | *253* | *253* | *833* | *104* | *210* | *318* | *259* | *891* |
| Mean (average value) | 2.45 | 3.18 | 3.42 | 3.70 | 3.32 | 2.12 | 2.45 | 2.79 | 3.01 | 2.69 |
| Median | 2.29 | 2.97 | 3.21 | 3.53 | 3.10 | 2.02 | 2.30 | 2.66 | 2.88 | 2.55 |
| Lower 2.5 percentile | 1.14 | 1.38 | 1.30 | 1.34 | 1.33 | 0.69 | 1.05 | 0.91 | 1.07 | 0.95 |
| Upper 2.5 percentile | 4.15 | 6.24 | 6.90 | 7.79 | 6.83 | 4.50 | 4.89 | 5.40 | 5.44 | 5.31 |
| Standard deviation | 0.827 | 1.326 | 1.524 | 1.434 | 1.423 | 0.892 | 0.980 | 1.110 | 1.136 | 1.102 |

# Table 3.40

## Percentage contribution of food types to average daily intake of manganese by sex and age of respondent

Percentages

| Type of food | Men aged (years): | | | | All men | Women aged (years): | | | | All women | All |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | | |
| | % | % | % | % | % | % | % | % | % | % | % |
| Cereals & cereal products | 49 | 53 | 52 | 50 | 51 | 47 | 49 | 48 | 48 | 48 | 50 |
| *of which:* | | | | | | | | | | | |
| *pasta* | *4* | *3* | *2* | *1* | *2* | *5* | *3* | *2* | *1* | *2* | *2* |
| *white bread* | *16* | *13* | *13* | *11* | *12* | *14* | *11* | *9* | *8* | *9* | *11* |
| *wholemeal bread* | *5* | *10* | *10* | *10* | *9* | *3* | *9* | *9* | *9* | *8* | *9* |
| *soft grain and other bread* | *5* | *6* | *6* | *6* | *6* | *7* | *6* | *5* | *5* | *6* | *6* |
| *breakfast cereals* | *7* | *10* | *10* | *12* | *11* | *9* | *9* | *12* | *15* | *12* | *11* |
| *biscuits, buns, cakes & pastries* | *4* | *4* | *5* | *6* | *5* | *4* | *5* | *5* | *6* | *5* | *5* |
| Milk & milk products | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| Eggs & egg dishes | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fat spreads | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat & meat products | 10 | 8 | 6 | 5 | 7 | 8 | 5 | 5 | 4 | 5 | 6 |
| Fish & fish dishes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Vegetables (excluding potatoes) | 9 | 9 | 9 | 9 | 9 | 11 | 12 | 11 | 10 | 11 | 10 |
| Potatoes & savoury snacks | 10 | 6 | 6 | 5 | 6 | 10 | 7 | 6 | 5 | 6 | 6 |
| Fruit & nuts | 2 | 5 | 7 | 7 | 6 | 5 | 6 | 7 | 10 | 8 | 7 |
| Sugars, preserves & confectionery | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 |
| Drinks* | 12 | 14 | 16 | 19 | 16 | 14 | 15 | 19 | 19 | 18 | 17 |
| *of which:* | | | | | | | | | | | |
| *tea* | *8* | *10* | *11* | *15* | *12* | *9* | *11* | *14* | *14* | *13* | *12* |
| Miscellaneous** | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| **Average daily intake (mg)** | **2.45** | **3.18** | **3.42** | **3.70** | **3.32** | **2.12** | **2.45** | **2.79** | **3.01** | **2.69** | **2.99** |
| **Total number of respondents** | **108** | **219** | **253** | **253** | **833** | **104** | **210** | **318** | **259** | **891** | **1724** |

*Note: * Includes soft drinks, alcoholic drinks, tea, coffee and water.*
*** Includes powdered beverages (except tea and coffee), soups, sauces, condiments and artificial sweeteners.*

Table 3.41

This table spreads over 2 pages. Altogether there is 1 spread (2 pages).

## Average daily intake of minerals by sex of respondent and region

| Mineral (unit of measurement) | Sex of respondent and region | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | | | | | | |
| | Scotland | | | Northern | | | Central, South West and Wales | | | London and the South East | | |
| | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd |
| **All sources** | | | | | | | | | | | | |
| Total iron (mg) | 13.9 | 12.8 | 5.82 | 12.9 | 12.3 | 4.81 | 14.9 | 13.2 | 13.06 | 14.2 | 13.2 | 6.28 |
| Haem iron (mg) | 1.0 | 0.9 | 0.58 | 0.8 | 0.7 | 0.51 | 0.8 | 0.7 | 0.51 | 0.8 | 0.7 | 0.50 |
| Non-haem iron (mg) | 12.9 | 11.9 | 5.68 | 12.0 | 11.6 | 4.67 | 14.1 | 12.2 | 12.99 | 13.5 | 12.4 | 6.24 |
| Calcium (mg) | 1066 | 1044 | 397.3 | 997 | 966 | 347.3 | 1050 | 1003 | 524.0 | 979 | 957 | 381.9 |
| Phosphorus (mg) | 1586 | 1498 | 442.6 | 1469 | 1431 | 426.7 | 1537 | 1514 | 652.2 | 1470 | 1448 | 389.3 |
| Magnesium (mg) | 306 | 291 | 99.3 | 305 | 301 | 96.2 | 315 | 300 | 113.1 | 312 | 306 | 97.2 |
| Sodium (mg)* | 3462 | 3312 | 1132.9 | 3337 | 3268 | 981.5 | 3385 | 3277 | 1095.3 | 3184 | 3160 | 908.8 |
| Chloride (mg)* | 5197 | 4994 | 1641.3 | 5029 | 4973 | 1458.3 | 5134 | 5011 | 1807.2 | 4815 | 4805 | 1365.0 |
| Potassium (mg) | 3416 | 3225 | 1028.0 | 3332 | 3292 | 963.1 | 3407 | 3329 | 1010.7 | 3351 | 3304 | 908.1 |
| Zinc (mg) | 11.4 | 11.1 | 4.39 | 10.3 | 10.1 | 3.32 | 10.9 | 10.1 | 7.27 | 10.8 | 9.9 | 5.83 |
| Copper (mg) | 1.44 | 1.24 | 0.981 | 1.37 | 1.27 | 0.503 | 1.52 | 1.33 | 0.738 | 1.54 | 1.35 | 1.074 |
| Iodine (µg) | 252 | 240 | 94.4 | 218 | 205 | 100.2 | 221 | 209 | 109.5 | 214 | 204 | 83.6 |
| Manganese (mg) | 3.28 | 3.08 | 1.417 | 3.18 | 3.09 | 1.308 | 3.61 | 3.11 | 2.865 | 3.45 | 3.21 | 1.615 |
| *Base* | | *65* | | | *234* | | | *294* | | | *240* | |
| **Food sources** | | | | | | | | | | | | |
| Total iron (mg) | 13.2 | 12.6 | 4.90 | 12.6 | 12.2 | 4.46 | 13.3 | 12.9 | 5.22 | 13.5 | 13.1 | 4.56 |
| Haem iron (mg) | 1.0 | 0.9 | 0.58 | 0.8 | 0.7 | 0.51 | 0.8 | 0.7 | 0.51 | 0.8 | 0.7 | 0.50 |
| Non-haem iron (mg) | 12.3 | 11.4 | 4.74 | 11.7 | 11.4 | 4.31 | 12.5 | 11.9 | 5.07 | 12.7 | 12.3 | 4.51 |
| Calcium (mg) | 1063 | 1044 | 394.1 | 993 | 953 | 348.2 | 1039 | 1001 | 486.6 | 965 | 954 | 367.3 |
| Phosphorus (mg) | 1584 | 1498 | 438.7 | 1466 | 1431 | 427.8 | 1518 | 1514 | 524.0 | 1465 | 1446 | 390.4 |
| Magnesium (mg) | 304 | 291 | 94.5 | 303 | 301 | 96.9 | 311 | 297 | 109.0 | 309 | 306 | 89.2 |
| Sodium (mg)* | 3462 | 3312 | 1132.9 | 3337 | 3268 | 981.9 | 3369 | 3268 | 1082.9 | 3182 | 3160 | 913.4 |
| Chloride (mg)* | 5196 | 4994 | 1639.8 | 5028 | 4973 | 1458.7 | 5072 | 5008 | 1610.3 | 4813 | 4805 | 1369.3 |
| Potassium (mg) | 3415 | 3225 | 1026.9 | 3331 | 3292 | 962.8 | 3402 | 3308 | 1001.4 | 3348 | 3304 | 912.4 |
| Zinc (mg) | 10.7 | 10.7 | 3.01 | 10.1 | 10.0 | 3.04 | 10.2 | 9.8 | 3.31 | 10.2 | 9.8 | 3.32 |
| Copper (mg) | 1.39 | 1.24 | 0.929 | 1.35 | 1.27 | 0.486 | 1.45 | 1.33 | 0.586 | 1.50 | 1.33 | 0.914 |
| Iodine (µg) | 245 | 239 | 88.0 | 214 | 201 | 95.3 | 216 | 206 | 106.2 | 208 | 202 | 76.6 |
| Manganese (mg) | 3.23 | 3.00 | 1.378 | 3.14 | 3.08 | 1.242 | 3.41 | 3.06 | 1.496 | 3.40 | 3.18 | 1.496 |
| *Base* | | *65* | | | *234* | | | *294* | | | *240* | |

*Note: * Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

| Women | | | | | | | | | | | | Mineral (unit of measurement) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scotland | | | Northern | | | Central, South West and Wales | | | London and the South East | | | |
| Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | |
| | | | | | | | | | | | | **All sources** |
| 12.1 | 10.8 | 14.89 | 11.1 | 9.9 | 8.33 | 12.2 | 9.9 | 22.25 | 11.3 | 10.1 | 5.48 | Total iron (mg) |
| 0.7 | 0.5 | 0.62 | 0.5 | 0.4 | 0.47 | 0.5 | 0.5 | 0.37 | 0.5 | 0.4 | 0.35 | Haem iron (mg) |
| 11.4 | 10.3 | 14.88 | 10.6 | 9.4 | 8.23 | 11.7 | 9.3 | 22.26 | 10.8 | 9.7 | 5.43 | Non-haem iron (mg) |
| 773 | 709 | 251.9 | 817 | 778 | 349.6 | 808 | 769 | 285.9 | 812 | 762 | 329.0 | Calcium (mg) |
| 1095 | 1056 | 270.2 | 1119 | 1115 | 333.7 | 1115 | 1095 | 276.6 | 1121 | 1120 | 308.6 | Phosphorus (mg) |
| 218 | 216 | 65.5 | 230 | 225 | 72.9 | 232 | 221 | 75.7 | 241 | 228 | 86.6 | Magnesium (mg) |
| 2424 | 2361 | 618.1 | 2352 | 2271 | 720.9 | 2301 | 2223 | 647.1 | 2234 | 2249 | 703.7 | Sodium (mg)* |
| 3653 | 3562 | 943.7 | 3554 | 3489 | 1046.5 | 3459 | 3345 | 956.2 | 3408 | 3425 | 1064.1 | Chloride (mg)* |
| 2583 | 2509 | 669.3 | 2656 | 2621 | 794.7 | 2661 | 2666 | 707.4 | 2665 | 2587 | 775.5 | Potassium (mg) |
| 8.0 | 7.1 | 3.78 | 7.5 | 7.4 | 2.87 | 7.9 | 7.4 | 3.43 | 8.3 | 7.8 | 4.06 | Zinc (mg) |
| 1.06 | 0.96 | 0.477 | 1.02 | 0.94 | 0.446 | 1.08 | 0.97 | 0.485 | 1.12 | 1.07 | 0.476 | Copper (mg) |
| 168 | 156 | 76.8 | 169 | 159 | 81.9 | 164 | 150 | 74.5 | 169 | 157 | 78.6 | Iodine (µg) |
| 2.61 | 2.45 | 0.982 | 2.67 | 2.43 | 1.239 | 2.78 | 2.56 | 1.235 | 2.87 | 2.67 | 1.416 | Manganese (mg) |
| | *66* | | | *229* | | | *327* | | | *268* | | *Base* |
| | | | | | | | | | | | | **Food sources** |
| 10.2 | 10.5 | 2.94 | 9.9 | 9.5 | 4.07 | 9.8 | 9.5 | 3.46 | 10.2 | 9.8 | 3.67 | Total iron (mg) |
| 0.7 | 0.5 | 0.62 | 0.5 | 0.4 | 0.47 | 0.5 | 0.5 | 0.37 | 0.5 | 0.4 | 0.35 | Haem iron (mg) |
| 9.5 | 9.9 | 2.72 | 9.4 | 8.9 | 3.87 | 9.3 | 9.0 | 3.39 | 9.7 | 9.4 | 3.59 | Non-haem iron (mg) |
| 766 | 707 | 248.6 | 786 | 766 | 285.8 | 779 | 758 | 257.5 | 769 | 743 | 272.9 | Calcium (mg) |
| 1093 | 1052 | 269.3 | 1117 | 1115 | 333.1 | 1111 | 1090 | 275.5 | 1115 | 1112 | 306.0 | Phosphorus (mg) |
| 216 | 216 | 64.3 | 228 | 224 | 71.0 | 228 | 220 | 66.8 | 233 | 225 | 73.6 | Magnesium (mg) |
| 2424 | 2361 | 618.1 | 2351 | 2271 | 720.7 | 2299 | 2220 | 645.9 | 2232 | 2249 | 705.1 | Sodium (mg)* |
| 3653 | 3562 | 943.7 | 3553 | 3489 | 1046.1 | 3457 | 3345 | 956.1 | 3406 | 3425 | 1063.9 | Chloride (mg)* |
| 2582 | 2509 | 669.3 | 2654 | 2621 | 793.9 | 2659 | 2666 | 707.6 | 2663 | 2584 | 774.3 | Potassium (mg) |
| 7.2 | 6.9 | 1.99 | 7.3 | 7.3 | 2.24 | 7.4 | 7.3 | 1.99 | 7.4 | 7.4 | 2.17 | Zinc (mg) |
| 1.01 | 0.96 | 0.353 | 0.98 | 0.94 | 0.380 | 1.03 | 0.96 | 0.370 | 1.08 | 1.06 | 0.390 | Copper (mg) |
| 160 | 148 | 66.2 | 161 | 157 | 66.7 | 157 | 147 | 67.0 | 159 | 152 | 69.1 | Iodine (µg) |
| 2.56 | 2.45 | 0.872 | 2.60 | 2.42 | 1.071 | 2.71 | 2.55 | 1.113 | 2.78 | 2.65 | 1.162 | Manganese (mg) |
| | *66* | | | *229* | | | *327* | | | *268* | | *Base* |

## Table 3.42

**Average daily intake of minerals as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and region**

Percentages

| Mineral (unit of measurement) | Sex of respondent and region | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Men | | | | Women | | | |
| | Scotland* | Northern | Central, South West and Wales | London and the South East | Scotland* | Northern | Central, South West and Wales | London and the South East |
| **All sources** | | | | | | | | |
| Total iron (mg)** | | | | | | | | |
| mean daily intake as % RNI | 160 | 148 | 171 | 164 | | | | |
| 19 to 50 years | | | | | 78 | 70 | 83 | 75 |
| over 50 years | | | | | [16] | 150 | 137 | 133 |
| % with intakes below LRNI | - | 1 | 1 | 1 | | | | |
| 19 to 50 years | | | | | 28 | 37 | 34 | 27 |
| over 50 years | | | | | [0] | 6 | - | 3 |
| Calcium (mg) | | | | | | | | |
| mean daily intake as % RNI | 152 | 142 | 150 | 140 | 110 | 117 | 115 | 116 |
| % with intakes below LRNI | - | 2 | 2 | 3 | 3 | 6 | 3 | 7 |
| Phosphorus (mg) | | | | | | | | |
| mean daily intake as % RNI | 288 | 267 | 279 | 267 | 199 | 204 | 203 | 204 |
| % with intakes below LRNI | - | - | - | - | - | 0 | - | 0 |
| Magnesium (mg) | | | | | | | | |
| mean daily intake as % RNI | 102 | 102 | 105 | 104 | 81 | 85 | 86 | 89 |
| % with intakes below LRNI | 6 | 9 | 10 | 8 | 12 | 15 | 11 | 14 |
| Sodium (mg)*** | | | | | | | | |
| mean daily intake as % RNI | 216 | 209 | 212 | 199 | 151 | 147 | 144 | 140 |
| % with intakes below LRNI | - | - | - | 0 | - | 0 | 0 | 0 |
| Chloride (mg)*** | | | | | | | | |
| mean daily intake as % RNI | 208 | 201 | 205 | 193 | 146 | 142 | 138 | 136 |
| % with intakes below LRNI | - | - | - | 0 | - | 0 | - | 0 |
| Potassium (mg) | | | | | | | | |
| mean daily intake as % RNI | 98 | 95 | 97 | 96 | 74 | 76 | 76 | 76 |
| % with intakes below LRNI | 4 | 5 | 6 | 8 | 17 | 22 | 19 | 18 |
| Zinc (mg) | | | | | | | | |
| mean daily intake as % RNI | 120 | 109 | 114 | 113 | 114 | 108 | 113 | 119 |
| % with intakes below LRNI | 2 | 4 | 4 | 3 | - | 6 | 3 | 4 |
| Copper (mg)**** | | | | | | | | |
| mean daily intake as % RNI | 120 | 114 | 127 | 129 | 89 | 85 | 90 | 93 |
| Iodine (µg) | | | | | | | | |
| mean daily intake as % RNI | 180 | 156 | 158 | 153 | 120 | 121 | 117 | 121 |
| % with intakes below LRNI | - | 3 | 2 | 1 | - | 6 | 4 | 4 |

