National Diet and Nutrition Survey: People aged 65 years and over

The diet and nutrition survey

USER GUIDE

Contents

Glossary

Glossary of abbreviations, terms and survey definitions

Benefits (receiving)	Participants who were receiving any state benefits (not counting the state pension)
Blood GSH-Px	Blood glutathione peroxidase activity.
BMI	see *Body Mass Index*
BMR	Basal Metabolic Rate, a measure of the energy needed per day to maintain vital functions which sustain life.
Body Mass Index	A measure of body fatness which standardises weight for height: calculated as [weight (kg)/height $(m)^2$]. Also known as the Quetelet Index
CHD	Coronary heart disease
COMA	The Committee on Medical Aspects of Food and Nutrition Policy
DBP	Diastolic blood pressure
Deft	Design factor; see Appendix J
Depression questionnaire	A questionnaire about mood which participants were asked to complete themselves (see Chapter 2).
DH	The Department of Health
Diary sample	Participants who completed a full four day dietary record.
DNU	Dunn Nutrition Unit
DRV	Dietary Reference Value. The term used to cover *LNRI*, *EAR*, *RNI* , and safe intake. (See Department of Health. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom*. HMSO (London, 1991) (Report on Health and Social Subjects: 41))
DHSS	The former Department of Health and Social Security
EAR	The Estimated Average Requirement of a group of people for energy or protein or a vitamin or a mineral. About half will usually need more than the EAR, and half less.
EGRAC	The erythrocyte glutathione reductase activation coefficient
ETKAC	The erythrocyte transketolase activation coefficient
ETK-B	The erythrocyte transketolase basal activity
Extrinsic sugars	Any sugar which is not contained within the cell walls of a food. Examples are the sugar in honey and table sugar.
FAD	Flavin adenine dinucleotide
Frankfort plane	The desired position for the participant's head when measuring height. The position is achieved when the head is tilted forward until the top of the external ear canal and the top of the lower bone of the eye socket are on a plane parallel to the floor.
Free-living participants	Participants who were part of the sample of people living in private homes (excluding those who lived in institutions).
GGT	γ-glutamyl transferase

GHS	General Household Survey
GP	General Practitioner
HDL cholesterol	High Density Lipoprotein Cholesterol
Head of household	The member of the household who owns the household accommodation, is legally responsible for its rent or is responsible for the household having the accommodation in some other way. When two members of a different sex have equal claim, the male is taken as the head of household. When two members of the same sex have equal claim, the elder is taken as the head of household.
Highest educational qualification	Participants were asked to chose their highest educational qualification from seven groups (including 'no qualifications'), by looking from the top of a list downwards (see page 60 of the main questionnaire in Appendix B).
Household	A single person or group of people who have an address as their only or main residence. A household may be a family or another group of people who share at least one meal a day or share the living accommodation (that is the living or sitting room).
HSE	Health Survey for England
Income	Participants were asked to give the annual income of their household from all sources before tax and other deductions by choosing one of 16 income groups from a show card (see show card CC in Appendix B).
Institution participants	Participants who were part of the sample of residents in residential and nursing homes.
Intrinsic sugars	Any sugar which is contained within the cell wall of a food
LDL (-calc) cholesterol	Low density lipoprotein cholesterol. LDL cholesterol was not measured in this survey. Total serum cholesterol minus *HDL cholesterol* is taken as approximation of LDL cholesterol, uncorrected for triglycerides. For brevity the term LDL (-calc) cholesterol is used for non-HDL cholesterol.
LRNI	The Lower Reference Nutrient Intake for protein or a vitamin or a mineral. An amount of the nutrient that is enough for only the few people in the group who have low needs.
MAFF	The Ministry of Agriculture, Fisheries and Food
Manual social classes	Participants living in households where the head of household was in or retired from an occupation ascribed to *Social Classes* III manual, IV or V.
MCH	Mean Cell Haemoglobin
MCHC	Mean Cell Haemoglobin Concentration
MCV	Mean Corpuscular Volume
Mean	The average value.
Median	Value such that half the responses lie below and half above.
MRC	The Medical Research Council
MUAC	Mid upper-arm circumference
NDNS	The National Diet and Nutrition Survey
NME sugars	see *Non-milk extrinsic sugars*
Non-manual social classes	Participants living in households where the head of household was in or retired from an occupation ascribed to *Social Classes* I, II or III non-manual.
Non-milk extrinsic sugars	Extrinsic sugars, except lactose in milk and milk products
NSP	Non-starch polysaccharides. A precisely measurable component of foods. A measure of 'dietary fibre'.
OPCS	The Office of Population Censuses and Surveys, which carried out the National Diet and Nutrition Survey: Children aged 1½ to 4½ years. Now part of the Office for National Statistics (ONS).
Outside sources of foods	Food from outside sources is that which is prepared outside the participant's home, including food prepared in other private households such as those of friends and relatives, at luncheon and social clubs, in restaurants and cafes and takeaway food.

PAF	Postcode Address File; the sampling frame for the survey
PCV	Packed cell volume
Percentiles	Points in the distribution of the sample for a quantity, expressed as percentage points. In this report, 2.5 percentiles of the distribution are used, that is the values of a quantity which the bottom 2.5% of the distribution lie below (the lower 2.5 percentile) and that which the upper 2.5% of the distribution lie above (the upper 2.5 percentile).
Physical activity	Maximum intensity of physical activity. Participants were asked a series of questions designed to record the extent to which they were physically active through exercise and sports, walking, housework and gardening. Their answers were classified into one of four groups - vigorous, moderate, light and inactive - according to the maximum intensity of physical activity for activities they claimed to carry out at least once a fortnight. Activities were assigned to levels as follows: *Vigorous* Running or jogging *Moderate* Cycling, keep fit, swimming, badminton/tennis; 20 or more minutes of continuous walking at a brisk or fast pace; heavy housework or heavy gardening. *Light* Physiotherapy, dancing, golf, yoga, bowls, rambling; 20 or more minutes of continuous walking at a slow, steady or average pace; light housework or light gardening. *Inactive* None of the above
Plasma 25-hydroxyvitamin D (Plasma 25-OHD)	Index of vitamin D status measured in plasma
Plasma ascorbate	Index of vitamin C status measured in plasma
PUFA	Polyunsaturated fatty acid
Region	Based on the Registrar General Standard Region and grouped as follows: Scotland and the North (Scotland, North, North West, Yorkshire and Humberside) Central, South West and Wales (Wales, West Midlands, East Midlands, East Anglia, South West) London and the South East
Responding sample	Participants who completed an interview.
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 97.5% of the people in a group. If average intake of a group is at the RNI, then risk of deficiency in the group is small.
SBP	Systolic blood pressure
SCPR	Social and Community Planning Research
SD/Std Dev	Standard deviation. An index of variability which is calculated as the square root of the variance and is expressed in the same units used to calculate the *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.
SENECA	The Survey in Europe on Nutrition and the Elderly, a Concerted Action
SI units	*Système Internationale d'Unités* (international System of Units)
Social Class	Social class was coded for the participant and also for the head of household, if this was a different person, according to six groups (I, II, III non-manual, III manual, IV and V) specified by the Registrar General's Classification of Occupations. Classifications were based on each person's main job before reaching retirement age, in order to avoid assigning inappropriately low social classes to people who had taken on retirement jobs which were at a lower level than their previous occupations. For analysis in this report, the six groups have been classified into two larger groups, *non-manual* and *manual*.