# Table 3.42 continued

## Average daily intake of minerals as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and region

Percentages

| Mineral (unit of measurement) | Sex of respondent and region | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Men | | | | Women | | | |
| | Scotland* | Northern | Central, South West and Wales | London and the South East | Scotland* | Northern | Central, South West and Wales | London and the South East |
| **Food sources** | | | | | | | | |
| Total iron (mg)** | | | | | | | | |
| mean daily intake as % RNI | 152 | 144 | 153 | 155 | | | | |
| 19 to 50 years | | | | | 65 | 64 | 64 | 68 |
| over 50 years | | | | | [16] | 125 | 125 | 121 |
| % with intakes below LRNI | - | 1 | 1 | 1 | | | | |
| 19 to 50 years | | | | | 30 | 39 | 36 | 28 |
| over 50 years | | | | | [0] | 6 | - | 3 |
| Calcium (mg) | | | | | | | | |
| mean daily intake as % RNI | 152 | 142 | 148 | 138 | 109 | 112 | 111 | 110 |
| % with intakes below LRNI | - | 2 | 2 | 3 | 3 | 7 | 3 | 7 |
| Phosphorus (mg) | | | | | | | | |
| mean daily intake as % RNI | 288 | 267 | 276 | 266 | 199 | 203 | 202 | 203 |
| % with intakes below LRNI | - | - | - | - | - | 0 | - | 0 |
| Magnesium (mg) | | | | | | | | |
| mean daily intake as % RNI | 101 | 101 | 104 | 103 | 80 | 84 | 84 | 86 |
| % with intakes below LRNI | 6 | 9 | 11 | 8 | 12 | 15 | 11 | 14 |
| Sodium (mg)*** | | | | | | | | |
| mean daily intake as % RNI | 216 | 209 | 211 | 199 | 151 | 147 | 144 | 140 |
| % with intakes below LRNI | - | - | - | 0 | - | 0 | 0 | 0 |
| Chloride (mg)*** | | | | | | | | |
| mean daily intake as % RNI | 208 | 201 | 203 | 193 | 146 | 142 | 138 | 136 |
| % with intakes below LRNI | - | - | - | 0 | - | 0 | - | 0 |
| Potassium (mg) | | | | | | | | |
| mean daily intake as % RNI | 98 | 95 | 97 | 96 | 74 | 76 | 76 | 76 |
| % with intakes below LRNI | 4 | 5 | 6 | 8 | 17 | 22 | 19 | 18 |
| Zinc (mg) | | | | | | | | |
| mean daily intake as % RNI | 113 | 106 | 107 | 107 | 103 | 104 | 106 | 106 |
| % with intakes below LRNI | 2 | 5 | 4 | 4 | 1 | 6 | 3 | 4 |
| Copper (mg)**** | | | | | | | | |
| mean daily intake as % RNI | 116 | 113 | 121 | 125 | 84 | 82 | 86 | 90 |
| Iodine (µg) | | | | | | | | |
| mean daily intake as % RNI | 175 | 153 | 155 | 148 | 114 | 115 | 112 | 113 |
| % with intakes below LRNI | - | 3 | 2 | 1 | - | 6 | 4 | 5 |
| *Base – respondents aged 19 to 50 years* | *44* | *178* | *209* | *173* | *50* | *158* | *245* | *196* |
| *Base – respondents aged over 50 years* | *21* | *56* | *84* | *67* | *16* | *71* | *83* | *73* |

*Note: * Square brackets enclosing numbers denote the actual number of cases, when the base is fewer than 30. The number of women aged over 50 years living in Scotland is less than 30 and mean values and percentages are not, therefore, presented for total iron.*

*** For total iron, the RNI and LRNI values are for men of all ages; for women, the RNI and LRNI values are different for 19 to 50 year olds and over 50 year olds.*

**** Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

***** There is no LRNI for copper.*

# Table 3.43

## Average daily intake of minerals by sex of respondent and whether someone in the respondent's household was receiving certain benefits

| Mineral (unit of measurement) | Sex of respondent and whether receiving benefits | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Men | | | | | | Women | | | | | |
| | Receiving benefits | | | Not receiving benefits | | | Receiving benefits | | | Not receiving benefits | | |
| | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd | Mean | Median | sd |
| **All sources** | | | | | | | | | | | | |
| Total iron (mg) | 11.8 | 11.3 | 5.04 | 14.4 | 13.1 | 9.42 | 9.7 | 8.4 | 10.53 | 12.0 | 10.4 | 15.71 |
| Haem iron (mg) | 0.8 | 0.7 | 0.50 | 0.8 | 0.7 | 0.52 | 0.6 | 0.4 | 0.59 | 0.5 | 0.5 | 0.37 |
| Non-haem iron (mg) | 11.0 | 10.5 | 4.91 | 13.6 | 12.2 | 9.35 | 9.2 | 7.9 | 10.47 | 11.5 | 9.8 | 15.70 |
| Calcium (mg) | 889 | 865 | 326.1 | 1035 | 1001 | 441.4 | 699 | 669 | 287.0 | 831 | 784 | 314.7 |
| Phosphorus (mg) | 1307 | 1260 | 401.3 | 1532 | 1491 | 519.2 | 976 | 976 | 317.6 | 1145 | 1134 | 289.6 |
| Magnesium (mg) | 257 | 232 | 92.5 | 319 | 307 | 101.9 | 199 | 191 | 71.7 | 240 | 231 | 77.3 |
| Sodium (mg)* | 3065 | 2867 | 1043.2 | 3358 | 3275 | 1009.5 | 2143 | 2029 | 789.1 | 2335 | 2274 | 655.5 |
| Chloride (mg)* | 4557 | 4323 | 1547.5 | 5087 | 5000 | 1578.0 | 3198 | 3071 | 1149.5 | 3540 | 3464 | 974.3 |
| Potassium (mg) | 2939 | 2710 | 931.8 | 3436 | 3361 | 958.2 | 2292 | 2217 | 703.2 | 2729 | 2700 | 735.5 |
| Zinc (mg) | 9.6 | 9.5 | 3.46 | 10.9 | 10.2 | 6.00 | 6.7 | 6.3 | 2.67 | 8.2 | 7.6 | 3.63 |
| Copper (mg) | 1.23 | 1.17 | 0.522 | 1.52 | 1.34 | 0.851 | 0.91 | 0.82 | 0.437 | 1.11 | 1.02 | 0.473 |
| Iodine (µg) | 185 | 161 | 97.6 | 226 | 214 | 98.3 | 139 | 126 | 68.1 | 173 | 159 | 78.4 |
| Manganese (mg) | 2.92 | 2.64 | 1.417 | 3.49 | 3.21 | 2.147 | 2.30 | 2.12 | 1.262 | 2.86 | 2.65 | 1.261 |
| *Base* | | *110* | | | *723* | | | *150* | | | *741* | |
| **Food sources** | | | | | | | | | | | | |
| Total iron (mg) | 11.4 | 11.2 | 4.39 | 13.4 | 12.9 | 4.82 | 8.8 | 8.2 | 3.96 | 10.3 | 10.0 | 3.54 |
| Haem iron (mg) | 0.8 | 0.7 | 0.50 | 0.8 | 0.7 | 0.52 | 0.6 | 0.4 | 0.59 | 0.5 | 0.5 | 0.37 |
| Non-haem iron (mg) | 10.7 | 10.4 | 4.23 | 12.6 | 12.0 | 4.71 | 8.2 | 7.7 | 3.72 | 9.8 | 9.5 | 3.44 |
| Calcium (mg) | 883 | 852 | 327.4 | 1025 | 996 | 419.5 | 685 | 666 | 264.5 | 795 | 765 | 265.9 |
| Phosphorus (mg) | 1302 | 1260 | 405.8 | 1522 | 1488 | 456.3 | 974 | 976 | 316.1 | 1140 | 1129 | 288.4 |
| Magnesium (mg) | 254 | 231 | 92.7 | 316 | 306 | 97.4 | 197 | 190 | 70.2 | 235 | 230 | 68.0 |
| Sodium (mg)* | 3061 | 2867 | 1051.7 | 3352 | 3272 | 1004.0 | 2141 | 2029 | 789.5 | 2334 | 2274 | 655.3 |
| Chloride (mg)* | 4551 | 4323 | 1555.5 | 5062 | 4989 | 1488.5 | 3196 | 3071 | 1149.4 | 3539 | 3464 | 974.1 |
| Potassium (mg) | 2931 | 2710 | 939.1 | 3434 | 3356 | 953.9 | 2290 | 2217 | 702.3 | 2727 | 2700 | 735.1 |
| Zinc (mg) | 9.3 | 9.3 | 3.19 | 10.3 | 10.0 | 3.20 | 6.5 | 6.3 | 2.35 | 7.5 | 7.4 | 2.02 |
| Copper (mg) | 1.21 | 1.17 | 0.482 | 1.47 | 1.33 | 0.727 | 0.88 | 0.82 | 0.361 | 1.06 | 1.01 | 0.375 |
| Iodine (µg) | 179 | 161 | 85.3 | 221 | 210 | 94.4 | 137 | 126 | 61.5 | 163 | 153 | 67.7 |
| Manganese (mg) | 2.82 | 2.61 | 1.254 | 3.39 | 3.17 | 1.432 | 2.26 | 2.12 | 1.123 | 2.78 | 2.64 | 1.078 |
| *Base* | | *110* | | | *723* | | | *150* | | | *741* | |

*Note: * Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

## Table 3.44

### Average daily intake of minerals as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and whether someone in the respondent's household was receiving certain benefits

Percentages

| Mineral (unit of measurement) | Sex of respondent and whether receiving benefits | | | |
|---|---|---|---|---|
| | Men | | Women | |
| | Receiving benefits | Not receiving benefits | Receiving benefits* | Not receiving benefits |
| **All sources** | | | | |
| Total iron (mg)** | | | | |
| mean daily intake as % RNI | 136 | 165 | | |
| 19 to 50 years | | | 66 | 80 |
| over 50 years | | | [25] | 144 |
| % with intakes below LRNI | 2 | 1 | | |
| 19 to 50 years | | | 50 | 28 |
| over 50 years | | | [3] | 2 |
| Calcium (mg) | | | | |
| mean daily intake as % RNI | 127 | 148 | 100 | 119 |
| % with intakes below LRNI | 5 | 2 | 12 | 4 |
| Phosphorus (mg) | | | | |
| mean daily intake as % RNI | 238 | 279 | 178 | 208 |
| % with intakes below LRNI | - | - | 1 | 0 |
| Magnesium (mg) | | | | |
| mean daily intake as % RNI | 86 | 106 | 74 | 89 |
| % with intakes below LRNI | 26 | 7 | 26 | 10 |
| Sodium (mg)*** | | | | |
| mean daily intake as % RNI | 192 | 210 | 134 | 146 |
| % with intakes below LRNI | 1 | - | 1 | 0 |
| Chloride (mg)*** | | | | |
| mean daily intake as % RNI | 182 | 204 | 128 | 142 |
| % with intakes below LRNI | 1 | - | 1 | - |
| Potassium (mg) | | | | |
| mean daily intake as % RNI | 84 | 98 | 65 | 78 |
| % with intakes below LRNI | 15 | 5 | 34 | 16 |
| Zinc (mg) | | | | |
| mean daily intake as % RNI | 101 | 115 | 95 | 117 |
| % with intakes below LRNI | 9 | 3 | 10 | 2 |
| Copper (mg)**** | | | | |
| mean daily intake as % RNI | 103 | 126 | 76 | 92 |
| Iodine (µg) | | | | |
| mean daily intake as % RNI | 132 | 161 | 100 | 123 |
| % with intakes below LRNI | 5 | 1 | 11 | 3 |

## Table 3.44 continued

**Average daily intake of minerals as a percentage of the Reference Nutrient Intake (RNI) and proportion of respondents with intakes below the Lower Reference Nutrient Intake (LRNI) by sex of respondent and whether someone in the respondent's household was receiving certain benefits**

Percentages

| Mineral (unit of measurement) | Sex of respondent and whether receiving benefits | | | |
|---|---|---|---|---|
| | Men | | Women | |
| | Receiving benefits | Not receiving benefits | Receiving benefits* | Not receiving benefits |
| **Food sources** | | | | |
| Total iron (mg)** | | | | |
| mean daily intake as % RNI | 131 | 154 | | |
| 19 to 50 years | | | 58 | 67 |
| over 50 years | | | [25] | 126 |
| % with intakes below LRNI | 2 | 1 | | |
| 19 to 50 years | | | 53 | 29 |
| over 50 years | | | [3] | 2 |
| Calcium (mg) | | | | |
| mean daily intake as % RNI | 126 | 147 | 98 | 114 |
| % with intakes below LRNI | 6 | 2 | 12 | 4 |
| Phosphorus (mg) | | | | |
| mean daily intake as % RNI | 237 | 277 | 177 | 207 |
| % with intakes below LRNI | - | - | 1 | 0 |
| Magnesium (mg) | | | | |
| mean daily intake as % RNI | 85 | 105 | 73 | 87 |
| % with intakes below LRNI | 27 | 7 | 27 | 10 |
| Sodium (mg)*** | | | | |
| mean daily intake as % RNI | 191 | 209 | 134 | 146 |
| % with intakes below LRNI | 1 | - | 1 | 0 |
| Chloride (mg)*** | | | | |
| mean daily intake as % RNI | 182 | 202 | 128 | 142 |
| % with intakes below LRNI | 1 | - | 1 | - |
| Potassium (mg) | | | | |
| mean daily intake as % RNI | 84 | 98 | 65 | 78 |
| % with intakes below LRNI | 16 | 5 | 34 | 16 |
| Zinc (mg) | | | | |
| mean daily intake as % RNI | 98 | 109 | 93 | 108 |
| % with intakes below LRNI | 10 | 3 | 10 | 2 |
| Copper (mg)**** | | | | |
| mean daily intake as % RNI | 100 | 122 | 74 | 88 |
| Iodine (µg) | | | | |
| mean daily intake as % RNI | 128 | 158 | 98 | 117 |
| % with intakes below LRNI | 6 | 1 | 11 | 3 |
| *Base – respondents aged 19 to 50 years* | *87* | *518* | *125* | *523* |
| *Base – respondents aged over 50 years* | *23* | *206* | *25* | *218* |

*Note:* * *Square brackets enclosing numbers denote the actual number of cases, when the base is fewer than 30. The number of women aged over 50 years living in benefit households is less than 30 and mean values and percentages are not, therefore, presented for total iron.*

** *For total iron, the RNI and LRNI values was for men of all ages; for women, the RNI and LRNI values are different for 19 to 50 year olds and over 50 year olds.*

*** *Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

**** *There is no LRNI for copper.*

## Table 3.45

## Comparison of average daily mineral intakes from food sources* by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19–64 years (present survey)

| Mineral (unit of measurement) | Age and sex of respondent | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey** | | | | All | 2000/01 NDNS | | | | All |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| **Men** | | | | | | | | | | |
| Total iron (mg) | | | | | | | | | | |
| mean | 12.6 | 13.8 | 14.2 | 13.9 | 13.7 | 11.4 | 13.0 | 13.7 | 13.6 | 13.2 |
| median | 12.4 | 13.2 | 13.3 | 13.7 | 13.2 | 11.2 | 12.5 | 13.1 | 13.3 | 12.6 |
| se/sd*** | 0.29 | 0.36 | 0.26 | 0.28 | 0.15 | 4.40 | 5.13 | 4.75 | 4.58 | 4.81 |
| Calcium (mg) | | | | | | | | | | |
| mean | 894 | 931 | 960 | 949 | 937 | 860 | 1017 | 1040 | 1027 | 1007 |
| median | 858 | 908 | 956 | 947 | 917 | 825 | 934 | 1014 | 1002 | 979 |
| se/sd*** | 23.1 | 20.0 | 16.5 | 16.3 | 9.3 | 316.4 | 564.8 | 351.9 | 323.9 | 411.2 |
| Copper (mg) | | | | | | | | | | |
| mean | 1.40 | 1.56 | 1.68 | 1.63 | 1.59 | 1.14 | 1.37 | 1.53 | 1.51 | 1.43 |
| median | 1.37 | 1.45 | 1.55 | 1.52 | 1.48 | 1.08 | 1.30 | 1.36 | 1.39 | 1.32 |
| se/sd*** | 0.03 | 0.05 | 0.05 | 0.04 | 0.02 | 0.316 | 0.517 | 0.864 | 0.751 | 0.705 |
| Iodine (µg) | | | | | | | | | | |
| mean | 225 | 238 | 248 | 231 | 237 | 166 | 216 | 221 | 230 | 215 |
| median | 217 | 235 | 235 | 216 | 225 | 152 | 196 | 215 | 223 | 205 |
| se/sd*** | 6.6 | 5.7 | 6.4 | 5.2 | 3.1 | 70.9 | 119.6 | 84.3 | 80.2 | 94.3 |
| *Base – number of respondents* | *214* | *254* | *346* | *273* | *1087* | *108* | *219* | *253* | *253* | *833* |
| **Women** | | | | | | | | | | |
| Total iron (mg) | | | | | | | | | | |
| mean | 9.8 | 10.2 | 11.0 | 10.6 | 10.5 | 8.8 | 9.2 | 10.2 | 10.9 | 10.0 |
| median | 9.1 | 9.4 | 10.2 | 10.1 | 9.8 | 9.1 | 9.0 | 10.1 | 10.6 | 9.6 |
| se/sd*** | 0.28 | 0.25 | 0.25 | 0.23 | 0.13 | 3.12 | 3.37 | 3.58 | 3.91 | 3.65 |
| Calcium (mg) | | | | | | | | | | |
| mean | 675 | 699 | 760 | 739 | 726 | 694 | 731 | 796 | 823 | 777 |
| median | 656 | 689 | 737 | 731 | 716 | 661 | 709 | 777 | 810 | 752 |
| se/sd*** | 19.4 | 17.4 | 13.8 | 12.9 | 7.8 | 256.8 | 228.9 | 271.9 | 287.2 | 268.7 |
| Copper (mg) | | | | | | | | | | |
| mean | 1.09 | 1.15 | 1.31 | 1.28 | 1.23 | 0.91 | 1.00 | 1.05 | 1.07 | 1.03 |
| median | 1.01 | 1.08 | 1.17 | 1.17 | 1.12 | 0.84 | 0.94 | 1.03 | 1.00 | 0.98 |
| se/sd*** | 0.04 | 0.03 | 0.03 | 0.03 | 0.02 | 0.376 | 0.374 | 0.375 | 0.376 | 0.378 |
| Iodine (µg) | | | | | | | | | | |
| mean | 158 | 166 | 180 | 174 | 171 | 130 | 145 | 162 | 178 | 159 |
| median | 144 | 157 | 168 | 164 | 161 | 129 | 135 | 155 | 171 | 151 |
| se/sd*** | 4.6 | 4.8 | 3.8 | 4.4 | 2.2 | 51.2 | 64.1 | 63.7 | 73.7 | 67.4 |
| *Base – number of respondents* | *189* | *253* | *385* | *283* | *1110* | *104* | *210* | *318* | *259* | *891* |

*Note:* * *Data on intakes from food sources were only available for comparison from the 1986/87 Adults Survey for the minerals presented.*

** *Gregory JR et al. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*

*** *The 1986/87 survey reported standard errors; the present survey reports standard deviations.*

# Table 3.46(a)

## Comparison of average daily mineral intakes from all sources by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19–64 years (present survey): men

| Mineral (unit of measurement) | Age and sex of respondent | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey* | | | | All | 2000/01 NDNS | | | | All |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| Total iron (mg) | | | | | | | | | | |
| mean | 13.0 | 14.1 | 14.5 | 14.1 | 14.0 | 11.5 | 13.9 | 14.1 | 15.2 | 14.0 |
| median | 12.5 | 13.3 | 13.4 | 13.7 | 13.2 | 11.3 | 12.8 | 13.2 | 13.6 | 12.9 |
| se/sd** | 0.35 | 0.37 | 0.32 | 0.30 | 0.17 | 4.60 | 7.50 | 5.63 | 13.21 | 9.00 |
| Calcium (mg) | | | | | | | | | | |
| mean | 899 | 933 | 961 | 952 | 940 | 867 | 1030 | 1049 | 1035 | 1016 |
| median | 863 | 908 | 959 | 947 | 919 | 825 | 951 | 1017 | 1002 | 987 |
| se/sd** | 22.9 | 20.4 | 16.5 | 16.4 | 9.4 | 324.6 | 606.3 | 358.7 | 331.0 | 430.7 |
| Sodium (mg)*** | | | | | | | | | | |
| mean | 3432 | 3327 | 3459 | 3272 | 3376 | 3342 | 3366 | 3340 | 3249 | 3320 |
| median | 3430 | 3309 | 3406 | 3232 | 3320 | 3356 | 3187 | 3312 | 3077 | 3255 |
| se/sd** | 78.2 | 61.2 | 51.9 | 51.8 | 29.8 | 1090.3 | 1077.5 | 1007.6 | 943.6 | 1018.2 |
| Chloride (mg)*** | | | | | | | | | | |
| mean | 5245 | 5125 | 5296 | 5029 | 5179 | 4921 | 5135 | 5052 | 4923 | 5018 |
| median | 5252 | 5052 | 5216 | 4991 | 5115 | 5157 | 4870 | 5011 | 4739 | 4965 |
| se/sd** | 115.4 | 91.1 | 78.8 | 78.0 | 44.6 | 1554.9 | 1879.6 | 1498.5 | 1385.8 | 1583.3 |
| Potassium (mg) | | | | | | | | | | |
| mean | 3018 | 3237 | 3279 | 3155 | 3187 | 2847 | 3286 | 3485 | 3553 | 3371 |
| median | 3006 | 3223 | 3197 | 3089 | 3143 | 2935 | 3194 | 3472 | 3566 | 3304 |
| se/sd** | 60 | 50 | 45 | 43 | 25 | 712.9 | 1012.9 | 910.8 | 998.2 | 968.9 |
| Magnesium (mg) | | | | | | | | | | |
| mean | 304 | 325 | 336 | 317 | 323 | 260 | 311 | 322 | 320 | 311 |
| median | 298 | 317 | 321 | 308 | 312 | 251 | 300 | 310 | 314 | 300 |
| se/sd** | 6.8 | 5.9 | 5.8 | 5.8 | 3.1 | 72.8 | 104.8 | 106.3 | 102.8 | 102.9 |
| Phosphorus (mg) | | | | | | | | | | |
| mean | 1382 | 1454 | 1492 | 1456 | 1452 | 1341 | 1550 | 1524 | 1508 | 1502 |
| median | 1360 | 1421 | 1473 | 1435 | 1429 | 1287 | 1485 | 1500 | 1499 | 1474 |
| se/sd** | 28.2 | 24.3 | 20.8 | 20.9 | 11.6 | 318.9 | 727.4 | 429.1 | 402.8 | 510.7 |
| Copper (mg) | | | | | | | | | | |
| mean | 1.41 | 1.57 | 1.82 | 1.63 | 1.63 | 1.16 | 1.43 | 1.58 | 1.56 | 1.48 |
| median | 1.37 | 1.45 | 1.56 | 1.52 | 1.49 | 1.14 | 1.30 | 1.36 | 1.41 | 1.32 |
| se/sd** | 0.03 | 0.05 | 0.17 | 0.04 | 0.06 | 0.338 | 0.673 | 0.972 | 0.882 | 0.820 |
| Zinc (mg) | | | | | | | | | | |
| mean | 10.7 | 11.3 | 11.7 | 11.5 | 11.4 | 9.2 | 10.7 | 11.4 | 10.8 | 10.7 |
| median | 10.4 | 11.0 | 11.1 | 11.1 | 10.9 | 9.2 | 9.8 | 10.3 | 10.3 | 10.1 |
| se/sd** | 0.24 | 0.21 | 0.24 | 0.21 | 0.11 | 2.49 | 4.36 | 8.41 | 4.22 | 5.75 |
| Iodine (µg) | | | | | | | | | | |
| mean | 233 | 240 | 251 | 243 | 243 | 167 | 223 | 226 | 235 | 220 |
| median | 218 | 235 | 236 | 217 | 226 | 152 | 202 | 217 | 227 | 209 |
| se/sd** | 8.8 | 5.8 | 6.7 | 9.8 | 3.9 | 70.1 | 122.4 | 93.0 | 85.0 | 99.1 |
| *Base - number of respondents* | *214* | *254* | *346* | *273* | *1087* | *108* | *219* | *253* | *253* | *833* |

*Note: * Gregory JR et al. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*

*** The 1986/87 survey reported standard errors; the present survey reports standard deviations.*

**** Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

# Table 3.46(b)

## Comparison of average daily mineral intakes from all sources by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19–64 years (present survey): women

| Mineral (unit of measurement) | Age and sex of respondent | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey* | | | | All | 2000/01 NDNS | | | | All |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| Total iron (mg) | | | | | | | | | | |
| mean | 11.8 | 11.1 | 12.9 | 12.9 | 12.3 | 10.0 | 9.8 | 12.9 | 12.3 | 11.6 |
| median | 9.5 | 9.6 | 10.3 | 10.3 | 10.0 | 9.3 | 9.0 | 10.5 | 11.0 | 10.0 |
| se/sd** | 0.95 | 0.42 | 0.69 | 0.78 | 0.36 | 4.88 | 5.98 | 23.30 | 8.00 | 14.99 |
| Calcium (mg) | | | | | | | | | | |
| mean | 675 | 700 | 764 | 747 | 730 | 706 | 736 | 814 | 903 | 809 |
| median | 656 | 692 | 739 | 732 | 717 | 669 | 718 | 789 | 850 | 763 |
| se/sd** | 19.4 | 17.4 | 13.9 | 13.5 | 7.9 | 263.9 | 232.6 | 292.8 | 381.7 | 314.0 |
| Sodium (mg)*** | | | | | | | | | | |
| mean | 2334 | 2372 | 2389 | 2294 | 2351 | 2304 | 2325 | 2317 | 2267 | 2303 |
| median | 2291 | 2345 | 2356 | 2259 | 2313 | 2247 | 2283 | 2241 | 2243 | 2247 |
| se/sd** | 49.1 | 43.4 | 33.8 | 42.4 | 20.5 | 721.3 | 666.4 | 707.5 | 652.3 | 683.1 |
| Chloride (mg)*** | | | | | | | | | | |
| mean | 3572 | 3601 | 3615 | 3490 | 3573 | 3412 | 3479 | 3514 | 3474 | 3482 |
| median | 3497 | 3575 | 3552 | 3485 | 3536 | 3342 | 3433 | 3451 | 3443 | 3425 |
| se/sd** | 74.0 | 64.5 | 50.4 | 63.3 | 30.7 | 1013.8 | 985.1 | 1051.6 | 991.9 | 1013.3 |
| Potassium (mg) | | | | | | | | | | |
| mean | 2259 | 2324 | 2562 | 2476 | 2434 | 2364 | 2398 | 2734 | 2885 | 2655 |
| median | 2228 | 2297 | 2510 | 2418 | 2410 | 2385 | 2383 | 2692 | 2829 | 2620 |
| se/sd** | 45 | 43 | 37 | 43 | 21 | 688.9 | 655.4 | 759.5 | 731.3 | 747.9 |
| Magnesium (mg) | | | | | | | | | | |
| mean | 215 | 232 | 250 | 238 | 237 | 208 | 211 | 241 | 252 | 233 |
| median | 208 | 225 | 233 | 226 | 226 | 206 | 203 | 234 | 241 | 223 |
| se/sd** | 5.2 | 5.0 | 4.5 | 4.7 | 2.5 | 69.9 | 64.9 | 79.3 | 82.4 | 77.9 |
| Phosphorus (mg) | | | | | | | | | | |
| mean | 986 | 1032 | 1121 | 1099 | 1072 | 1050 | 1045 | 1134 | 1180 | 1116 |
| median | 943 | 1017 | 1114 | 1103 | 1054 | 1057 | 1017 | 1124 | 1174 | 1107 |
| se/sd** | 21.5 | 19.7 | 15.5 | 16.7 | 9.1 | 298.8 | 278.9 | 296.4 | 309.0 | 301.0 |
| Copper (mg) | | | | | | | | | | |
| mean | 1.10 | 1.16 | 1.31 | 1.29 | 1.23 | 0.97 | 1.02 | 1.11 | 1.11 | 1.07 |
| median | 1.01 | 1.08 | 1.18 | 1.17 | 1.13 | 0.84 | 0.94 | 1.03 | 1.01 | 0.99 |
| se/sd** | 0.04 | 0.03 | 0.03 | 0.03 | 0.02 | 0.523 | 0.416 | 0.514 | 0.433 | 0.473 |
| Zinc (mg) | | | | | | | | | | |
| mean | 7.6 | 8.2 | 8.7 | 8.6 | 8.4 | 7.1 | 7.1 | 8.2 | 8.6 | 7.9 |
| median | 7.5 | 7.8 | 8.5 | 8.3 | 8.2 | 6.6 | 6.6 | 7.8 | 8.1 | 7.4 |
| se/sd** | 0.16 | 0.17 | 0.13 | 0.14 | 0.08 | 3.17 | 2.88 | 3.79 | 3.66 | 3.54 |
| Iodine (µg) | | | | | | | | | | |
| mean | 161 | 168 | 184 | 181 | 176 | 136 | 148 | 171 | 190 | 167 |
| median | 146 | 158 | 172 | 171 | 163 | 129 | 138 | 157 | 180 | 155 |
| se/sd** | 4.7 | 5.0 | 3.9 | 5.0 | 2.3 | 62.3 | 65.4 | 78.4 | 84.2 | 77.8 |
| *Base – number of respondents* | *189* | *253* | *385* | *283* | *1110* | *104* | *210* | *318* | *259* | *891* |

*Note: * Gregory JR et al. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*

*** The 1986/87 survey reported standard errors; the present survey reports standard deviations.*

**** Data in this table are for intakes from food and dietary supplements only and do not include further additions of salt in cooking or at the table.*

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# 4 Urinary analytes

## 4.1 Introduction

This chapter presents data based on the analysis of the samples taken from the 24-hour urine collection made by respondents in the survey.

As described in Appendix P of the Technical Report[1] the main reason for collecting a urine sample was to provide an indirect estimate of sodium intakes. It is not possible to obtain accurate estimates of dietary intake of sodium from weighed food intake information, mainly because it is not possible to assess accurately the amount of salt added to food in cooking or at the table. Estimates of sodium and potassium intakes can be obtained by measuring their urinary excretion, assuming the body is in balance for these minerals. Since the rate of excretion of both sodium and potassium varies with intake, the best estimate of intake is obtained from the analysis of a urine sample taken from a complete 24-hour collection, which allows for the fluctuations in intake over the collection period. A spot urine sample is not sufficiently representative to provide a valid measurement of sodium and potassium excretion.

Appendix P also describes the procedure for the 24-hour urine collection (including the administration of para-aminobenzoic acid (PABA)), the taking of the sub-samples, the processing of the urine samples and quality control procedures. The response rate for the urine sample is given in Chapter 1 of this report.