Section 1: Background, purpose and research design

1 BACKGROUND, PURPOSE AND RESEARCH DESIGN

This chapter describes the background to the National Diet and Nutrition Survey of people aged 65 years or over, its aims, the survey design and methodologies. Subsequent chapters and appendices give more detailed accounts of the components of the survey.

1.1 The National Diet and Nutrition Survey Programme

The National Diet and Nutrition Survey (NDNS) programme is a joint initiative, established in 1992, between the Ministry of Agriculture, Fisheries and Food (MAFF) and the Department of Health (DH).

The NDNS programme aims to provide a comprehensive, cross-sectional picture of the dietary habits and nutritional status of the population of Great Britain. It also contributed to the health monitoring programme set out in the Government's 'Health of the Nation' White Paper.[1]

The programme aims to:

- provide detailed quantitative information on the food and nutrient intakes, sources of nutrients, and nutritional status of various subgroups in the population to inform Government policy;

- describe the characteristics of individuals with intakes of specific nutrients above and below the national average;

- provide a database to enable the calculation of likely dietary intakes of natural toxicants, contaminants and additives for food chemical risk assessment;

- measure blood and urine indices that give evidence of nutritional status or dietary markers and to relate these to dietary, physiological and social data;

- provide height, weight and other measurements of body size of a representative sample of individuals and to examine their relationship with social, dietary and health data, as well as data from blood analyses;

- monitor the diet of the population, divided into four age groups, to establish the extent to which it is adequately nutritious and varied;

- monitor the extent to which quantitative dietary and nutritional targets set by Government are being met;

- assess physical activity levels and relate these to dietary intake, nutritional and physiological status.

- provide detailed information on the condition and function of the tissues of the mouth in relation to dietary intake and nutritional status.

- help determine possible relationships between diet and nutritional status and ill health in later life.

The NDNS programme builds on the experience gained from the earlier Dietary and Nutritional Survey of British Adults.[2] Because different methodologies may be appropriate for different age groups, the programme is separately considering different age groups in the population; children aged 1½ to 4½ years, young people aged 4 to 18 years, adults aged 19 to 64 years, and older adults aged 65 years and over. The report of the survey of children aged 1½ to 4½ years, was published in 1995.[3]

1.2 The need for a survey

Following the survey of children aged 1½ to 4½ years[3], MAFF and DH agreed that the next group to be surveyed would be elderly people. People aged 65 or over were given priority over schoolchildren because it had been over 20 years since the diet and nutrition of elderly people had been the subject of a national survey. Furthermore the proportion of the age group in the population as a whole has been increasing, especially the size of the population of very old people aged 85 years or over. Two reports from the Department of Health Committee on the Medical Aspects of Food and Nutrition Policy (COMA) drew attention to the dearth of information about the nutritional status of people past pensionable age. The COMA report on Dietary Reference Values for Food Energy and Nutrients for the United Kingdom[4] repeatedly stressed the difficulty of giving guidance about nutrient requirements because of the absence of data about older people. The COMA report on The Nutrition of Elderly People[5] was also limited in its scope by lack of data and it made several recommendations concerning the need for more information to assess intakes of several nutrients, and to develop improved means of assessing nutritional status, particularly of very elderly people in institutions.

It was agreed that the survey should include a proportion of people living in institutions which was sufficiently large to give independent results. Although this group is a minority of the population of those aged 65 years or over, it probably includes a majority of those most frail in our society. A third of the people aged 85 years or over now live in institutions which represents a five-fold increase in the past 10 years. This frail group in society makes heavy demands on health care resources.

MAFF and DH are grateful to several outside experts for their advice, particularly during the design of the survey. These include members of COMA and the members of the MAFF Working Party on Dietary Surveys. Additionally, an invited group of experts met in December 1992.

The following principles were agreed at the outset:

i. That the population would be sub-divided into 10 year age groups and that in this respect and others where practical, the design should be comparable to the Department of Health and Social Security survey begun in 1967/8[6]. Where possible there would be compatibility with the DH, Health Survey for England[7].

ii. That the sample of participants would be representative - except that the numbers of men and women in all groups would be as equal as possible.

iii. That social circumstances should be explored in detail, also current drug therapy.

iv. That the ideal would be a weighed dietary record maintained for seven consecutive days. That

modifications to this ideal would be needed to take account of physical and mental impairment and to maximise response, such as reducing the number of days or accepting a semi-quantitative record.

v. That there would be an assessment of physical activity levels. That assessment of muscle power, possibly through grip strength, would be attempted.

vi. That haematologiocal and biochemical analyses would be included in the survey.

vii. That a oral health component was desirable.

viii. That body measurements would be taken and that blood pressure would be measured.

ix. That the option of additional tests such as bowel function should be explored.

MAFF and DH commissioned Social and Community Planning Research (SCPR), the University College London (UCL) Department of Epidemiology and Public Health and the Medical Research Council (MRC) Dunn Nutrition Unit (DNU) at Cambridge to carry out this survey.

1.3 The aims of the survey

The survey was designed to meet the aims of the NDNS programme in providing detailed information on the current dietary behaviour and nutritional status of people aged 65 years and over (older adults) in Great Britain, both living in the community and in institutions.

Additionally, this survey would:

i. Provide data to assist with the development of quantitative dietary and nutritional guidelines for older adults, and

ii. Provide information on social and domestic circumstances which may influence participants' food consumption and nutritional status.

To meet these aims the survey had to be designed to collect detailed information about the quantities of foods and nutrients consumed by older adults and demographic and lifestyle information. The survey also had to include anthropometric measurements and measurements of nutritional status in blood and urine and an oral health examination. Separate samples were required for 'free-living' individuals, that is people living in private households, and an 'institution' sample of those living in residential or nursing homes.

1.4 The sample design and selection

It was estimated that samples of 1,250 free-living adults and 400 adults in institutions were needed for analysis. The achieved sample for free-living adults required approximately equal numbers by sex for the age groups 65-74, 75-84 and 85 years or over. However, due to the relatively low number of men in the population aged 85 years or over, it was agreed that the sample for this group would be lower than for the other groups. Target sample sizes of 100 for men aged 85 years or over and 230 for each of the other five groups were set. The sample of adults in institutions was required to consist of roughly equal numbers of men and women, with no more than three residents

to be sampled from any institution. Both samples were required to cover all months of the year to reflect seasonality in dietary habits.

The free-living sample was selected using a multi-stage random probability design, with postal sectors as the first stage units. The small users' Postcode Address File (PAF) was used as the sampling frame. The frame was stratified according to region and 1991 Census data for social class.