### 4.1.1 Para-aminobenzoic acid (PABA)

The collection of a complete 24-hour urine sample is a demanding task, and previous experience has shown that samples are frequently incomplete. Therefore, an additional procedure, 'PABA-check', has been devised. This is designed to monitor the completeness of the collection by asking respondents to take three 80mg tablets of para-aminobenzoic acid (PABA) at intervals during the 24-hour collection period. Measurement of the PABA concentration and total volume of the collected sample permits the calculation of the percentage recovery of the administered PABA, which in turn is a measure of completeness of the 24-hour urine collection.

The use of this procedure in this survey was approved by the Multi-centre and Local Research Ethics Committees and was successfully piloted in the feasibility study. It was included in part of Wave 1 of the mainstage survey. One respondent in Wave 1 exhibited an acute allergic reaction soon after taking the three PABA doses. Although this occurrence may have been a chance association, the survey doctor decided, after seeking external advice, to recommend the discontinuation of the PABA-check procedure as a precaution[2]. From part-way through Wave 1 until the end of the survey, all subsequent 24-hour urines were collected without PABA-check.

Analysis was carried out on urine samples for respondents in Wave 1 who completed the PABA-check. There were 29 respondents where PABA was taken and measured and where the result obtained was within the acceptable limits for PABA recovery of 108mg to 198mg[3]. Mean estimated 24-hour excretion of sodium, potassium and creatinine was calculated for this subset and the remaining respondents who provided a urine sample. The data suggest that the samples unvalidated by PABA contained slightly more of these analytes than the PABA-validated samples, suggesting on average a slight, but non-significant, over-collection of urine. Therefore, the mean excretion per 24 hours of sodium and potassium from the survey data seem unlikely to be underestimates.

### 4.1.2 Plasma creatinine

Following the removal of the PABA-check from the survey procedures, an alternative method of checking the completeness of the 24-hour urine collections was used. Measuring plasma creatinine concentration, which is relatively constant for individuals over time, allows the calculation of each respondent's theoretical 24-hour creatinine excretion rate and this can be compared with the measured excretion rate from the urine samples[4]. An acceptable range of values for creatinine that would be expected in a complete 24-hour urine sample was calculated for each respondent who completed this component and compared with the observed amounts of creatinine in the urine samples. Half of all respondents for whom this could be done fell within the acceptable limits, 32% gave creatinine recoveries that appeared to be too low, and 18% recoveries that appeared too high.

Mean 24-hour sodium and potassium excretion rates of the 50% who fell within the acceptable range for creatinine excretion were compared with the mean values for all respondents who reported making a 24-hour urine collection and were found to be no more than 2% higher. The errors that are likely to have arisen as a result of the lack of the PABA-check confirmation of completeness of the 24-hour urine collections are considered to have been relatively small and probably resulted in a small downward bias in the results.

## 4.2 Results used in the analysis

A total of 1,495 respondents made a 24-hour urine collection. From this, 1,459 samples were analysed; 36 samples were either not received or received in an unsuitable condition for analysis and have been excluded from the urine analysis results. A number of respondents, 298 (20%), from whom a urine sample was obtained and analysed, reported failing to collect at least one void during the 24-hour period[5].

The samples were analysed for concentrations of urinary sodium, urinary potassium, urinary urea, urinary fluoride and urinary creatinine. By measuring urinary creatinine in the samples a comparison can be made between groups based on ratios of urinary sodium to urinary creatinine. The ratios quoted with creatinine as the denominator will enable comparisons to be made with other datasets where only spot urine samples were collected and the analyte results expressed as a ratio with creatinine. The use of creatinine ratios also makes it possible to include those results from the present survey where a full 24-hour collection was not achieved.

Data from the present survey were converted to mmol/24h based on the weight of the full collection in kg and a conversion factor of 1kg being equal to 1 litre[6]. In 18 cases the complete urine collection could not be weighed due to technical problems so excretion per 24 hours cannot be calculated.

Data on excretion per 24 hours are presented only for complete 24-hour collections which were weighed (1,153 unweighted). Partial collections, where at least one void was missed, have been excluded. Ratios of urinary analytes are presented including data for incomplete collections as well as for complete collections (1,458 unweighted).

## 4.3 Urinary sodium

The main purpose for measuring urinary sodium excretion was to provide an indirect estimate of sodium intake. It is not possible to measure intake directly as the amount of salt added to food in cooking or at the table cannot be accurately assessed.

Table 4.1 presents data on mean urinary sodium excretion per 24 hours for men and women by age. The mean urinary sodium excretion per 24 hours for men was 187.4mmol, significantly higher than for women, 138.5mmol ($p<0.01$). Men had significantly higher mean urinary sodium excretion per 24 hours than women in each age group except those aged 19 to 24 years ($p<0.01$). There were no significant age differences in mean urinary sodium excretion per 24 hours for men or women. Urinary sodium excretion (mmol/24h) can be compared with dietary intakes of sodium (mg/day), where 1mmol is equal to 23mg. Mean values for sodium calculated from total urinary sodium excretion were 4310mg/day for men and 3186mg/day for women. This compares with a mean daily intake of dietary sodium of 3320mg/day for men and 2303mg/day for women (*see* Chapter 3, section 3.6), indicating that the dietary measurement is underestimating intake by 25% to 30% largely due to exclusion of salt added in cooking and at the table from the dietary sodium estimates.

Urinary sodium excretion can be converted to provide an estimate of salt intake, where 1g salt contains 17.1mmol sodium. This assumes that dietary intake of sodium is equal to the urinary output, and that all sodium in the diet comes from salt. In the Report on Nutritional Aspects of Cardiovascular Disease, the Committee on Medical Aspects of Food Policy (COMA) recommended an intake of salt of 6g/day or less[7]. This recommendation was endorsed by the Scientific Advisory Committee on Nutrition in its recent report on Salt and Health[8]. Mean salt intakes calculated from urinary sodium excretion, shown in Table 4.2, were 11.0g/day for men in this survey and 8.1g/day for women[9] (p<0.01). For all age/sex groups mean salt intakes were higher than the COMA recommendation of 6g/day. There were no significant differences in mean salt intakes by age for men or women. Overall, 85% of men and 69% of women had salt intakes of more than 6g/day (p<0.01). A significantly higher proportion of the youngest group of men had intakes of salt of more than 6g/day, than men in any other age group (p<0.01). For example, 98% of men aged 19 to 24 years had an estimated salt intake of more than 6g/day compared with 82% of those aged 50 to 64 years. The youngest group of women were significantly more likely to have salt intakes of more than 6g/day, 83%, than those aged 50 to 64 years, 62% (p<0.05).

(Tables 4.1 and 4.2)

## 4.4 Urinary potassium

Table 4.3 shows that the mean urinary potassium excretion per 24 hours for men was 80.7mmol, significantly higher than that for women, 67.5mmol (p<0.01). Men had significantly higher mean urinary potassium excretion than women in all age groups except those aged 19 to 24 years (25 to 34: p<0.05; 35 to 64: p<0.01).

The youngest group of men had significantly lower mean excretion of potassium than men in any other age group (p<0.05). For example, men aged 19 to 24 years had a mean urinary potassium excretion of 65.8mmol/24h compared with 84.5mmol/24h for men aged 25 to 34 years. There were no significant differences by age for women.

Urinary potassium excretion (mmol/24h) can be compared with dietary intakes of potassium (mg/day), where 1mmol is equal to 39mg. Mean values for potassium calculated from total urinary potassium excretion were 3147mg/day for men and 2632mg/day for women. This compares with a mean daily intake of dietary potassium of 3371mg for men and 2655mg for women (*see* Chapter 3, section 3.7), and shows good agreement between the urinary and the dietary data.

(Table 4.3)

## 4.5 Urinary fluoride

The main sources of fluoride in the diet are fluoridated water, and other natural sources, tea and toothpaste. The concentration of fluoride in the water supplies varies, with about 10% of the UK population receiving a water supply which has either been fluoridated or has a naturally occurring fluoride content at or around 1ppm (53µmol/l). Tea contains high concentrations of fluoride and provides about 70% of the average fluoride intake[10]. Safe intakes of fluoride for adults are 0.05mg/kg body weight/day[10].

Table 4.4 presents data on mean urinary fluoride excretion per 24 hours for respondents who made a full 24-hour urine collection. Mean urinary fluoride excretion per 24 hours was 70.3µmol for men, and 66.3µmol for women (ns). Men and women aged 19 to 24 years had significantly lower mean urinary fluoride excretion than those in any other age group (25 to 34: p<0.05; all others: p<0.01). For example, men and women aged 19 to 24 years had a mean urinary fluoride excretion of 45.2µmol/24h and 35.3µmol/24h respectively, compared with 82.7µmol/24h for men and 81.4µmol/24h for women aged 50 to 64 years. Men and women aged 25 to 34 years had significantly lower mean urinary fluoride excretion than the oldest group of men and women (men: p<0.05; women: p<0.01). In addition, women aged 25 to 34 years had significantly lower mean urinary fluoride excretion than those aged 35 to 49 years (p<0.05).

The distribution of values for urinary fluoride was skewed with median values about 20% lower than mean values.

Safe intakes of fluoride for adults are 0.05mg/kg/day (or 3µmol/kg/day)[10]. Overall, 1% of men and 3% of women had a urinary fluoride excretion per 24 hours that suggest intakes of fluoride above the safe level[12] (table not shown). This proportion ranged from none of those aged 19 to 24 years to 2% of men and 6% of women aged 50 to 64 years. Fluoride comes from a range of sources including tap water, toothpaste and dietary supplements. The level of fluoride in the tap water samples provided by respondents and in toothpaste are yet to be analysed. Respondents were asked at the dietary interview if they were taking any dietary supplements. One per cent of men and less than 0.5% of women who reported taking supplements said that they were taking fluoride supplements.

(Table 4.4)

## 4.6 Urinary urea

The mean urinary urea excretion per 24 hours was 375.1mmol for men, and for women was, significantly lower, 273.0mmol (p<0.01). As for urinary sodium and urinary potassium, men had significantly higher mean urinary urea excretion than women in all age groups except those aged 19 to 24 years ($p<0.01$). There were no significant age differences in mean urinary urea excretion for men or women.

(Table 4.5)

## 4.7 Urinary sodium to urinary creatinine ratio

The ratio of urinary sodium to urinary creatinine is given for all those respondents who made the 24-hour urine collection, and includes those who reported failing to collect at least one void during the 24-hour collection period.

In adults, creatinine excretion is generally higher for men than women; this is associated with the higher proportion of lean body tissue in men. Urinary concentrations of sodium relative to urinary concentrations of creatinine are therefore generally lower for men than women. This general pattern was reflected in the results of the current survey (Table 4.6). The mean urinary sodium to urinary creatinine ratio was 10.6mol/mol for men, significantly lower than the value for women, 12.4mol/mol ($p<0.01$). The mean urinary sodium to urinary creatinine ratio was significantly lower for men than women in each age group except 19 to 24 years (25 to 34: $p<0.05$; 35 to 64: $p<0.01$). There were no significant differences in the mean ratio for men or women by age.

(Table 4.6)

## 4.8 Variation in urinary analyte levels

Tables 4.7 and 4.8 show the mean excretion per 24 hours for the four urinary analytes measured and the urinary ratio of sodium to creatinine for men and women according to the region[12] in which they lived, and whether someone in the respondent's household was receiving benefits[13] (*see* caveat to section 2.7).

For region, there were very few clear patterns in the data or significant differences between sub-groups. Men in Scotland had a significantly higher mean urinary sodium excretion per 24 hours and a higher urinary sodium to urinary creatinine ratio than men living in Central and South West regions of England and in Wales or in London and the South East (both: $p<0.05$). Men and women living in Central and South West regions of England and in Wales had a significantly higher mean urinary fluoride excretion per 24 hours than those living in Scotland ($p<0.05$). This difference may be attributable in part to regional differences in the fluoridation of water. About 10% of the UK population receive a water supply which has either been fluoridated or has a naturally occurring fluoride content at or around 1ppm (53µmol/l). Major fluoridation schemes are in operation in Birmingham and throughout the West Midlands and also in Tyneside[14].

There were no significant differences in any of the urinary analytes associated with household receipt of benefits for men or women.

(Tables 4.7 and 4.8)

## 4.9 Comparisons of urinary analytes between 1986/87 Adults Survey and present NDNS

Table 4.9 compares data from this survey with data on urinary sodium and urinary potassium from the Dietary and Nutritional Survey of British Adults aged 16 to 64 years carried out in 1986/87 (1986/87 Adults Survey)[15]. Data are presented for those respondents in this survey who made a full 24-hour urine collection. In the 1986/87 Adults Survey, respondents who failed to collect one or more voiding, and all cases where the period of collection was less than 18 hours or greater than 30 hours were excluded from the analysis[16]. It should be noted that in the 1986/87 Adults Survey the youngest age group was adults aged 16 to 24 years, while in the current NDNS the youngest age group is adults aged 19 to 24 years. This should be borne in mind where there are differences between these groups. A summary of the methodology and findings from the 1986/87 Adults Survey is given in Appendix S of the Technical Report[1].

There were few significant differences in mean urinary sodium and potassium excretion per 24 hours between the two surveys. Overall, men in the present survey had significantly higher mean urinary sodium excretion per 24 hours than men in the 1986/87 Adults Survey, 187mmol compared with 173mmol ($p<0.05$). There were no significant differences in mean urinary sodium excretion between the two surveys for women, or by age for both sexes.

When urinary sodium excretion data are converted to salt intake, the mean intake for men in the present survey was 11.0g/day and for women 8.1g/day compared with 10.1g/day for men and 7.7g/day for women in the 1986/87 Adults Survey (data not shown; significance of differences not calculated).

Overall, women in the present survey had significantly higher mean urinary potassium excretion per 24 hours than women in the 1986/87 Adults Survey, 68mmol and 62mmol respectively ($p<0.05$). The only other significant difference in mean urinary potassium excretion between the two surveys was for women aged 50 to 64 years, with those in the present survey having a higher mean excretion than those in the 1986/87 Adults Survey ($p<0.05$). This is not surprising given that women overall, and those aged 50 to 64 years, had significantly higher mean daily potassium intakes in the present survey than in the 1986/87 Adults Survey (*see* Chapter 3, section 3.10).

(Table 4.9)

## References and endnotes

1. The Technical Report is available online at http://www.food.gov.uk/science.
2. A challenge test performed in July 2001 concluded that PABA was not the cause of the respondent's allergic symptoms. By this stage fieldwork had been completed.
3. Bates CJ, Thurnham DI, Bingham SA, Margetts BM, Nelson M. Biochemical markers of nutrient intake. In: Margetts BM, Nelson M, eds. *Design Concepts in Nutritional Epidemiology.* 2nd Edition. Open University Press (Oxford, 1997): 170-240.
4. There are no generally accepted values for expected creatinine excretion rates and plasma clearance values in the literature. The following reference was used in calculating expected excretion rates:Tietz NW, ed. *Clinical Guide to Laboratory Tests.* 2nd Edition. W.B.Saunders (Philadelphia, 1990): pp174-176. The acceptable range for the amount of creatinine expected to be excreted in the urine in 24 hours can be calculated in terms of the number of millilitres of plasma that is completely cleared of creatinine per minute for a standard 1.73 square metres of body surface area (Tietz, 1990). This is specified as 90-139ml for men aged 15 to 40 years and 80 to 125ml for women aged 15 to 40 years. For each year of age above this the values decrease by 0.65ml. Actual surface area (for adjustment) is calculated from weight and height, and excretion rates are converted to millimoles per 24 hours. Thus the measured plasma creatinine concentration is converted to an acceptable range of urinary excretion of creatinine in a 24-hour period. If the observed urinary creatinine excretion (concentration times volume) is less than the lower limit of this range, the urine collection is likely to have been incomplete. If higher than the upper limit, the collection may have been extended for more than 24 hours.
5. The assessment of completeness of collection using plasma creatinine suggested that in 32% of cases the creatinine recoveries appeared to be too low. This contrasts with 20% of cases where the respondent reported missing at least one collection during the 24 hours. These findings are not incompatible. The plasma creatinine assessment relies on published 'normal ranges' and these may not be exactly appropriate for the sample in this survey, for example, because of different assay methods or differences in the characteristics of the population examined.
6. The interviewer weighed the full 24-hour urine collection twice, prior to taking any sub-samples, and the mean weight is taken.
7. Department of Health. Report on Health and Social Subjects: 46. *Nutritional Aspects of Cardiovascular Disease.* HMSO (London, 1994).
8. Scientific Advisory Committee on Nutrition. *Salt and Health.* TSO (London, 2003). The Scientific Advisory Committee on Nutrition found no basis for a revision of the 1994 COMA recommendation for a target salt intake of 6g/day (2.4g/100mmol sodium) for the adult population. Six grams is higher than the Reference Nutrient Intake (RNI) and substantially greater than the salt intake required to maintain the sodium content of the body.
9. Values were calculated for all respondents who reported making a full 24-hour urine collection.
10. Department of Health. Report on Health and Social Subjects: 41. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom*. HMSO (London, 1991).
11. Safe levels of intake were calculated for each respondent based on their body weight (kg) and 3µmol/kg/day. Calculated safe levels of intake were compared with fluoride excretion levels.
12. The areas included in each of the four analysis 'regions' are given in the response chapter, Chapter 2 of the Technical Report, online at http://www.food.gov.uk/science. Definitions of 'regions' are given in the glossary (*see* Appendix C).
13. Households receiving benefits are those where someone in the respondent's household was currently receiving Working Families Tax Credit or had, in the previous 14 days, drawn Income Support or (Income-related) Job Seeker's Allowance. Definitions of 'household' and 'benefits (receiving)' are given in the glossary (*see* Appendix C).
14. Medical Research Council. *Water Fluoridation and Health.* Medical Research Council (London, 2002).
15. Gregory J, Foster K, Tyler H, Wiseman M. *The Dietary and Nutritional Survey of British Adults*. HMSO (London, 1990).
16. Excluding those with collections less than 18 hours in the 1986/87 Adults Survey is equivalent to excluding all partial collections from the analyses in the present survey. Excluding respondents to the present survey where the period of urine collection was greater than 30 hours made little difference to overall mean values and no difference to the significance of differences between the two surveys. The 1986/87 Adults Survey did not include PABA-check and the completeness of the 24-hour collections made by respondents was not validated.

## Table 4.1

### Percentage distribution of total urinary sodium (mmol/24h)by sex and age of respondent

**Respondents who reported making a full 24-hour urine collection***

Cumulative percentages

| Total urinary sodium (mmol/24h) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| Less than 60 | - | 6 | 2 | 8 | 5 | 4 | 7 | 5 | 12 | 8 |
| Less than 90 | - | 12 | 9 | 15 | 11 | 17 | 25 | 20 | 28 | 24 |
| Less than 120 | 9 | 27 | 19 | 27 | 23 | 34 | 41 | 43 | 50 | 44 |
| Less than 150 | 33 | 33 | 36 | 42 | 37 | 65 | 57 | 67 | 68 | 65 |
| Less than 180 | 46 | 48 | 51 | 54 | 51 | 70 | 74 | 80 | 84 | 79 |
| Less than 210 | 60 | 59 | 60 | 67 | 62 | 84 | 85 | 87 | 92 | 88 |
| Less than 240 | 75 | 70 | 74 | 77 | 74 | 88 | 91 | 92 | 94 | 92 |
| Less than 270 | 96 | 78 | 82 | 85 | 84 | 90 | 95 | 97 | 98 | 96 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *62* | *152* | *170* | *183* | *567* | *60* | *129* | *203* | *187* | *580* |
| Mean (average value) | 188.5 | 194.7 | 189.9 | 178.7 | 187.4 | 155.7 | 148.2 | 137.0 | 128.0 | 138.5 |
| Median | 180.9 | 185.5 | 175.1 | 173.5 | 177.5 | 130.2 | 136.8 | 128.4 | 119.4 | 129.3 |
| Lower 2.5 percentile | 103.1 | 37.3 | 41.8 | 35.9 | 41.0 | 29.4 | 33.3 | 43.7 | 39.2 | 39.0 |
| Upper 2.5 percentile | 284.2 | 381.6 | 378.2 | 361.8 | 370.1 | 397.2 | 380.2 | 277.7 | 268.1 | 282.7 |
| Standard deviation | 58.38 | 99.03 | 82.55 | 84.61 | 85.80 | 79.09 | 78.83 | 58.40 | 58.92 | 66.42 |

*Note: * This excludes 298 cases where the respondent reported missing at least one collection.*

## Table 4.2

### Percentage distribution of salt intake (g/day) estimated from total urinary sodium by sex and age of respondent

**Respondents who reported making a full 24-hour urine collection***

Cumulative percentages

| Salt intake (g/d) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| 3 or less | - | 5 | 2 | 5 | 4 | 4 | 6 | 5 | 7 | 6 |
| 6 or less | 2 | 20 | 13 | 18 | 15 | 17 | 29 | 31 | 38 | 31 |
| 9 or less | 37 | 34 | 39 | 42 | 39 | 66 | 59 | 68 | 69 | 66 |
| 12 or less | 60 | 57 | 58 | 65 | 60 | 84 | 81 | 85 | 91 | 86 |
| 15 or less | 81 | 73 | 80 | 83 | 79 | 90 | 92 | 96 | 96 | 95 |
| 18 or less | 100 | 89 | 91 | 91 | 91 | 92 | 97 | 100 | 99 | 98 |
| All | | 100 | 100 | 100 | 100 | 100 | 100 | | 100 | 100 |
| *Base* | *62* | *152* | *170* | *183* | *567* | *60* | *129* | *203* | *187* | *580* |
| Mean (average value) | 11.0 | 11.4 | 11.1 | 10.5 | 11.0 | 9.1 | 8.7 | 8.0 | 7.5 | 8.1 |
| Median | 10.6 | 10.9 | 10.2 | 10.1 | 10.4 | 7.6 | 8.0 | 7.5 | 7.0 | 7.6 |
| Lower 2.5 percentile | 6.0 | 2.2 | 2.4 | 2.1 | 2.4 | 1.7 | 1.9 | 2.6 | 2.3 | 2.3 |
| Upper 2.5 percentile | 16.6 | 22.3 | 22.1 | 21.2 | 21.6 | 23.2 | 22.2 | 16.2 | 15.7 | 16.5 |
| Standard deviation | 3.41 | 5.79 | 4.83 | 4.95 | 5.02 | 4.62 | 4.61 | 3.42 | 3.45 | 3.88 |

*Note: * This excludes 298 cases where the respondent reported missing at least one collection.*

# Table 4.3

## Percentage distribution of total urinary potassium (mmol/24h) by sex and age of respondent

**Respondents who reported making a full 24-hour urine collection*** Cumulative percentages

| Total urinary potassium (mmol/24h) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| Less than 20 | - | 2 | 1 | 2 | 1 | 6 | 3 | 1 | 2 | 2 |
| Less than 30 | 9 | 4 | 3 | 5 | 5 | 9 | 12 | 3 | 5 | 6 |
| Less than 40 | 12 | 9 | 7 | 8 | 8 | 23 | 17 | 8 | 15 | 14 |
| Less than 50 | 22 | 20 | 14 | 15 | 17 | 44 | 35 | 21 | 22 | 27 |
| Less than 60 | 34 | 29 | 24 | 23 | 26 | 57 | 51 | 38 | 37 | 43 |
| Less than 70 | 49 | 42 | 37 | 36 | 40 | 65 | 67 | 54 | 57 | 59 |
| Less than 80 | 84 | 51 | 52 | 50 | 54 | 79 | 78 | 70 | 71 | 73 |
| Less than 90 | 88 | 63 | 65 | 64 | 66 | 86 | 87 | 84 | 81 | 84 |
| Less than 100 | 93 | 72 | 74 | 71 | 75 | 92 | 93 | 90 | 89 | 90 |
| Less than 120 | 100 | 83 | 87 | 89 | 88 | 97 | 97 | 95 | 94 | 96 |
| Less than 140 | | 92 | 97 | 96 | 96 | 100 | 97 | 99 | 99 | 99 |
| All | | 100 | 100 | 100 | 100 | | 100 | 100 | 100 | 100 |
| *Base* | *62* | *152* | *170* | *184* | *568* | *60* | *129* | *203* | *187* | *580* |
| Mean (average value) | 65.8 | 84.5 | 81.4 | 82.0 | 80.7 | 59.8 | 64.3 | 70.2 | 69.2 | 67.5 |
| Median | 70.6 | 78.4 | 78.1 | 81.0 | 76.7 | 53.8 | 58.5 | 67.5 | 66.5 | 65.2 |
| Lower 2.5 percentile | 23.4 | 23.0 | 28.6 | 20.7 | 24.3 | 9.3 | 19.2 | 29.7 | 20.2 | 22.4 |
| Upper 2.5 percentile | 108.6 | 164.8 | 145.0 | 151.4 | 152.1 | 132.4 | 140.1 | 127.1 | 124.4 | 127.0 |
| Standard deviation | 21.28 | 40.62 | 29.70 | 32.33 | 33.42 | 27.12 | 39.60 | 26.16 | 27.94 | 30.41 |

*Note: * This excludes 298 cases where the respondent reported missing at least one collection.*

# Table 4.4

## Percentage distribution of total urinary fluoride (µmol/24h) by sex and age of respondent

**Respondents who reported making a full 24-hour urine collection*** Cumulative percentages

| Total urinary fluoride (µmol/24h) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| Less than 10 | 4 | 1 | 0 | 2 | 1 | 1 | 5 | 2 | - | 2 |
| Less than 20 | 15 | 7 | 7 | 4 | 7 | 30 | 16 | 11 | 10 | 14 |
| Less than 30 | 34 | 17 | 18 | 15 | 18 | 52 | 40 | 22 | 23 | 30 |
| Less than 40 | 51 | 27 | 32 | 30 | 32 | 69 | 50 | 30 | 29 | 38 |
| Less than 50 | 63 | 40 | 45 | 41 | 44 | 78 | 61 | 42 | 38 | 48 |
| Less than 60 | 82 | 55 | 53 | 49 | 56 | 86 | 68 | 50 | 48 | 57 |
| Less than 70 | 87 | 64 | 62 | 58 | 64 | 88 | 74 | 61 | 61 | 67 |
| Less than 80 | 90 | 71 | 67 | 63 | 69 | 95 | 77 | 66 | 68 | 72 |
| Less than 90 | 91 | 81 | 73 | 69 | 76 | 96 | 80 | 73 | 73 | 77 |
| Less than 100 | 91 | 85 | 77 | 72 | 79 | 99 | 85 | 78 | 76 | 81 |
| Less than 120 | 96 | 93 | 87 | 78 | 86 | 99 | 90 | 86 | 81 | 86 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *62* | *152* | *170* | *184* | *568* | *60* | *129* | *203* | *187* | *580* |
| Mean (average value) | 45.2 | 64.2 | 71.6 | 82.7 | 70.3 | 35.3 | 54.5 | 69.2 | 81.4 | 66.3 |
| Median | 37.4 | 55.9 | 52.6 | 62.7 | 54.9 | 27.8 | 39.0 | 59.9 | 61.0 | 52.2 |
| Lower 2.5 percentile | 4.5 | 13.2 | 16.3 | 11.7 | 13.1 | 11.5 | 6.5 | 10.9 | 13.8 | 10.7 |
| Upper 2.5 percentile | 122.7 | 178.2 | 205.2 | 241.3 | 205.2 | 93.1 | 172.6 | 186.8 | 339.1 | 199.6 |
| Standard deviation | 28.64 | 40.15 | 52.07 | 62.14 | 51.99 | 23.04 | 43.16 | 46.11 | 78.32 | 58.22 |

*Note: * This excludes 298 cases where the respondent reported missing at least one collection.*

## Table 4.5

### Percentage distribution of total urinary urea (mmol/24h) by sex and age of respondent

**Respondents who reported making a full 24-hour urine collection*** Cumulative percentages

| Total urinary urea (mmol/24h) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| Less than 100 | 4 | 2 | 1 | 2 | 2 | - | 7 | 1 | 4 | 4 |
| Less than 150 | 6 | 5 | 3 | 4 | 4 | 13 | 15 | 8 | 12 | 11 |
| Less than 200 | 13 | 12 | 10 | 8 | 10 | 27 | 28 | 18 | 22 | 22 |
| Less than 250 | 18 | 23 | 18 | 17 | 19 | 40 | 53 | 39 | 42 | 43 |
| Less than 300 | 30 | 30 | 32 | 31 | 31 | 53 | 71 | 60 | 66 | 64 |
| Less than 350 | 42 | 41 | 45 | 48 | 45 | 82 | 82 | 79 | 80 | 80 |
| Less than 400 | 63 | 55 | 62 | 62 | 60 | 91 | 95 | 90 | 90 | 91 |
| Less than 450 | 78 | 69 | 75 | 75 | 74 | 94 | 97 | 96 | 96 | 96 |
| Less than 500 | 90 | 82 | 83 | 84 | 84 | 94 | 97 | 97 | 99 | 97 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *62* | *152* | *170* | *184* | *568* | *60* | *129* | *203* | *187* | *580* |
| Mean (average value) | 362.0 | 387.7 | 368.3 | 375.3 | 375.1 | 284.9 | 256.3 | 281.9 | 271.1 | 273.0 |
| Median | 375.6 | 388.4 | 362.8 | 353.1 | 366.2 | 283.6 | 244.9 | 272.5 | 263.6 | 262.3 |
| Lower 2.5 percentile | 59.3 | 117.2 | 134.4 | 109.1 | 115.5 | 123.1 | 79.5 | 113.1 | 83.1 | 83.1 |
| Upper 2.5 percentile | 695.4 | 817.7 | 653.0 | 698.3 | 702.5 | 607.8 | 580.8 | 519.5 | 475.5 | 514.5 |
| Standard deviation | 136.36 | 164.47 | 132.60 | 157.02 | 149.93 | 116.02 | 109.09 | 96.46 | 100.60 | 103.07 |

*Note: * This excludes 298 cases where the respondent reported missing at least one collection.*

## Table 4.6

### Percentage distribution of urinary sodium: urinary creatinine ratio (mol/mol) by sex and age of respondent

**Respondents who made 24-hour urine collection*** Cumulative percentages

| Urinary sodium: urinary creatinine ratio (mol/mol) | Men aged (years): | | | | All men | Women aged (years): | | | | All women |
|---|---|---|---|---|---|---|---|---|---|---|
| | 19–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % | cum % |
| Less than 5.0 | 7 | 7 | 5 | 5 | 6 | 6 | 6 | 2 | 2 | 3 |
| Less than 7.5 | 20 | 21 | 17 | 23 | 20 | 18 | 19 | 18 | 14 | 17 |
| Less than 10.0 | 54 | 50 | 45 | 48 | 48 | 33 | 41 | 39 | 33 | 37 |
| Less than 12.5 | 70 | 73 | 72 | 72 | 72 | 54 | 59 | 60 | 57 | 58 |
| Less than 15.0 | 84 | 91 | 88 | 86 | 88 | 64 | 75 | 74 | 72 | 73 |
| Less than 17.5 | 89 | 94 | 97 | 93 | 94 | 87 | 87 | 88 | 84 | 86 |
| All | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| *Base* | *92* | *186* | *214* | *213* | *704* | *88* | *178* | *269* | *219* | *754* |
| Mean (average value) | 10.9 | 10.5 | 10.7 | 10.6 | 10.6 | 12.8 | 12.4 | 12.0 | 12.6 | 12.4 |
| Median | 9.3 | 10.1 | 10.2 | 10.2 | 10.1 | 12.1 | 11.5 | 11.5 | 11.7 | 11.6 |
| Lower 2.5 percentile | 2.7 | 3.6 | 4.3 | 3.2 | 3.7 | 4.2 | 3.8 | 5.0 | 5.1 | 4.5 |
| Upper 2.5 percentile | 23.1 | 21.3 | 18.0 | 21.1 | 20.4 | 26.4 | 27.8 | 24.6 | 23.0 | 25.4 |
| Standard deviation | 4.48 | 4.19 | 3.49 | 4.34 | 4.07 | 5.43 | 6.02 | 4.94 | 5.11 | 5.32 |

*Note: * This includes respondents who reported making a full 24-hour urine collection and those who made a partial collection, that is, recorded missing at least one collection during the 24 hours.*