Eighty postal sectors were selected as first stage units, with probability proportional to the number of postal delivery points; from each sector 375 addresses were randomly selected and sent a sift form which asked for details of the sex and age of every person living in the household. Non-responding addresses were visited by an interviewer who attempted to collect the same information as on the sift form. Copies of the sift form are reproduced in Appendix B. From the returns, households containing eligible adults were identified and a sample of individuals was selected using the probabilities required to produce the target sample sizes, with only one person being sampled per household. Addresses which were found to be institutions were excluded from the sample.

The institution sample was selected from the postal areas which contained the postal sectors of the free-living sample, since larger geographical areas were required in order to yield a sufficient sample of institutions. A sample of residential and nursing homes for elderly people in these postal areas was drawn from the Communal Establishments File for England and Wales (List C), maintained by the Office of Population Censuses and Surveys (OPCS), and from Section F of the General Register for Scotland. A total of 240 institutions were randomly selected with further institutions being selected as reserves for use if the original selections proved to be ineligible or unproductive.

To allow for seasonality, fieldwork was distributed over four waves, each of three months' duration. The four fieldwork waves were:

Wave 1: October to December 1994
Wave 2: January to March 1995
Wave 3: April to June 1995
Wave 4: July to September 1995

At the selection of the first stage units, that is the 80 postal sectors (postal areas for the institution sample), 20 sectors (areas) were allocated to each of the four fieldwork waves. The allocation took account of the need to have equal numbers of households in each wave of fieldwork, and for each wave to be nationally representative.

Letters explaining the survey were sent to each member of the free-living sample and to the manager of each sampled institution in advance of the interviewers' calls. Letters were also sent to Chief Constables of Police, Directors of Public Health and Directors of Social Services with responsibility for the selected areas, informing them of when and where the survey would be taking place. These letters are reproduced in Appendix B.

A detailed account of the sampling procedures and response to the postal sift is given in Appendix H.

1.5 The elements of the survey

To meet the aims of the survey it was necessary to collect dietary data, conduct physical measurements and take blood and urine samples. It was decided that collection of the dietary data, and information about health and lifestyle and other background information would be carried out by interviewers and the physical measurements and collection of blood and urine samples by nurses.

Survey interviewers asked sampled individuals if they would agree to:

- answer an interviewer-administered questionnaire, collecting general information about dietary habits, details of dietary supplements and medicines taken, and information about physical activities and health;

- keep a four-day weighed record of all food and drink consumed, both in and out of the home (the 'food diary'); (a four-day record was chosen instead of a seven-day record because it was found to produce better levels of compliance and completion in the feasibility study[8]);

- answer a short questionnaire after the recording period had finished, concerning any difficulties in keeping the dietary record, and any circumstances which may have affected their eating habits during the recording period, such as illness (this information would assist the survey nutritionists in evaluating the quality of recording in the dietary record);

- keep a seven-day record of the number of bowel movements;

- answer an interviewer-administered 'memory questionnaire' to test cognitive function;

- complete a 'depression questionnaire';

- agree to be visited by a survey nurse;

- agree to be visited by a dental examiner (covered in a separate report[9]).

Survey nurses asked the sampled individuals to:

- agree to the following measurements being taken: height, weight, arm demi-span, mid upper-arm, waist and hip circumferences, blood pressure, hand grip strength and visual acuity (the visual acuity test was a separate study and is not reported here);

- agree to provide samples of blood and urine

Interviewers were allowed to collect proxy information from a household member or carer for the questionnaires, food diary, and bowel movement record if the participant was unable to provide some or all of the information required, for example in cases of mental or physical infirmity.

With the participant's consent, their family doctor or General Practitioner (GP) was notified of their inclusion in the survey and was subsequently informed of their blood pressure and some of the blood results. Nurses obtained written and witnessed consent for taking the blood sample. If the participant had a mental infirmity and was unable to give informed consent, nurses were required to

seek written proxy consent for the blood sample and the other measurements from the participant's next of kin, or, if there was no next of kin, from their principal carer.

Copies of the fieldwork documents are provided in Appendix B.

As a token of appreciation for completion of the dietary record for the full four days, £10 was paid to the participant (or carer).

A feasibility study was carried out by SCPR, UCL and the DNU in February 1994 to test the sampling procedures, questionnaires and dietary methodology and to develop protocols for taking physical measurements and blood and urine collection for both free-living and institution samples[8]. This study showed that the methodologies were feasible, although modifications were required to improve levels of co-operation. Further details of the feasibility study are provided in Appendix A. After the feasibility study further pilot work was undertaken in August 1994 to test modified dietary procedures for the institution sample.

1.6 Fieldwork

Fieldwork was conducted by interviewers and nurses who had been recruited and trained by SCPR. Interviewer and nurse training for the procedures particular to this survey was carried out at two-day briefings conducted by the survey team, including researchers and nutritionists from SCPR and staff from UCL and the DNU, including the Survey Doctor. The first half-days of these briefings were jointly for the interviewers and nurses while the remainder of the training was separate. Staff from the two client departments also contributed to the briefings.

In addition to the briefings full written instructions were provided for interviewers and nurses, prepared by members of the survey team.

1.7 Plan of the report

Chapter 2 and its associated appendices describe the survey methodologies. The reasons for the choice of a four-day weighed dietary record are discussed. The recording and weighing procedures for foods eaten in and out of the home, food and brand coding and editing procedures carried out on the completed dietary records are described including differences between the methods adopted for the free-living and the institution samples. The purpose and choice of measurements and the techniques and instruments used are reported. This section also explains the purpose of obtaining the blood and urine samples, the techniques and equipment used, and the analyses carried out.

Chapter 3 gives details of response to the different elements of the survey for the free-living and institution samples and the characteristics of the achieved samples.

Chapters 4 to 12 report the substantive results of the survey. As some participants chose not to co-operate with all elements of the survey, data presented in these chapters are based on those co-operating with that element, rather than on those who completed all elements of the survey. Chapters 4 to 9 cover results based on the dietary records, the food consumed *(Chapter 4)* and energy and nutrient intakes *(Chapters 5 to 9)*. Chapter 10 reports on the anthropometric and grip strength data and Chapter 11 on the blood pressure results. Chapter 12 reports on nutritional status indicators in blood and urine and associations with nutrient intakes.

The report presents descriptive statistics for the variables measured and associations with demographic, social and behavioural characteristics of the sample populations. Where appropriate, data from this survey have been compared to other similar dietary surveys, including the nutrition surveys of elderly people of 1967-8[6] and 1972-3[10]. However, it should be noted that it is often difficult to make direct comparisons with other surveys because of differences in study design and methodology.

A copy of the survey database will be deposited with The Data Archive at the University of Essex following publication of this Report. Independent researchers who wish to carry out their own analyses should apply to the Archive for access.[11]

References and notes

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[9] Steele JG, Sheiham A, Marcenes W, Walls AWG. *National Diet and Nutrition Survey: people aged 65 years and over. Volume 2: Report of the oral health survey.* The Stationery Office (London, 1998).

10. Department of Health and Social Security. Report on Health and Social Subjects: 16. *Nutrition and Health in Old Age 1972-3.* HMSO (London, 1979).

11. For further information about archived data please contact:

The User Services Section
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Section 2:
Methodologies

2 METHODOLOGIES

2.1 The choice of dietary methodology

The survey used a weighed dietary intake methodology to provide quantified food and nutrient intakes for people aged 65 years or over.

A weighed intake method had been used successfully in two previous Government surveys, the Dietary and Nutritional Survey of British Adults[1] and the National Diet and Nutrition Survey for children aged 1½ to 4½ years[2]. A feasibility study was conducted to assess whether this method would be suitable for people aged 65 years or over, both free-living individuals and those living in residential and nursing homes, and whether accurate information could be obtained from physically or mentally frail people[3].

The results of the feasibility study showed that the weighed intake method could be used effectively with free-living individuals but was less effective for those in institutions, due to their greater frailty and to difficulties in ensuring co-operation of care staff over a four or seven day recording period[3].

It was decided to ask free-living participants to weigh and record all food and drink consumed during the recording period. Institution participants would be visited daily by the interviewer to weigh one main meal and they, or their carers, would be asked to keep a descriptive record of food and drink consumed for the remainder of each 24-hour period. The two methodologies are detailed in Appendix C.

2.2 Choice of number and pattern of recording days.

The number of days for the dietary record needed to be sufficient to represent usual dietary intake patterns, yet not too onerous for the participants. Two alternative recording periods were tested in the feasibility study, seven days and four days.

Evaluation of the seven and four day dietary records showed no significant differences between average nutrient intakes for the two recording periods. However, those asked to complete four day records showed higher levels of compliance and completion of the record than those keeping a seven day record. It was decided to use a four day recording period and weight the food consumption recorded to produce values for seven days[3].

The feasibility study showed that intakes of some nutrients varied according to the day of the week. It was therefore considered essential to have records for all days of the week in the main survey and a dietary record placement pattern was selected which would ensure an even spread of start days throughout the week.

2.3 The questionnaires

Participants were asked by the interviewer to answer a series of questionnaires. These are reproduced in Appendix B.

Main questionnaire
This questionnaire was in three sections so that it could be split between separate visits, if necessary. The first section, which covered participants' usual mealtimes and the types of food and

drink they usually consumed, the types of food and drink they avoided, their use of salt, artificial sweeteners, herbal teas and alcoholic drinks, smoking and use of dietary supplements and medicines, was administered before the dietary record was explained.

The second and third sections collected information about use of meals on wheels, attendance at luncheon clubs, home food delivery and shopping, accommodation, household composition, habitual physical activities, health, employment, receipt of pensions and benefits. A common questionnaire was used for both free-living and institution participants, although some questions were particular to one or other group. A modified version of this questionnaire was used for cases where information was collected from a proxy informant with the agreement either of the participant or, if the participant was mentally frail, of a carer.

Memory questionnaire
Participants were invited to answer a 'memory questionnaire' which tested cognitive function. Interviewers were instructed to administer this questionnaire at the start of their first visit if they considered there was a possibility that the participant would not be able to provide the information required for the survey, due to cognitive impairment, or on a later visit if this was not the case. Guidance was provided on how to interpret the answers in order to decide whether to interview a proxy person instead of the participant.

Depression questionnaire
Participants were asked to complete a self-completion questionnaire about mood on one of the interviewer's later visits. It was intended that this should be completed by the participant alone, although assistance from the interviewer, another household member or a carer was given when necessary.

Final visit questionnaire
At the end of the four day dietary recording period, the interviewer asked the participant if any special circumstances might have affected their eating behaviour during this time, and whether there were any foods or drinks which they thought they had omitted to record. Information was collected on illness suffered by participants during the recording period and whether this affected their diet. Interviewers also recorded any other circumstances which might have influenced eating habits or the quality of the diaries. This information and the details of eating habits provided by the participants in the main questionnaire were used by the survey nutritionists when checking the dietary record.

At the end of the final interview, participants were asked to agree to be visited by a dental examiner some weeks later (the Oral Health Survey is covered in a separate report)[4].

2.4 The dietary records and recording procedures

This section provides brief descriptions of the dietary records and recording procedures used for the free-living and institution participants. The dietary records are reproduced in Appendix B.

2.4.1 Free-living participants

Free-living participants were issued with Soehnle Quanta digital food scales. They were asked to keep a weighed record of all food and drink consumed over four consecutive days. Two versions of the dietary record were provided, the `home diary' for use at home and a simplified ‘eating out

diary' for use outside the home.

The home diary was used for recording a description of every food and drink consumed at home, its brand, who provided it and the time at which it was consumed. The weight served was recorded along with a description and weight of any leftovers. Participants were also asked to record medicines and dietary supplements taken.

Interviewers demonstrated how to weigh and record foods and drinks, including second helpings and leftovers, and provided written instructions. Where the participant was unable or unwilling to keep the record, if the participant agreed their spouse or carer was asked to complete it on their behalf.

Weighing every cup of tea or coffee consumed was found to be onerous for participants in the feasibility study. To reduce the participant's workload in the main survey, the participant was asked to weigh a typical cup or mug of tea and coffee and these weights were used for the remainder of the recording period.

The home diary also contained pages for free-living participants to record the type and amount of ingredients that were used in recipes for home prepared foods consumed during the recording period.

The feasibility study showed that some participants who were unable or unwilling to weigh their food and drink could be encouraged to keep a descriptive diary of the food and drink they consumed. This practice was continued in the main survey only where the requirement of weighing foods would have lead to non-participation. The interviewer questioned the participant or carer about each item recorded in order to get an indication of portion size. As far as possible, interviewers timed their visits to these participants to coincide with mealtimes so that they could weigh the meals for the participant. Weights were also obtained from food packaging which all participants were encouraged to keep during the recording period.

Interviewers returned on the first day of recording to resolve recording or weighing difficulties, to probe items not adequately described, to check that leftovers had been recorded and to give encouragement to the participant. At this and each subsequent call, the interviewers collected the completed diary pages for immediate coding. This allowed them to check for missing or incomplete entries which could be resolved by asking the participant further questions at the next visit. Interviewers made a minimum of one further call during the recording period in cases where the participant was coping well with the weighing and recording task; other participants needed more calls to obtain full information for each day.

The eating out diary was intended to be used whenever participants were away from home and unable to weigh the food and drink they consumed. Participants were asked to record in this diary a description of every food and drink, along with the time, the amount consumed, the price and the place of purchase. Interviewers could then purchase duplicate items of the foods eaten away from home and weigh them. Participants were also asked to keep any packaging from food items to provide weights and other information for the interviewer.

2.4.2 Participants living in institutions

In institutions interviewers weighed and recorded in the home diary one meal served to the

participant each day. They aimed to weigh and record at least one breakfast, one lunch and one evening meal across the recording period. The participant or a carer was given a simple 'food record' to record the types and amounts of food and drink consumed while the interviewer was not present. Those participants who ate outside the institution were also given an eating out diary. The interviewer completed the main dietary record by transferring the information given in the eating out diary and the food record. To assist the completion and coding of the diary, the caterer at the institution was asked to provide further information about ingredients and portion sizes of foods served. The survey nutritionists assigned estimated weights to items which had not been weighed.