## Table 4.7

### Urinary analytes by sex of respondent and region

| Sex of respondent and urinary analyte (unit of measurement) | Region | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Scotland | | | | Northern | | | | Central, South West and Wales | | | | London and the South East | | | |
| | Mean | Median | sd | *Base* | Mean | Median | sd | *Base* | Mean | Median | sd | *Base* | Mean | Median | sd | *Base* |
| **Men** | | | | | | | | | | | | | | | | |
| Urinary sodium (mmol/24h)* | 229.2 | 239.7 | 80.46 | *50* | 186.9 | 163.0 | 95.75 | *156* | 184.3 | 181.2 | 80.98 | *200* | 178.7 | 166.7 | 79.87 | *161* |
| Urinary potassium (mmol/24h)* | 79.6 | 73.6 | 32.33 | *50* | 77.5 | 74.8 | 32.69 | *156* | 79.9 | 77.1 | 30.86 | *201* | 85.2 | 80.7 | 37.17 | *161* |
| Urinary fluoride (µmol/24h)* | 53.5 | 41.5 | 34.93 | *50* | 65.4 | 52.6 | 48.03 | *156* | 79.4 | 58.1 | 58.97 | *201* | 69.1 | 56.0 | 49.12 | *161* |
| Urinary urea (mmol/24h)* | 414.6 | 407.7 | 153.60 | *50* | 361.2 | 349.6 | 169.84 | *156* | 373.0 | 366.0 | 122.58 | *201* | 378.8 | 385.5 | 158.04 | *161* |
| Urinary sodium: urinary creatinine ratio (mol/mol)** | 12.1 | 11.6 | 3.83 | 56 | 11.1 | 11.0 | 3.98 | 192 | 10.2 | 9.6 | 3.78 | 258 | 10.3 | 9.9 | 4.47 | 198 |
| **Women** | | | | | | | | | | | | | | | | |
| Urinary sodium (mmol/24h)* | 142.4 | 130.0 | 72.53 | *44* | 136.6 | 125.7 | 63.37 | *158* | 137.1 | 128.1 | 70.88 | *203* | 141.0 | 133.8 | 62.52 | *175* |
| Urinary potassium (mmol/24h)* | 58.5 | 55.6 | 26.79 | *44* | 68.1 | 65.3 | 27.86 | *158* | 65.3 | 62.4 | 35.03 | *203* | 71.7 | 68.9 | 27.01 | *175* |
| Urinary fluoride (µmol/24h)* | 44.6 | 26.9 | 49.82 | *44* | 64.1 | 47.0 | 60.14 | *158* | 72.6 | 56.5 | 66.41 | *203* | 66.5 | 58.2 | 45.94 | *175* |
| Urinary urea (mmol/24h)* | 269.9 | 252.1 | 114.39 | *44* | 268.4 | 256.5 | 109.87 | *158* | 262.1 | 255.6 | 98.89 | *203* | 290.6 | 285.3 | 96.97 | *175* |
| Urinary sodium: urinary creatinine ratio (mol/mol)** | 12.8 | 12.9 | 5.09 | *51* | 12.3 | 12.0 | 5.12 | *202* | 12.5 | 11.6 | 5.47 | *270* | 12.2 | 11.3 | 5.38 | *230* |

*Note:* * *Results are for those who completed a full 24-hour collection only, that is, where the respondent reported not missing any collection during the 24 hours. There were an additional 298 cases where the respondent reported missing at least one collection during the 24 hours, these cases have been excluded from this analysis.*

** *Urinary sodium:creatinine ratio is given for all respondents who made a urine collection, irrespective of whether they reported making a full or partial collection.*

## Table 4.8

### Urinary analytes by sex of respondent and whether someone in the respondent's household was receiving certain benefits

| Sex of respondent and urinary analyte (unit of measurement) | Whether receiving benefits | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Receiving benefits | | | | Not receiving benefits | | | |
| | Mean | Median | sd | *Base* | Mean | Median | sd | *Base* |
| **Men** | | | | | | | | |
| Urinary sodium (mmol/24h)* | 185.9 | 177.3 | 85.97 | *77* | 187.7 | 177.8 | 85.85 | *490* |
| Urinary potassium (mmol/24h)* | 74.3 | 73.3 | 31.89 | *77* | 81.7 | 77.3 | 33.58 | *491* |
| Urinary fluoride (µmol/24h)* | 77.3 | 63.1 | 59.49 | *77* | 69.2 | 53.2 | 50.70 | *491* |
| Urinary urea (mmol/24h)* | 344.5 | 381.1 | 145.98 | *77* | 379.8 | 366.0 | 150.12 | *491* |
| Urinary sodium: urinary creatinine ratio (mol/mol)** | 11.2 | 11.1 | 4.33 | 98 | 10.5 | 10.1 | 4.03 | 606 |
| **Women** | | | | | | | | |
| Urinary sodium (mmol/24h)* | 136.1 | 125.6 | 77.80 | *107* | 139.1 | 130.2 | 63.64 | *472* |
| Urinary potassium (mmol/24h)* | 61.3 | 54.4 | 42.34 | *107* | 68.9 | 66.7 | 26.84 | *472* |
| Urinary fluoride (µmol/24h)* | 55.8 | 43.2 | 46.73 | *107* | 68.7 | 56.0 | 60.31 | *472* |
| Urinary urea (mmol/24h)* | 249.4 | 233.0 | 110.57 | *107* | 278.4 | 265.1 | 100.65 | *472* |
| Urinary sodium: urinary creatinine ratio (mol/mol)** | 12.2 | 11.6 | 5.14 | *137* | 12.4 | 11.6 | 5.36 | *617* |

*Note:* * *Results are for those who completed a full 24-hour collection only, that is, where the respondent reported not missing any collection during the 24 hours. There were an additional 298 cases where the respondent reported missing at least one collection during the 24 hours, these cases have been excluded from this analysis.*

** *Urinary sodium:creatinine ratio is given for all respondents who made a urine collection, irrespective of whether they reported making a full or partial collection.*

## Table 4.9

## Comparison of total urinary sodium and potassium (mmol/24h) by respondents in two surveys: 1986/87 Adults Survey; 2000/01 NDNS Adults aged 19 to 64 years (present survey)

| Sex of respondent and urinary analyte (unit of measurement) | Age (years) of respondent | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1986/87 Adults survey* | | | | All | 2000/01 NDNS** | | | | All |
| | 16–24 | 25–34 | 35–49 | 50–64 | | 19–24 | 25–34 | 35–49 | 50–64 | |
| **Men** | | | | | | | | | | |
| Urinary sodium (mmol/24h) | | | | | | | | | | |
| mean | 179 | 175 | 175 | 166 | 173 | 188 | 195 | 190 | 179 | 187 |
| median | 171 | 167 | 166 | 164 | 166 | 181 | 186 | 174 | 174 | 178 |
| se/sd*** | 7.30 | 5.48 | 4.47 | 4.29 | 2.58 | 58.38 | 99.03 | 82.55 | 84.61 | 85.80 |
| *Base* | *144* | *193* | *280* | *225* | *842* | *62* | *152* | *170* | *183* | *567* |
| Urinary potassium (mmol/24h) | | | | | | | | | | |
| mean | 79 | 79 | 79 | 73 | 77 | 66 | 84 | 81 | 82 | 81 |
| median | 75 | 78 | 74 | 71 | 74 | 71 | 78 | 78 | 81 | 77 |
| se/sd*** | 3.5 | 2.0 | 2.3 | 2.0 | 1.2 | 21.3 | 40.6 | 29.7 | 32.3 | 33.4 |
| *Base* | *144* | *193* | *280* | *225* | *842* | *62* | *152* | *170* | *184* | *568* |
| **Women** | | | | | | | | | | |
| Urinary sodium (mmol/24h) | | | | | | | | | | |
| mean | 136 | 131 | 135 | 124 | 132 | 156 | 148 | 137 | 128 | 138 |
| median | 126 | 129 | 131 | 119 | 126 | 130 | 137 | 128 | 119 | 129 |
| se/sd*** | 5.05 | 3.51 | 3.23 | 2.96 | 1.78 | 79.09 | 78.83 | 58.40 | 58.92 | 66.42 |
| *Base* | *136* | *213* | *293* | *223* | *865* | *60* | *129* | *203* | *187* | *580* |
| Urinary potassium (mmol/24h) | | | | | | | | | | |
| mean | 62 | 62 | 66 | 58 | 62 | 60 | 64 | 70 | 69 | 68 |
| median | 58 | 59 | 62 | 56 | 60 | 54 | 58 | 68 | 66 | 65 |
| se/sd*** | 2.1 | 1.8 | 1.5 | 1.3 | 0.8 | 27.1 | 39.6 | 26.2 | 27.9 | 30.4 |
| *Base* | *136* | *213* | *293* | *223* | *865* | *60* | *129* | *203* | *187* | *580* |

*Note:* * *Gregory JR et al. The Dietary and Nutritional Survey of British Adults. HMSO (London, 1990).*

** *Data for the 2000/01 NDNS is presented for those respondents who made a full 24-hour urine collection only that is, did not report missing any collections. Data for the 1986/87 Adults Survey is presented for those who did not report missing any collections, and for those where the period of collection was at least 18 hours and no more than 30 hours.*

*** *1986/87 survey reported standard errors; present survey reports standard deviations.*

# Appendix A Sampling errors and statistical methods

## 1 Sampling errors

This section examines the sources of error associated with survey estimates and presents sampling errors of survey estimates, referred to as standard errors, and design factors for a number of key variables shown in this volume. It should be noted that tables showing standard errors in the main part of this volume have assumed a simple random sample design. In testing for the significance of the differences between two survey estimates, proportions or means, the standard error calculated as for a simple random sample design was multiplied by an assumed, conservative, design factor of 1.5 to allow for the complex sample design.

The estimates presented in the main part of this volume are based on data weighted to correct for differential sampling probability and for differential non-response. The sampling errors presented in this appendix were calculated after applying a weight to compensate for differential sampling probability and differential non-response. The sample was also post-stratified, so that it matched the population distribution in terms of age, sex and region[1].

### 1.1 The accuracy of survey results

Survey results are subject to various sources of error. The total error in a survey estimate is the difference between the estimate derived from the data collected and the true value for the population. It can be thought of as being comprised of random and systematic errors, and each of these two main types of error can be subdivided into error from a number of different sources.

#### 1.1.1 Random error

Random error is the part of the total error which would be expected to average zero if a number of repeats of the same survey were carried out based on different samples from the same population.

An important component of random error is sampling error, which arises because the estimate is based on a survey rather than a census of the population. The results of this or any other survey would be expected to vary from the true population values. The amount of variation depends on both the size of the sample and the sample design.

Random error may also arise from other sources such as the respondent's interpretation of the questions. As with all surveys carried out by the Social Survey Division (SSD), considerable efforts were made on this survey to minimise these effects through interviewer training and through feasibility work; however, it is likely some will remain that are not possible to quantify.

#### 1.1.2 Systematic error

Systematic error, or bias, applies to those sources of error that will not average to zero over a number of repeats of the survey. The category includes, for example, bias due to omission of certain parts of the population from the sampling frame, or bias due to interviewer or coder variation. A substantial effort is put into avoiding systematic errors but it is likely that some will remain.

Non-response bias is a systematic error that is of particular concern. It occurs if non-respondents to the survey, or to particular elements of the survey, differ significantly in some respect from respondents, so that the responding sample is not representative of the total population. Non-response can be minimised by training interviewers in how to deal with potential refusals and in strategies to minimise non-contacts. However, a certain level of non-response is inevitable in any voluntary survey. The resulting bias is, however, dependent not only on the absolute level of non-response, but on the extent to which non-respondents differ from respondents in terms of the measures that the survey aims to estimate.

Although respondents were encouraged to take part in all components of the survey, some refused certain components. Chapter 2 of the Technical Report[2] examines the characteristics of groups responding to the different parts of the survey package. The analysis of the region, sex and age profile of respondents compared with population estimates showed evidence of some response bias. In particular, there was an under representation of men and of people aged 19 to 24 years. The data for the main part of this volume (and all volumes in the series) were therefore weighted for differential non-response by sex, age and region.

## 1.2 Standard errors for estimates for the NDNS of adults aged 19 to 64 years

As described in Chapter 1 and Appendix D of the Technical Report[2], this survey used a complex sample design, which involved both clustering and stratification. In considering the accuracy of estimates, standard errors calculated on the basis of a simple random sample design will be incorrect because of the complex sample design.

This dietary survey sample was clustered using postcode sectors as primary sampling units (PSUs). Clustering can increase standard errors if there is a lot of variation in characteristics between the PSUs, but little variation within them. By contrast, stratification tends to reduce standard errors especially where the stratification factors are correlated to the survey estimate. Stratifying the sample ensures that certain sections of the population are represented in the sample. The main stratifier used on this survey was Standard Statistical Region (SSR). The PSUs were further stratified by population density, socio-economic group and car ownership (*see* Appendix D of the Technical Report[2]).

In a complex sample design, the size of the standard error of any estimate depends on how the characteristic of interest is spread within and between PSUs and strata: this is taken into account by pairing up adjacent PSUs from the same strata. The squared differences in the estimates between successive PSUs from the same strata are calculated and summed to produce the standard error.

The majority of estimates in this survey take the form of ratio estimates, either means or proportions. The formula to calculate the standard error of these is:

$$se(r) = \frac{1}{x}\left[var(y) + r^2 var(x) - 2r\,cov(y,x)\right]^{1/2}$$

where the ratio $r = y/x$.

The method explicitly allows for the fact that the percentages and means are actually ratios of two survey estimates, both of which are subject to random error. The value *se (r)* is the estimate of the standard error of the ratio, *r*, expressed in terms of *se(y)* and *se(x)* which are the estimated standard errors of *y* and *x*, and *cov(y, x)* which is their estimated covariance. The resulting estimate is slightly biased and only valid if the denominator is not too variable[3]. The ratio means for age groups have standard errors equal to zero for the full sample because both the numerator and the denominator have been set to equal the population totals and thus cannot vary for any selected sample.

The method of standard error estimation compares the successive differences between totals of the characteristic of interest for adjacent PSUs (postal sectors)[4]. The characteristic is the numerator (for example the average daily intake of vitamin C), and the sample size is the denominator in the ratio estimate[5]. The ordering of PSUs reflects the ranking of postal sectors on the stratifiers used in the sample design.

Tables A1 and A4 give standard errors, taking account of the complex sample design used on this survey, for the key variables presented in this volume. For selected vitamins and minerals and urinary analytic estimates are shown by sex and age. Standard errors for estimates of socio-demographic subgroups, such as household benefit status and region, are shown separately for men and women to reflect the way they are presented in the main part of the report. Standard errors are presented for the diary sample only.

## 1.3 Estimating standard errors for other survey estimates

Although standard errors can be calculated readily by computer, there are practical problems in presenting a large number of survey estimates. One solution is to calculate standard errors for selected variables and, from these, identify design factors appropriate for the specific survey design and for different types of survey variable. The standard error of other survey measures can then be estimated using an appropriate design factor, together with the sampling error assuming a simple random sample.

### 1.3.1 The Design Factor (*deft*)

The effect of a complex sample design can be quantified by comparing the observed variability in the sample with the expected variability had the survey used a simple random sample. The most commonly used statistic is the design factor (*deft*), which is calculated as a ratio of the standard error for a survey estimate allowing for the full complexity of the sample design (including weighting), to the standard error assuming that the result has come from a simple random sample. The *deft* can be used as a multiplier to the standard error based on a simple random sample, $se(p)_{srs}$, to give the standard error of the complex design, se(p), by using the following formula:

$$se(p)=deft \times se(p)_{srs}$$

Tables A1 to A3 show *deft* values for certain measures for those who completed a seven-day dietary record, and Table A4 for those who made a 24-hour urine collection. The level of *deft* varies between survey variables, reflecting the degree to which the characteristic is clustered within PSUs or is distributed between strata. Variables which are highly correlated to the post-strata should also have reduced *deft* values. For a single variable, the level of the *deft* can also vary according to the size of the subgroup on which the estimate is based because smaller subgroups can be less affected by clustering.

Table A1 shows the *deft* values for a range of socio-demographic variables for the diary sample, Tables A2 for selected vitamins, Table A3 for selected minerals and Table A4 for urinary analytes. For the socio-demographic variables, where geographic clustering would be expected, six out of ten of the design factors for men and eight out of ten for women are less than 1.2. Design factors of this order are considered to be small and they indicate that, in this survey, the characteristic is not markedly clustered geographically. For two of the ten socio-demographic variables *deft* values are above 1.5 for both sexes.