2.4.3 Coding the dietary record

Interviewers were required to code each entry in the diary using a codelist containing descriptions of over 3,500 foods. To code each item accurately, they needed to collect detailed information about every food and drink consumed. Composite items, such as a salad, entered on one line had to be split into their constituents by the interviewer before coding. Foods and drinks recorded in the eating out diary and the institution food record were transcribed by the interviewer into the main diary before coding.

Brand information was recorded by the participant and used by the interviewer to assign brand codes to certain items. For foods not provided from home stocks, for example meals provided by relatives or meals on wheels, the ‘source’ was coded. Survey nutritionists were available to answer interviewers’ coding queries.

Every food diary was checked for incorrect and missing codes and weights by the survey nutritionists prior to electronic data entry. At this stage unweighed foods were given estimated weights, which were marked to distinguish them from weighed data.

2.4.4 Diary data entry and editing

Once the completeness and consistency of the diary information had been checked, daily nutrient intakes for each participant were calculated by linking the quantities of each food consumed with the nutrient databank. The nutrient databank, compiled and maintained by MAFF, holds nutrient data on 55 nutrients for over 3,500 foods and is detailed in Appendix E.

Full details of data entry and editing procedures are given in Appendix C.

2.5 Bowel movement record

On the visit when the dietary record was initiated, participants were also asked to keep a seven day record of the number of their bowel movements. The record is reproduced in Appendix B.

2.6 Anthropometry, blood pressure and grip strength

Participants were also asked to agree to be visited by a nurse on a convenient day after the start of the dietary record for the physical measurements and collection of blood and urine samples.

Anthropometry, the measurement of body size, weight and proportions, is an intrinsic part of a nutritional survey as is measurement of blood pressure. This survey provided measurements of height, weight and other body dimensions which could be related to social, dietary and health data,

as well as the results of blood analyses. A measure of hand grip strength was included as an indication of muscle strength which may be related to nutritional status and the level of physical activity.

2.6.1 Choice of anthropometric measurements

A number of factors needed to be considered when deciding which measurements should be taken; these included the acceptability of the measurement to participants, whether equipment suitable for use in the home was available, and whether nurses could be trained to take the measurements accurately.

Height and weight measurements were also used to derive the Quetelet or Body Mass Index (weight[kg]/height[m]^2), a measure of body fatness.

Demi-span, which is the distance between the sternal notch and the finger roots with the arm out-stretched laterally, was used as an alternative measure of skeletal size. Height measurement may be difficult or inaccurate for people who are unable to stand straight or are unsteady on their feet and, furthermore, most people lose height as vertebrae and vertebral discs compress and shrink with age.

Mid upper-arm circumference, waist and hip circumferences were measured to give information on body size and waist-hip ratio was derived.

Triceps and subscapular skinfold thickness measurements had been tested in the feasibility study but were found to be inaccurate with high intra and inter-observer variability, and thus these measures were not included in the main stage of the survey.

2.6.2 Training and recruitment of the nurses

Nurses of grade E or above with recent experience of phlebotomy, particularly with elderly people, were recruited locally by advertisement.

Nurses were trained in accurate measurement techniques at two-day briefings which included practice in all the measurements, including the phlebotomy procedures. The second day concluded with an exercise during which each nurse repeated anthropometric, blood pressure and grip strength measurements on a series of subjects in order to check for consistency of measurement between nurses.

Written instructions were also provided and experienced Nurse Supervisors accompanied the nurses on some of their visits and telephoned them weekly to check on their progress.

2.6.3 Techniques and instruments used

The anthropometric, blood pressure and grip strength measurements were each taken on the nurse's first visit to the participant. Interviewers were allowed to arrange this visit to take place at any time after the start of the dietary record. They accompanied the nurse for at least the initial part of the visit, which covered explanation of the measurements to be taken and the obtaining of written consents. The next visit, at which participants provided samples of blood (after written consent had been obtained) and urine, was made by the nurse alone.

This section provides brief descriptions of the techniques and instruments used. For further details see Appendix G which contains the protocols for the anthropometric measurements.

Height: the measure was taken with a portable, digital, telescopic stadiometer. Measurements were taken to the nearest millimetre. Prior to taking the measurement, participants were asked to remove their shoes and nurses checked that the participant's head was horizontal in the Frankfort Plane.

Weight: the measure was taken to the nearest 100 grams using Soehnle Quantratronic digital personal scales on a hard level surface. Participants were asked to remove shoes and heavy outer garments and objects.

Demi-span: the measurement, from the sternal notch to the finger roots with the right arm stretched laterally, was taken with a retractable tape with a hook attached to the end. The measurement was taken twice to the nearest even millimetre. Participants were asked to remove any items of clothing which might distort the measurement, such as ties or thick necklaces,

Waist, hip and mid-upper arm circumferences: the measures were taken using an insertion tape (a standard measuring tape with a metal buckle at one end). Two measurements were taken, to the nearest even millimetre. Participants were asked to wear light clothing for the measurements and to remove outer layers of clothing or tight garments which might affect the measurements. The waist and hip circumferences were taken by passing the tape around the body and inserting the end through the buckle at the other end of the tape.

The mid-upper arm circumference was measured on the left arm in two stages. Firstly, the mid point of the upper arm was located and marked using a skin marker pen. Secondly, the circumference at this point was measured using the insertion tape. Two measurements were taken to the nearest even millimetre.

Blood pressure: pulse rate and systolic, diastolic and mean arterial pressures, were measured three times at one minute intervals on the participant's right arm using a Dinamap automated sphygmomanometer.

Grip strength: this measurement was taken separately for each hand, using the Nottingham Handgrip Dynamometer. Measurements were taken to the nearest 100 grams. The participants were seated with their forearms resting on a table and their elbows at ninety degrees. They were encouraged by the nurse to squeeze the handgrip for one submaximal practice followed by two maximal efforts of approximately three seconds duration each.

In addition to these measurements a visual acuity test was carried out at the end of either the first or second nurse visit. This was a separate study and is not reported here.

2.7 Purpose of obtaining a sample of venous blood and urine sample collection

One of the main aims of the NDNS programme is to assess the results of analyses of blood and urine in relation to dietary, physiological and social data. A major outcome of this nationally-representative survey will be the definition of age-related reference ranges of blood indices for a range of nutrients for older adults in Great Britain. Venous blood samples were obtained in nearly all cases after an overnight fast to ensure that the levels of nutrients, especially blood lipids, would be representative of tissue status.

Approval from National Health Service (NHS) Local Research Ethics Committees, for each of the 80 postal code sectors of the survey was obtained before carrying out the fieldwork. Up to 30ml of blood was taken from participants. As in the pre-school child survey[2], if there was insufficient blood to measure all of the designated analytes, then those with greatest clinical significance, for reporting to the participants and their GPs, were preferentially analysed. The order was as follows:

1. Haemoglobin and other haematological indices;

2. Clotting factors (fibrinogen, prothrombin time; activated partial thromboplastin time);

3. Analytes with possible clinical relevance in plasma, namely the degree of saturation of iron-binding capacity with iron, ferritin, folate, vitamin B_{12}, creatinine, urea, albumin, cholesterol, triglycerides and 25-hydroxy vitamin D;

4. Other analytes in plasma (fat and water-soluble vitamin indices; minerals related to bone health, trace elements; gamma glutamyl transferase, and HDL-cholesterol).

In addition, first void on rising single urine samples were collected, for the analysis of urine sodium, potassium and creatinine levels. Creatinine measurements provide a basis for inter-subject comparisons which are an alternative to 24-hour urine collections when spot samples are to be analysed. Full details of the blood and urine analyses are given in Appendix N.

Approval was obtained from the NHS Local Research Ethics Committee, for blood remaining after completion of the above analyses to be stored, with the consent of the participant, and an undertaking was given that no sample would be tested for Human Immunodeficiency Virus (HIV). Participant confidentiality was safeguarded by ensuring that all samples and results were identified by the participants' code numbers alone; only those survey personnel who needed to contact the participants or their GPs directly had access to the link between participants' names and their survey codes.

2.8 Procedures for obtaining the blood and urine samples

All procedures associated with the processing and analysis of the blood and urine samples were contracted to the Medical Research Council Dunn Nutrition Unit (DNU) in Cambridge, whose staff worked closely with SCPR throughout the survey. The nurses, who were recruited by SCPR for the anthropometry and the blood and urine sampling procedures, were also trained by members of the DNU and were in telephone contact with the Survey Doctor, the DNU Survey Office and their Nurse Supervisors throughout the fieldwork for advice. If additional phlebotomy training was required this was organised by Sarstedt (68 Boston Road, Beaumont Leys, Leicester), the manufacturer/distributor of the phlebotomy system which was used for blood collection.

2.8.1 Venepuncture procedure

The blood samples were collected via a Sarstedt "Multifly" butterfly needle, generally in the antecubital vein. The Sarstedt system was selected because it is a closed system; the risk of clotting during blood collection is minimal and the available tube sizes and types were suitable for the survey's requirements.

Full details of the procedures for collecting and processing blood and urine are given in Appendix N.

2.8.2 Subdivision and stabilisation of blood samples at the local hospital laboratories.

Each local laboratory was recruited by the DNU, in consultation with SCPR, to ensure a) proximity and accessibility from the participants' places of domicile and b) willingness and ability to carry out the processing and storage of the blood and urine samples, which required centrifugation at 4°C and storage of sub-samples at -40°C or lower.

2.9 Ethical Approval

The DNU, assisted by the Survey Doctor, sought ethical approval for the survey procedures from each of the NHS Local Research Ethics Committees covering the 80 sampled areas. All Committees gave their approval, although in a few individual instances, some very minor variations from the basic protocol were imposed. Information about the survey was sent to the Directors of Public Health (Chief Administrative Medical Officers in Scotland), Chief Constables of Police, and Directors of Social Services, with a request for them to inform the appropriate local staff.

2.10 Consent procedures

Written consent was requested from each participant by the nurse, for the following aspects of the survey.

1. Permission to inform each participant's GP of the results of any blood pressure measurements taken. (If this consent was not given, then no blood pressure measurements were taken, since it was considered that if any result was abnormal the nurse would be in an ethically difficult position because there would be no means of ensuring that the participant received appropriate clinical advice);

2. Permission to take a blood sample (this consent signature also had to be witnessed by someone other than a member of the survey team);

3. Permission to inform the participant's GP of the results of the clinically-significant blood measurements;

4. Permission to store remaining blood and urine and to carry out unspecified additional assays, but specifically excluding the identification of viruses, such as HIV, or associated antibodies at some time in the future;

5. Permission to flag the NHS Central Register of Births and Deaths to ensure automatic notification of the participants' development of cancer or cause of death (to permit future epidemiological research).

Nurses explained these aspects with reference to a leaflet which described the physical measurements and their purposes and the consent which was to be signed by the participants. All participants were told that they could withdraw their consent at any time.

Proxy Consent

Special procedures were developed for those participants who were deemed, from the results of the memory questionnaire, to be incapable of providing informed consent. It was considered important to include this group in the survey because they are particularly vulnerable yet have tended to be excluded from previous nutrition surveys. Moreover this group, principally suffering from dementia, may be at greater risk of nutritional inadequacy.

Several authorities and professional bodies have produced guidelines which identify situations in which it may be ethically justified for another person to give consent on behalf of a mentally impaired individual[5,6]. A crucial determinant of these circumstances is that the research is likely to benefit other persons who are similarly incapacitated, and that the same information cannot be obtained by research on persons who do not belong to this group[7]. Provided the procedure is of minimal risk to the individual, for instance, venepuncture, there is a strong ethical case for this type of non-therapeutic research. Progress in the treatment of people with mental confusion is dependent on a better understanding of their disorder and possible preventive or therapeutic opportunities[8]. To proceed, it is important that the subject appears to agree or does not actively resist the procedures, that a proxy consent giver agrees and that there was no previously written request by the subject which implied refusal to participate[9]. In cases in which a subject is too confused to be able to give meaningful informed consent, it is suggested that permission for their participation should be sought from a close relative or independent person who knew the incapacitated person well and could protect his or her interests[10].

For the purposes of this survey, the proxy consent giver was, wherever possible, the next-of-kin or else a day-to-day carer who was independent of the survey team. Proxy consent was required for all the measurements, including those which did not require written consent from those participants who were capable of giving their own consent. Nurses were instructed with regard to the constraints of proxy consent: thus no procedures could be carried out if the participant appeared to object, resist or become distressed.

A copy of the consent form and an information card handed to each participant, is given in Appendix B.

2.11 Urine Collection

It had been shown during the feasibility study[3] that many participants found it difficult to collect a 24-hour urine sample reliably, and it was considered to be inappropriate to use the PABA-check procedure during the main survey. For this reason a single urine sample was preferred.

During the first visit the nurse instructed each participant to collect a single early morning sample of their urine in a 25ml glass screw-capped container on the morning of the second visit, just before the blood collection. A plastic jug was also provided to assist in collection. This sample, after labelling, was taken by the nurse with the heparinised blood samples to the local hospital laboratory for storage at -40°C or below, before transportation to the Dunn. It was used for assays of sodium, potassium, and creatinine contents.

2.12 Procedures for reporting results to the participants and their GPs

Subject to consent, GPs were notified immediately following the first visit by the interviewer that the participant was taking part in the survey. If blood pressure measurements were taken, then any

consistently abnormal values (that is systolic pressure above 180 or below 90 mm Hg; diastolic pressure above 120 mm Hg), were reported immediately to the GP by telephone. The nurse also informed the Survey Doctor.

Haematology results were sent by the Haematology Laboratory, Addenbrooke's Hospital, Cambridge to the DNU Survey Office within 2 to 3 weeks of sample collection. They were then sent, with a covering letter, to the GP and to the participant, together with the blood pressure results. The GP, but not the participant, also received a list of the measurement ranges considered to be clinically normal in this age group, and the participant was advised to consult their GP if any results were abnormal.

The biochemical analyses were performed in batches, several months after sample collection, and the results were available 3 to 6 months after sampling. The results of analytes considered to have clinical significance were then reported to the participant and to their GP, in a format similar to that used for the haematology results. Again, the reference ranges were sent only to the GP and the participant was advised to consult their GP if any abnormal values were found.