For women, 77% of the design factors presented in Tables A2 to A4 are less than 1.2, while for men 71% are less than 1.2. For women, none of the *deft* values are greater than 1.5, while for men, 3% are greater than 1.5.

(Tables A1 to A4)

### 1.3.2 Testing differences between means and proportions

Standard errors can be used to test whether an observed difference between two proportions or means in the sample is likely to be entirely due to sampling error. An estimate for the standard error of a difference between percentages assuming a simple random sample is:

$$se_1(p_1-p_2) = \sqrt{[(p_1 q_1/n_1) + (p_2 q_2/n_2)]}$$

where $p_1$ and $p_2$ are the observed percentages for the two subsamples, $q_1$ and $q_2$ are respectively $(100-p_1)$ and $(100-p_2)$, and $n_1$ and $n_2$ are the subsample sizes.

The equivalent formula for the standard error of the difference between the means for subsamples 1 and 2 is:

$$se_2(diff) = \sqrt{(se_1^2+se_2^2)}$$

Allowance for the complex sample design is then made by multiplying the standard errors $se_1$ and $se_2$ from the above formula by the appropriate *deft* values.

In this volume the calculation of the difference between proportions and means assumed a *deft* value of 1.5 across all survey estimates. The calculation of complex sampling errors and design factors for key characteristics show that this was a conservative estimate for some characteristics for some age and sex groups, but was an optimistic estimate for other characteristics. Therefore there will be some differences in sample proportions and means that are not commented on in the text, but that are significantly different, at least at the $p<0.05$ level. Equally, there will be some differences that are described as significant in the text, but that are not significantly different when the complex sampling design is taken into account. An indication of the characteristics for which significance tests are likely to provide false-positives or false-negatives can be gained by looking at the size of the *deft* values in the tables in this appendix.

Confidence intervals can be calculated around a survey estimate using the standard error for that estimate. For example, the 95% confidence interval is calculated as 1.96 times the standard error on either side of the estimated proportion or mean value. At the 95% confidence level, over many repeats of the survey under the same conditions, 95% of these confidence intervals would contain the population estimate. However, when assessing the results of a survey, it is usual to assume that there is only a 5% chance that the true population value will fall outside the 95% confidence interval calculated for the survey estimate.

## References and endnotes

1 Weighting for different sampling probabilities results in larger sampling errors than for an equal-probability sample without weights. However, using population totals to control for differential non-response tends to lead to a reduction in the errors. The method used to calculate the sampling errors identifies the weighting for unequal sampling probabilities and to the population separately, and adjusts the sampling errors accordingly.

2 The Technical Report, including its Appendices, is available online at http://www.food.gov.uk/science.

3 This variability of the denominator can be measured by the coefficient of variation of *x*, denoted by *cv(x)*, which is the standard error of *x* expressed as a proportion of *x*

$$cv(x) = \frac{se(x)}{x}$$

It has been suggested that the ratio estimator should not be used if *cv(x)* is greater than 0.2. For the standard errors produced here, the denominators for the ratios were 'number of men' and 'number of women'. Both of these totals were constant, determined by the post-stratification and, therefore, there is no variation in these denominators and hence the *cv* of the denominator will be zero.

4 The calculation of standard errors and design factors for this survey used the software package Stata. For further details of the method of calculation see: Elliot D. A comparison of software for producing sampling errors on social surveys. *Survey Methodology Bulletin* 1999*;* **44**: 27–36.

5 For a survey of this kind the sample size is subject to random fluctuation, both within each PSU and overall. This is because the number of adults identified in each PSU is dependent on which households are sampled and there will be differing amounts of non-response. There is more control in the (weighted) sample sizes of subgroups such as age and sex since these variables were used as post-stratifiers.

# Table A1

## True standard errors and design factors for socio-demographic characteristics of the diary sample by sex of respondent

**Diary sample** Numbers

| | Men | | | Women | | |
|---|---|---|---|---|---|---|
| | % (p) | Standard error of p* | Design factor | % (p) | Standard error of p* | Design factor |
| **Age group** | | | | | | |
| 19–24 years | 13 | 0.00 | 0.00 | 12 | 0.00 | 0.00 |
| 25–34 years | 26 | 0.00 | 0.00 | 24 | 0.00 | 0.00 |
| 35–49 years | 30 | 0.00 | 0.00 | 36 | 0.00 | 0.00 |
| 50–64 years | 30 | 0.00 | 0.00 | 29 | 0.00 | 0.00 |
| **Region** | | | | | | |
| Scotland | 8 | 0.92 | 0.98 | 7 | 0.86 | 0.98 |
| Northern | 28 | 1.14 | 0.73 | 26 | 0.96 | 0.65 |
| Central, South West and Wales | 35 | 2.54 | 1.54 | 37 | 2.62 | 1.62 |
| London and the South East | 29 | 2.48 | 1.58 | 30 | 2.57 | 1.67 |
| **Household receipt of benefits** | | | | | | |
| Receiving benefits | 13 | 1.47 | 1.25 | 17 | 1.47 | 1.17 |
| Not receiving benefits | 87 | 1.47 | 1.25 | 83 | 1.47 | 1.17 |
| *Sample size* | | *833* | | | *891* | |

*Note: * The ratio means for age groups for the diary sample have standard errors equal to zero because both the numerator and the denominator have been set to equal the population totals and thus cannot vary for any selected sample.*

Table A2 This table spreads over 2 pages. Altogether there is 1 spread (2 pages).

## True standard errors and design factors for average daily intake of selected vitamins from food sources by sex and age of respondent

**Diary sample** Numbers

| Vitamin (unit of measurement) | Age (years): 19–24 Mean r | Standard error of r | Design factor | 25–34 Mean r | Standard error of r | Design factor | 35–49 Mean r | Standard error of r | Design factor |
|---|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | | |
| Total carotene (β-carotene equivalents) (µg) | 1469 | 128.6 | 1.38 | 1801 | 114.1 | 1.35 | 2077 | 87.1 | 1.09 |
| Vitamin A (retinol equivalents) (µg) | 560 | 45.5 | 1.35 | 724 | 52.3 | 1.48 | 989 | 79.8 | 0.94 |
| Thiamin (mg) | 1.60 | 0.071 | 1.34 | 2.08 | 0.172 | 1.13 | 2.04 | 0.102 | 1.00 |
| Riboflavin (mg) | 1.68 | 0.105 | 1.41 | 2.12 | 0.077 | 1.04 | 2.19 | 0.060 | 1.08 |
| Niacin equivalents (mg) | 39.4 | 1.31 | 1.20 | 46.2 | 1.41 | 1.15 | 45.9 | 0.87 | 1.04 |
| Vitamin $B_6$ (mg) | 2.6 | 0.12 | 1.29 | 3.0 | 0.09 | 1.09 | 2.9 | 0.07 | 1.08 |
| Vitamin $B_{12}$ (µg) | 4.4 | 0.22 | 1.39 | 5.9 | 0.28 | 1.24 | 7.0 | 0.35 | 1.02 |
| Folate (µg) | 301 | 13.2 | 1.27 | 346 | 10.5 | 1.22 | 343 | 7.4 | 0.99 |
| Vitamin C (mg) | 64.9 | 6.97 | 1.40 | 74.1 | 3.97 | 1.21 | 88.4 | 3.97 | 1.10 |
| Vitamin D (µg) | 2.9 | 0.19 | 1.32 | 3.5 | 0.18 | 1.25 | 3.7 | 0.13 | 0.91 |
| Vitamin E (α-tocopherol equivalents) (mg) | 9.8 | 0.48 | 1.25 | 10.5 | 0.33 | 1.09 | 10.8 | 0.30 | 1.11 |
| **Women** | | | | | | | | | |
| Total carotene (β-carotene equivalents) (µg) | 1294 | 133.7 | 1.42 | 1712 | 92.5 | 1.09 | 2015 | 92.3 | 1.08 |
| Vitamin A (retinol equivalents) (µg) | 467 | 41.0 | 1.21 | 587 | 47.3 | 0.99 | 675 | 29.6 | 1.04 |
| Thiamin (mg) | 1.45 | 0.099 | 1.30 | 1.55 | 0.075 | 0.84 | 1.52 | 0.050 | 0.92 |
| Riboflavin (mg) | 1.39 | 0.076 | 1.23 | 1.44 | 0.036 | 0.95 | 1.66 | 0.037 | 1.07 |
| Niacin equivalents (mg) | 29.5 | 1.20 | 1.28 | 28.8 | 0.73 | 1.16 | 31.5 | 0.57 | 1.13 |
| Vitamin $B_6$ (mg) | 2.0 | 0.09 | 1.22 | 1.9 | 0.05 | 1.09 | 2.0 | 0.04 | 1.04 |
| Vitamin $B_{12}$ (µg) | 4.0 | 0.25 | 1.29 | 4.0 | 0.17 | 1.11 | 4.9 | 0.18 | 1.26 |
| Folate (µg) | 229 | 10.7 | 1.19 | 233 | 6.3 | 1.13 | 255 | 4.3 | 0.88 |
| Vitamin C (mg) | 67.9 | 4.84 | 1.18 | 72.3 | 3.69 | 1.13 | 80.0 | 2.72 | 0.98 |
| Vitamin D (µg) | 2.3 | 0.19 | 1.23 | 2.4 | 0.12 | 1.04 | 2.8 | 0.14 | 1.19 |
| Vitamin E (α-tocopherol equivalents) (mg) | 7.9 | 0.56 | 1.26 | 7.9 | 0.22 | 0.95 | 8.2 | 0.16 | 0.87 |
| *Sample sizes* | | | | | | | | | |
| *Men* | | *108* | | | *219* | | | *253* | |
| *Women* | | *104* | | | *210* | | | *318* | |

Numbers

| 50–64 Mean r | 50–64 Standard error of r | 50–64 Design factor | All Mean r | All Standard error of r | All Design factor | Vitamin (unit of measurement) |
|---|---|---|---|---|---|---|
| | | | | | | **Men** |
| 2459 | 118.2 | 1.08 | 2041 | 54.2 | 1.09 | Total carotene (β-carotene equivalents) (µg) |
| 1145 | 88.7 | 1.11 | 911 | 37.4 | 1.00 | Vitamin A (retinol equivalents) (µg) |
| 2.07 | 0.095 | 1.20 | 2.00 | 0.061 | 1.08 | Thiamin (mg) |
| 2.20 | 0.064 | 1.20 | 2.11 | 0.032 | 0.99 | Riboflavin (mg) |
| 44.6 | 0.92 | 1.09 | 44.7 | 0.51 | 1.01 | Niacin equivalents (mg) |
| 2.8 | 0.07 | 1.12 | 2.9 | 0.04 | 1.08 | Vitamin $B_6$ (mg) |
| 7.3 | 0.37 | 1.10 | 6.5 | 0.16 | 1.00 | Vitamin $B_{12}$ (µg) |
| 361 | 10.6 | 1.23 | 344 | 4.3 | 0.99 | Folate (µg) |
| 94.5 | 3.70 | 1.09 | 83.4 | 2.12 | 1.12 | Vitamin C (mg) |
| 4.2 | 0.14 | 0.93 | 3.7 | 0.08 | 1.05 | Vitamin D (µg) |
| 11.0 | 0.43 | 1.27 | 10.6 | 0.21 | 1.29 | Vitamin E (α-tocopherol equivalents) (mg) |
| | | | | | | **Women** |
| 2205 | 74.3 | 0.86 | 1914 | 49.8 | 1.07 | Total carotene (β-carotene equivalents) (µg) |
| 816 | 45.1 | 0.95 | 671 | 20.5 | 0.97 | Vitamin A (retinol equivalents) (µg) |
| 1.60 | 0.045 | 0.83 | 1.54 | 0.032 | 0.96 | Thiamin (mg) |
| 1.75 | 0.047 | 1.11 | 1.60 | 0.024 | 1.11 | Riboflavin (mg) |
| 32.3 | 0.58 | 1.06 | 30.9 | 0.38 | 1.24 | Niacin equivalents (mg) |
| 2.1 | 0.05 | 1.14 | 2.0 | 0.03 | 1.13 | Vitamin $B_6$ (mg) |
| 5.7 | 0.20 | 1.01 | 4.8 | 0.11 | 1.21 | Vitamin $B_{12}$ (µg) |
| 268 | 7.2 | 1.21 | 251 | 3.1 | 1.03 | Folate (µg) |
| 94.5 | 3.19 | 0.99 | 81.0 | 1.79 | 1.07 | Vitamin C (mg) |
| 3.5 | 0.15 | 1.01 | 2.8 | 0.08 | 1.21 | Vitamin D (µg) |
| 8.2 | 0.25 | 1.28 | 8.1 | 0.11 | 1.00 | Vitamin E (α-tocopherol equivalents) (mg) |
| | | | | | | *Sample sizes* |
| | *253* | | | *833* | | *Men* |
| | *259* | | | *891* | | *Women* |

Table A3 This table spreads over 2 pages. Altogether there is 1 spread (2 pages).

## True standard errors and design factors for average daily intake of selected minerals from food sources by sex and age of respondent

**Diary sample** Numbers

| Mineral (unit of measurement) | Age (years): 19–24 Mean r | 19–24 Standard error of r | 19–24 Design factor | 25–34 Mean r | 25–34 Standard error of r | 25–34 Design factor | 35–49 Mean r | 35–49 Standard error of r | 35–49 Design factor |
|---|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | | |
| Total iron (mg) | 11.4 | 0.62 | 1.47 | 13.0 | 0.38 | 1.11 | 13.7 | 0.28 | 0.95 |
| Calcium (mg) | 860 | 46.5 | 1.54 | 1017 | 36.4 | 0.96 | 1040 | 23.0 | 1.04 |
| Phosphorus (mg) | 1335 | 40.9 | 1.36 | 1527 | 42.0 | 1.08 | 1520 | 28.2 | 1.05 |
| Magnesium (mg) | 258 | 8.9 | 1.32 | 308 | 7.7 | 1.12 | 318 | 6.0 | 0.98 |
| Sodium (mg) | 3342 | 146.5 | 1.40 | 3347 | 87.1 | 1.22 | 3337 | 65.4 | 1.03 |
| Chloride (mg) | 4921 | 208.9 | 1.40 | 5056 | 132.9 | 1.22 | 5047 | 97.5 | 1.03 |
| Potassium (mg) | 2841 | 90.9 | 1.34 | 3284 | 75.1 | 1.11 | 3481 | 57.2 | 0.99 |
| Zinc (mg) | 9.0 | 0.28 | 1.31 | 10.2 | 0.26 | 1.08 | 10.6 | 0.21 | 0.98 |
| Copper (mg) | 1.14 | 0.042 | 1.39 | 1.37 | 0.038 | 1.10 | 1.53 | 0.053 | 0.98 |
| Iodine (µg) | 166 | 9.2 | 1.35 | 216 | 9.5 | 1.18 | 221 | 5.2 | 0.99 |
| Manganese (mg) | 2.45 | 0.107 | 1.35 | 3.18 | 0.104 | 1.17 | 3.42 | 0.093 | 0.97 |
| **Women** | | | | | | | | | |
| Total iron (mg) | 8.8 | 0.38 | 1.26 | 9.2 | 0.25 | 1.08 | 10.2 | 0.18 | 0.90 |
| Calcium (mg) | 694 | 32.7 | 1.31 | 731 | 15.3 | 0.97 | 796 | 17.3 | 1.14 |
| Phosphorus (mg) | 1046 | 39.1 | 1.35 | 1041 | 21.8 | 1.15 | 1130 | 16.8 | 1.02 |
| Magnesium (mg) | 205 | 7.7 | 1.20 | 209 | 5.0 | 1.17 | 235 | 3.6 | 0.94 |
| Sodium (mg) | 2303 | 90.1 | 1.28 | 2324 | 42.7 | 0.93 | 2316 | 36.2 | 0.91 |
| Chloride (mg) | 3409 | 126.5 | 1.28 | 3478 | 65.8 | 0.97 | 3512 | 53.5 | 0.91 |
| Potassium (mg) | 2362 | 85.6 | 1.28 | 2397 | 54.2 | 1.20 | 2731 | 41.8 | 0.98 |
| Zinc (mg) | 6.8 | 0.28 | 1.36 | 6.7 | 0.14 | 1.07 | 7.6 | 0.11 | 1.00 |
| Copper (mg) | 0.91 | 0.044 | 1.19 | 1.00 | 0.026 | 1.02 | 1.05 | 0.018 | 0.86 |
| Iodine (µg) | 130 | 6.5 | 1.31 | 145 | 4.6 | 1.05 | 162 | 3.5 | 0.98 |
| Manganese (mg) | 2.12 | 0.108 | 1.24 | 2.45 | 0.074 | 1.10 | 2.79 | 0.050 | 0.80 |
| *Sample sizes:* | | | | | | | | | |
| *Men* | | *108* | | | *219* | | | *253* | |
| *Women* | | *104* | | | *210* | | | *318* | |