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Section 3: Questionnaire and diary coding

3 QUESTIONNAIRE AND DIARY CODING

This section contains extracts from the instructions issued to interviewers concerning the administration of the main interview and food diary.

3.1 Main questionnaire

Section One: Food and drink

Q10 *Artificial sweeteners in food/cooking.* You may find that respondents who never cook have difficulty in answering this question and you may need to check with another member of the household, or a food provider/cook in the case of institutions, in order to obtain the required information.

Q14 *Brands of artificial sweetener*. Try to see packet if you are able and copy down exact brand name of each sweetener and its form (tablets, etc)

Q18 *Milk.* Codes 01 to 03 relate to cows' milk only

Q19 *Meat products* are foodstuffs which are purchased containing the relevant kind of meat in a processed form. Cooking or curing (smoking, salting or drying) do not in themselves count as processing. Processing will usually involve mixing with other ingredients.

Thus, for example, purchased steak pies, corned beef, beefburgers, or tinned meat-balls, would all count as meat products. On the other hand, steak or beef bought from a butcher (including minced beef) or roast beef, pastrami or salt beef would be coded as beef even if the respondent subsequently made it into a pie, hamburger or meat-balls, etc.

Q22 *Vitamins, minerals and food supplements.* The product licence number will appear, if at all, on the label or box containing the supplement (not all supplements have PL numbers). It will usually have two groups of 4 digits (note that in the questionnaire the separating double bar is in the wrong place) and may be identified by the letters PL.

eg. PL 4408/0023

If you see a number, but are not sure whether it is the product licence number, write it down anyway but underneath the boxes.

- If more than five supplements are taken, record further details on a separate sheet and attach to the questionnaire.

- If any supplements are prescribed by a doctor they should ideally still be entered at this question rather than on a Medicine Sheet. However, if you are unsure whether a prescribed item is a supplement or not you should enter it on the Medicine Sheet.

Q25 *Medicines.* Remember to complete the Medicine Sheet(s) at the end of this question. Three medicines may be entered on each sheet. You should use as many sheets as necessary, entering the serial number at the top and numbering successive sheets for the same sample member 1, 2, 3 etc.

The bottom copy of the Medicine Sheet(s) will be given by you to the nurse who will need to know about respondent's medication prior to taking a blood sample. The top copy is returned by you together with other documents relating to that respondent.

Please note the importance of getting full details of all medicines taken in the relevant period. In particular, it is essential that you obtain precise information about the main strength and frequency of consumption of each prescribed medicine. Always enter the respondent's actual frequency of taking the medicine which may not be the same as the frequency shown on the box/bottle.

You are also asked to collect the produce licence number (P/L) which is to be found on the label of the medicine (see instructions at Q22 above).

See also instruction for prescribed vitamin, mineral or food supplements at Q22.

Q26-Q29 *Drinking.* The information collected here will be used to look at the relationship between drinking habits and health. We are only interested in alcoholic drinks - not in non-alcoholic or low alcoholic drinks. Make sure that the respondent is aware of this. This is why we exclude canned shandy (which is very low in alcohol). However, shandy bought in a pub or made at home from beer and lemonade does have a reasonable alcohol content and so is included.

Q28 *Amount drunk on any one day.* Ask this question for any of the groups of drink that the respondent has drunk in all the last 12 months (see Q27). If the respondent says the amount he/she drinks on any one day varies greatly, ask him/her to think of the amount he/she would drink most often.

For shandy and for beer the amount is coded in half pints, so any answers given in pints will need to be multiplied by two before entering. With beer you also have the option to code in cans if the respondent answers in this way. If the respondent tends to drink cans and halves in a usual drinking occasion, then write in both on the questionnaire.

Spirits are recorded in singles - so if the answer is given in doubles multiply it by two before entering. A nip or a top should be treated as a single. Miniature bottles contain two singles, a normal bottle contains 27 singles, half a bottle contains 14 singles. If someone gives a different measure eg "I have a couple of spoonfuls of brandy in my coffee" then ascertain the size of spoon and write this in.

For wine the answer is in glasses:

A carafe or 70 centilitre standard bottle = six glasses

half a bottle = 03 glasses

one third or one quarter bottle = 2 glasses

litre bottle = 8 glasses

half a litre bottle = 4 glasses

a third of a litre bottle = 3 glasses

quarter of a litre bottle = 2 glasses

Sherry is usually drunk in small glasses but if it is drunk in schooners this is counted as 2 glasses. One bottle of fortified wine is 14 small glasses.

For any other type of drink please write in the measure if it is coded "other".

Q30-Q37 *Smoking.* In this section we are interested in looking at ordinary tobacco which is smoked. Ignore references to snuff, chewing tobacco or herbal tobacco. Include hand rolled cigarettes.

Q31c. *Number of cigarettes usually smoked in a day (ex smokers).*
If the ex smoker has cut down gradually over time find out the number they used to smoke at peak consumption

Q31/Q35 *Number of cigarettes/cigars usually smoke(d)*
Q36c If a smoker cannot give an answer in number of cigarettes/cigars, but only in, say, ounces of tobacco, then write the answer next to the boxes.

Section Two: Lifestyle

The first part of this section is divided into two parts, for the Free Living sample (Q38b to Q59) and the Institutional sample (Q60 to Q75).

Q41 If you are in doubt as to whether a club constitutes a "luncheon club/social club etc", write in the full details so that we can code it in the office later.

Q46 Note that this question relates to how long food would be kept in a can by anyone in the household who deals with food preparation. If the respondent spontaneously states that he/she never stores any food in an open can you may code '1' at the top of the page and proceed to the next question.

Q52e *Food and grocery shopping done for the respondent.* Note that this excludes any home deliveries (recorded at Q49 and Q50) and any trips on which the respondent

is also present (these should be recorded at Q52a).

Q53 and Q54 — Please re-read the definitions of *household* and *head of household* in your interviewer manual.

Q63a — *Place where living before came to institution.* Please note that the place of residence immediately before the respondent entered the institution is required. This may be a short hospital stay or other transitional arrangement such as staying with relatives.

Q66b and Q67b — By *"main course"* we mean the main element of the main course part of the meal - eg "Roast Chicken", "Shepherds Pie", "Vegetable Lasagna", etc

Qs60-75 — *Institutional sample.* It is likely that you will need to obtain proxy information from care staff for some of the questions. Qs65-67, Q68a and Q69a relate to the institution as a whole and providing that the circumstances covered are the same for all sampled residents you will only need to ask these questions once and may copy them for other interviews in the same institution. However, questions relating to respondents themselves (Qs60-63, Q68b, Q69b, Qs70-75) will need to be obtained individually from the respondent, or proxy, if applicable.

Q79 — *Going outdoors at all.* This will include going outdoors for the purpose of food or grocery shopping which you will already have asked some respondents about at Q51.

Q80b/c — *Walking.* Note that these questions refer to continuous walking. Effectively, this means purpose of walking for the designated time period without breaks.

Q84 — *Activities currently undertaken.* Note that we do not want to double count anything here. In particular, this means that if time spent rambling/long distance walking (code 11) has already been referred to in the earlier questions on walking (eg Q80a), we do not want it recorded here again.