Numbers

| 50–64 | | | All | | | Mineral (unit of measuremnet) |
|---|---|---|---|---|---|---|
| Mean r | Standard error of r | Design factor | Mean r | Standard error of r | Design factor | |
| | | | | | | **Men** |
| 13.6 | 0.32 | 1.11 | 13.2 | 0.17 | 1.04 | Total iron (mg) |
| 1027 | 24.1 | 1.18 | 1007 | 13.2 | 0.92 | Calcium (mg) |
| 1505 | 28.4 | 1.12 | 1493 | 15.4 | 0.98 | Phosphorus (mg) |
| 318 | 7.0 | 1.09 | 308 | 3.5 | 1.01 | Magnesium (mg) |
| 3248 | 62.4 | 1.05 | 3313 | 38.7 | 1.10 | Sodium (mg) |
| 4922 | 93.4 | 1.07 | 4995 | 56.7 | 1.09 | Chloride (mg) |
| 3552 | 70.5 | 1.13 | 3367 | 36.0 | 1.08 | Potassium (mg) |
| 10.3 | 0.19 | 1.07 | 10.2 | 0.10 | 0.94 | Zinc (mg) |
| 1.51 | 0.050 | 1.07 | 1.43 | 0.023 | 0.95 | Copper (mg) |
| 230 | 6.4 | 1.28 | 215 | 3.8 | 1.17 | Iodine (µg) |
| 3.70 | 0.095 | 1.06 | 3.32 | 0.049 | 1.00 | Manganese (mg) |
| | | | | | | **Women** |
| 10.9 | 0.23 | 0.96 | 10.0 | 0.12 | 1.01 | Total iron (mg) |
| 823 | 18.5 | 1.04 | 777 | 11.0 | 1.22 | Calcium (mg) |
| 1176 | 20.9 | 1.09 | 1112 | 12.5 | 1.25 | Phosphorus (mg) |
| 246 | 4.8 | 1.06 | 229 | 2.6 | 1.12 | Magnesium (mg) |
| 2266 | 41.8 | 1.03 | 2302 | 23.3 | 1.02 | Sodium (mg) |
| 3474 | 62.2 | 1.01 | 3481 | 34.2 | 1.01 | Chloride (mg) |
| 2884 | 54.2 | 1.19 | 2653 | 30.4 | 1.21 | Potassium (mg) |
| 7.8 | 0.15 | 1.07 | 7.4 | 0.09 | 1.25 | Zinc (mg) |
| 1.07 | 0.029 | 1.22 | 1.03 | 0.014 | 1.08 | Copper (mg) |
| 178 | 4.9 | 1.07 | 159 | 2.4 | 1.08 | Iodine (µg) |
| 3.01 | 0.079 | 1.12 | 2.69 | 0.040 | 1.09 | Manganese (mg) |
| | | | | | | *Sample sizes:* |
| | *253* | | | *833* | | *Men* |
| | *259* | | | *891* | | *Women* |

Table A4 This table spreads over 2 pages. Altogether there is 1 spread (2 pages).

## True standard errors and design factors for urinary analytes by sex and age of respondent

**Diary sample**

| Urinary analytes (unit of measurement)* | Age (years): 19–24 | | | | 25–34 | | | | 35–49 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean r | Standard error of r | Design factor | *Base* | Mean r | Standard error of r | Design factor | *Base* | Mean r | Standard error of r | Design factor | *Base* |
| **Men** | | | | | | | | | | | | |
| Urinary sodium (mmol/24h) | 188.5 | 11.13 | 1.51 | *62* | 194.6 | 11.32 | 1.42 | *152* | 189.9 | 5.98 | 0.94 | *170* |
| Urinary potassium (mmol/24h) | 65.8 | 3.84 | 1.43 | *62* | 84.4 | 4.25 | 1.30 | *152* | 81.5 | 2.05 | 0.90 | *170* |
| Urinary fluoride (µmol/24h) | 45.2 | 5.39 | 1.49 | *62* | 64.4 | 5.03 | 1.55 | *152* | 71.4 | 4.23 | 1.06 | *170* |
| Urinary urea (mmol/24h) | 362.0 | 26.95 | 1.57 | *62* | 387.8 | 16.76 | 1.26 | *152* | 368.2 | 9.92 | 0.98 | *170* |
| Urinary sodium: urinary creatinine ratio (mol/mol) | 10.9 | 0.71 | 1.52 | *92* | 10.5 | 0.43 | 1.40 | *186* | 10.7 | 0.21 | 0.88 | *214* |
| **Women** | | | | | | | | | | | | |
| Urinary sodium (mmol/24h) | 154.4 | 13.08 | 1.31 | *60* | 148.8 | 7.41 | 1.07 | *129* | 137.0 | 4.08 | 1.00 | *203* |
| Urinary potassium (mmol/24h) | 59.0 | 4.83 | 1.39 | *60* | 64.7 | 3.86 | 1.11 | *129* | 70.2 | 1.85 | 1.01 | *203* |
| Urinary fluoride (µmol/24h) | 35.1 | 3.07 | 1.06 | *60* | 54.7 | 4.05 | 1.06 | *129* | 69.2 | 3.30 | 1.02 | *203* |
| Urinary urea (mmol/24h) | 283.2 | 19.22 | 1.31 | *60* | 256.8 | 11.45 | 1.19 | *129* | 281.9 | 6.80 | 1.01 | 203 |
| Urinary sodium: urinary creatinine ratio (mol/mol) | 12.7 | 0.76 | 1.32 | *88* | 12.4 | 0.53 | 1.18 | *178* | 12.1 | 0.30 | 0.99 | *269* |

*Note: * Full 24-hour collection is where the respondent reported not missing any collection during the 24 hours. There were an additional 298 cases where the respondent reported missing at least one collection during the 24 hours, these cases have been excluded from the analysis of urinary sodium, potassium, fluoride and urea but included for the urinary creatinine: urinary sodium ratio.*

| 50–64 | | | | All | | | | Urinary analytes (unit of measurement)* |
|---|---|---|---|---|---|---|---|---|
| Mean r | Standard error of r | Design factor | *Base* | Mean r | Standard error of r | Design factor | *Base* | |
| | | | | | | | | **Men** |
| 178.7 | 5.53 | 0.89 | *183* | 187.4 | 4.66 | 1.29 | *567* | Urinary sodium (mmol/24h) |
| 82.0 | 2.42 | 1.02 | *184* | 80.7 | 1.85 | 1.32 | *568* | Urinary potassium (mmol/24h) |
| 82.7 | 5.22 | 1.14 | *184* | 70.3 | 2.88 | 1.32 | *568* | Urinary fluoride (µmol/24h) |
| 375.3 | 10.31 | 0.89 | *184* | 375.1 | 7.44 | 1.18 | *568* | Urinary urea (mmol/24h) |
| 10.6 | 0.30 | 1.02 | *213* | 10.6 | 0.18 | 1.16 | *704* | Urinary sodium: urinary creatinine ratio (mol/mol) |
| | | | | | | | | **Women** |
| 128.0 | 3.59 | 0.84 | *187* | 138.5 | 2.98 | 1.08 | *580* | Urinary sodium (mmol/24h) |
| 69.2 | 2.30 | 1.13 | *187* | 67.5 | 1.37 | 1.08 | *580* | Urinary potassium (mmol/24h) |
| 81.4 | 6.59 | 1.15 | *187* | 66.3 | 2.61 | 1.08 | *580* | Urinary fluoride (µmol/24h) |
| 271.1 | 6.66 | 0.91 | *187* | 273.0 | 4.74 | 1.11 | *580* | Urinary urea (mmol/24h) |
| 12.6 | 0.36 | 1.04 | *219* | 12.4 | 0.20 | 1.05 | *754* | Urinary sodium: urinary creatinine ratio (mol/mol) |

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# Appendix B Unweighted base numbers

## Table B1

### Unweighted base numbers: dietary interview, seven-day dietary record and 24-hour urine collection by sex of respondent

| | Dietary interview | Seven-day weighed intake dietary record | 24-hour urine collection* | |
|---|---|---|---|---|
| | | | Full collection | All |
| **Age** | | | | |
| Men aged (years): | | | | |
| 19–24 | 86 | 61 | 31 | 44 |
| 25–34 | 219 | 160 | 103 | 126 |
| 35–49 | 394 | 303 | 221 | 277 |
| 50–64 | 309 | 242 | 183 | 209 |
| All men | 1008 | 766 | 538 | 655 |
| Women aged (years): | | | | |
| 19–24 | 109 | 78 | 44 | 61 |
| 25–34 | 277 | 211 | 131 | 175 |
| 35–49 | 487 | 379 | 244 | 325 |
| 50–64 | 370 | 290 | 204 | 242 |
| All women | 1243 | 958 | 623 | 803 |
| **Region** | | | | |
| Men | | | | |
| Scotland | 80 | 53 | 41 | 46 |
| Northern | 267 | 195 | 137 | 165 |
| Central, South West and Wales | 337 | 274 | 190 | 241 |
| London and the South East | 324 | 244 | 170 | 203 |
| Women | | | | |
| Scotland | 111 | 70 | 42 | 51 |
| Northern | 341 | 256 | 177 | 226 |
| Central, South West and Wales | 436 | 350 | 223 | 289 |
| London and the South East | 355 | 282 | 181 | 237 |
| **Household receipt of benefits**** | | | | |
| Men | | | | |
| Receiving benefits | 145 | 106 | 75 | 95 |
| Not receiving benefits | 863 | 660 | 463 | 561 |
| Women | | | | |
| Receiving benefits | 283 | 199 | 135 | 174 |
| Not receiving benefits | 960 | 759 | 488 | 629 |
| **All** | 2251 | 1724 | 1161 | 1459 |

*Note: * Unweighted bases are given for those who made a full 24-hour collection, that is, where the respondent reported not missing any collection during the 24 hours; and for all those from whom a urine sample was obtained, that is including partial cases where the respondent reported missing at least one collection during the 24 hours.*

*** Receipt of benefits was asked of the respondent about themselves, their partner or anyone else in the household. Benefits asked about were Working Families Tax Credit, Income Support and (Income-related) Job Seeker's Allowance.*

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# Appendix C Glossary of abbreviations, terms and survey definitions

| | |
|---|---|
| Benefits (receiving) | Receipt of Working Families Tax Credit by the respondent or anyone in their household at the time of the interview, or receipt of Income Support, or (Income-related) Job Seeker's Allowance by the respondent or anyone in their household in the 14 days prior to the date of interview. |
| COMA | The Committee on Medical Aspects of Food and Nutrition Policy. |
| CAPI | Computer-assisted personal interviewing. |
| CASI | Computer-assisted self-interviewing. The respondent is given the opportunity to enter their responses directly on to a laptop computer. This technique is used to collect data of a sensitive or personal nature, for example, contraception. |
| Cum % | Cumulative percentage (of a distribution). |
| Deft | Design factor; *see* Notes to Tables and Appendix A. |
| DH | The Department of Health. |
| Diary sample | Respondents for whom a seven-day dietary record was obtained. |
| Doubly labelled water (DLW) | A method for assessing total energy expenditure, used to validate dietary assessment methods by comparison with estimated energy intake. The respondent drinks a measured dose of water labelled with the stable isotopes $^{2}H_2$ and $^{18}O$ and collects urine samples over the next 10 to 15 days. Energy expenditure is calculated from the excretion rates of the isotopes. |
| dna | Does not apply. |
| DRV | Dietary Reference Value. The term used to cover LRNI, EAR, RNI and safe intake. (*See* Department of Health. Report on Health and Social Subjects: 41. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom.* HMSO (London, 1991).) |
| EAR | The Estimated Average Requirement of a group of people for energy or protein or a vitamin or mineral. About half will usually need more than the EAR, and half less. |
| HNR | Medical Research Council Human Nutrition Research, Cambridge. |

| | |
|---|---|
| Household | The standard definition used in most surveys carried out by the Social Survey Division, ONS, and comparable with the 1991 Census definition of a household was used in this survey. A household is defined as a single person or group of people who have the accommodation as their only or main residence and who either share one main meal a day or share the living accommodation. *See* McCrossan E. *A Handbook for interviewers.* HMSO (London, 1991). |
| HRP | Household Reference Person. This is the member of the household in whose name the accommodation is owned or rented, or is otherwise responsible for the accommodation. In households with a *sole* householder, that person is the household reference person; in households with *joint* householders, the person with the *highest income* is taken as the household reference person – if both householders have exactly the same income, the *older* is taken as the household reference person. This differs from Head of Household in that female householders with the highest income are now taken as the HRP and, in the case of joint householders, income then age (rather than sex then age) is used to define the HRP. |
| LRNI | The Lower Reference Nutrient Intake for a vitamin or mineral. An amount of nutrient that is enough for only the few people in the group who have low needs. |
| MAFF | The Ministry of Agriculture, Fisheries and Food. |
| Mean | The average value. |
| Median | *see* Percentiles. |
| MRC | The Medical Research Council. |
| na | Not available, not applicable. |
| NDNS | The National Diet and Nutrition Survey. |
| No. | Number (of cases). |
| ONS | Office for National Statistics. |
| PAF | Postcode Address File: the sampling frame for the survey. |
| Para-aminobenzoic acid (PABA) -check | Para-aminobenzoic acid (PABA) is actively absorbed and excreted, so can be used to check the 24-hour urine collection to verify completeness. The PABA-check validation requires the respondent to take three tablets of 80mg PABA with meals on the day of the 24-hour urine collection. Provided that at least 85% of the PABA dose is then recovered in the urine |

collection, this is deemed to be a valid 24-hour collection.

| | |
|---|---|
| Percentiles | The percentiles of a distribution divide it into equal parts. The median of a distribution divides it into two equal parts, such that half the cases in the distribution fall (or have a value) above the median, and the other half fall (or have a value) below the median. |
| PSU | Primary Sampling Unit: for this survey, postcode sectors. |
| Region | Based on the 'Standard regions' and grouped as follows:<br><br>**Scotland**<br><br>**Northern**<br>North<br>Yorkshire and Humberside<br>North West<br><br>**Central, South West and Wales**<br>East Midlands<br>West Midlands<br>East Anglia<br>South West<br>Wales<br><br>**London and the South East**<br>London<br>South East<br><br>The regions of England are as constituted after local government reorganisation on 1 April 1974. The regions as defined in terms of counties are listed in Chapter 2 of the Technical report online at http://www.food.gov.uk/science. |
| Responding sample | Respondents who completed the dietary interview and may/may not have co-operated with other components of the survey. |
| RNI | The Reference Nutrient Intake for protein or a vitamin or a mineral. An amount of the nutrient that is enough, or more than enough, for about 97% of the people in a group. If average intake of a group is at the RNI, then the risk of deficiency in the group is small. |
| sd/Std Dev | Standard deviation. An index of variability that is calculated as the square root of the variance and is expressed in the same units used to calculate the *mean* (*see* mean). |
| se | Standard error. An indication of the reliability of an estimate of a population parameter, which is calculated by dividing the standard deviation of |

| | |
|---|---|
| | the estimate by the square root of the sample size (*see also* sd/Std Dev). |
| SSD | The Social Survey Division of the Office for National Statistics. |
| Wave; Fieldwork wave | The three-month period in which fieldwork was carried out.<br><br>Wave 1: July to September 2000<br>Wave 2: October to December 2000<br>Wave 3: January to March 2001<br>Wave 4: April to June 2001 |
| WHO | World Health Organization. |

# Appendix D List of tables

## 1: Background, research design and response

### Tables



## 2: Vitamins

### Tables

## 3: Minerals

### Tables

## 4: Urinary analytes

### Tables

## Appendix A: Sampling errors and statistical methods

### Tables



## Appendix B: Unweighted base numbers

### Tables