Q87a and Q88a — These questions refer to heavy and light housework, respectively.

Section Three: Health and classification

Q93b — *Long standing illness, disability or infirmity.* Please probe this fully so that we can code it in as much detail as possible. Also please remember to probe for the possibility of more than one disease, disability etc.

Q111a etc — *Employment.* These questions ask about the *respondent's* main pre-retirement job. By main we mean what the respondent considered to be his/her main job at the time he was doing it. If the respondent changed career during his/her pre-retirement life, please ask about the most recent of the main jobs he/she did.

Q118 etc — These questions cover the current, most recent or main job in the working life of

the *Head of Household* (HoH), as identified at Q54, if the HoH is not the respondent. Use Q118ab to identify which job should be asked about.

3.2 The Food and Drink Weighing and Recording Procedures (Free Living)

We need a record of all the food and drinks typically consumed by the respondent. This information must then be coded in such a way that a computer can convert it into a measure of the amount of nutrients the respondent typically has in their diet. In order to do this we need very exact details about the foods consumed, the way they are prepared and the weights of each food as served. The respondent should continue to follow their normal eating pattern.

Therefore, we are asking the respondent to:

* Weigh all the food and drink that they consume over a 4 day period

* Record the weights, along with detailed descriptions of every food and drink

And the interviewers task is to:

* Explain and demonstrate the use of a set of food scales so that the respondent can weigh their food and drink

* Explain and demonstrate the use of the food diaries in which the respondent records everything they eat and drink

* Check that the food diaries are completed correctly, that weighing is done accurately and that enough description is given for each food or drink to be coded

* To code every food or drink that occurs in the diaries

What should be recorded in the diaries:

- ALL foods, eaten either inside or outside of the home.
- ALL drinks, including alcohol and water.
- ALL vitamin and mineral supplements.
- ALL medicines (including those which are inhaled)**.**

Everything consumed by the respondent during the recording period should be recorded in detail. You will have already asked the respondent about their eating pattern (question 2 of the questionnaire) and you should refer to it when checking the diary for omissions. Remember to probe for water or drinks when tablets or pills are recorded in the diary.

A laminated card, with details of how to weigh and fill in the diary on one side and an example diary page on the other, has been produced for each respondent. Once you have explained the weighing and recording procedures to the respondent, you can leave this card with them for reference.

The food and drink diaries:

There are two recording diaries; the main, A4 sized `Food and Drink' diary which is used for all foods eaten inside the home, and a smaller `Eating Out' diary used for all foods eaten away from the home.

You need to stick a serial number label to the front page of the diary, on the second page with the food information questions, and to the back of every diary page that has food entries on it. On each diary page there is a box to tick to indicate that you have affixed a label to that page.

For both diaries, a new page should be used at the beginning of each day. The first page, and any other pages used that day, should have both the day and the date filled in by the respondent. The main diary also has a question for the respondent to indicate how well they feel.

Always use a different colour pen to the respondent when writing in details probed, for duplicate weights and for coding. You should try to use a red pen when writing on the diary. If the respondent uses red pen, you should make a note of it on the front of the diary and also write down the colour you have chosen to code in.

Completing the main diary

Before the respondent begins recording you should complete the front cover of the main diary, noting the days on which they are to record what they eat and drink. You should also write on your name, and, if you wish, your telephone number. The cover also has a section for you to write the day and time of future visits as planned with the respondent.

The second page of the diary should be completed by you in conversation with the respondent; this page serves as a useful check for you when coding. You should complete this page during the first visit, it can be used to show the respondent the amount of detail required, and will give you information to help you code the diary.

Following the second (information) page, each diary then contains twenty four pages for recording food and drink consumed along with five pink recipe sheets. You should remove completed diary pages for coding at each checking call and should ensure that the respondent always has sufficient pages for recording.

The recording pages have nine columns, the first five are for the use of the respondent and the remaining four have been shaded for the interviewer. The 'source', 'brand code' and 'food code' columns are considered in the ‘Coding Instructions for Interviewers’ section.

The column marked 'time' should be completed for every plate of food (along with am or pm). You should ensure that the approximate time is recorded for every plate of food. More than one plate of food can have the same time. The times will be converted into 24 hour clock in the office.

The 'brand name' column must be used for every manufactured or processed food item and should detail the actual brand of the food, such as Birds Eye, Walls or Kelloggs. Fresh foods, such as fruit and vegetables, will not have a brand name.

The 'food and drink' column should provide enough space for the respondent to record sufficient information for you to code each food. The respondent can use more than one line to record each food, provided it is clear which weight the description refers to. Any measures which are not in grams, eg fl.ozs, tablespoons, ounces etc, should be included in this column (NOT in the 'weight served' column).

The 'weight served' column has sufficient space to record the weight of foods consumed in grams. You will be showing the respondent a `cumulative' weighing method which means that the weight of each food adds on to the one weighed before it; ie. for every plate, the weights in the `weight served' column should always increase so that the last item added to the plate should have the greatest recorded weight. Do NOT enter the unit of weight, ie. grams.

The 'weight leftover' column should only be used if leftovers occur. After the meal, the respondent should put the plate back on the scale and record the total weight of the plate plus the leftovers in the 'leftover' column, next to the weight of the plate. The weight of the leftovers should always be greater than the weight of the plate but less than the recorded weight of the last item added to the plate. The respondent should then place a tick in this column next to the foods which have been leftover. The respondent should also describe the leftover in the 'remarks' section at the bottom of each diary page, eg. half of a tomato and bone of the pork chop leftover. Details of the leftovers ensure that the leftover is accurately proportioned between the different foods leftover when nutritional information is being extracted in the office.

The other four shaded columns are for the use of the interviewer. The 'Est tick box' column is only to be used when the weight of a food item has been estimated. An estimated weight is defined as one where the original food item was not weighed, but the weight entered is considered accurate by the interviewer. An estimated weight may be necessary when the respondent has forgotten to weigh a food item, but the interviewer had the opportunity to weigh a similar item, eg. a biscuit from the same packet as the one eaten.

You are most likely to need the 'Est tick box' column when you are transferring weights from the eating out diary to the main diary (see `duplicates'). You should note that you should only tick the `Est' column if you have weighed a duplicate item, it is not to be used for you or the respondent to guess at the weight of portions!

At the bottom of each diary page is a section for 'remarks'. You should encourage the respondent to use it to add any information that they might feel would be useful. If the respondent spills any of their food - and it wasn't weighed as a leftover - it should be recorded here, along with any details about the amount spilt. Comments about any changes in routine, or anything else that may have effected the recording pattern, should also be written in this section.

The Tea and Coffee Record

Weighing tea and coffee can become very tedious for the respondent, especially as many cups can be drunk in one day. However, people tend to use the same cup or mug, and to add similar amounts of milk and sugar, when making tea and coffee at home. The `Tea and Coffee Record' should therefore be completed with the respondent using their normal cup or mug.

Once completed, the respondent need not weigh any further cups of tea or coffee, as long as they

are `typical'. When subsequent cups are consumed the respondent need only enter `cup of tea/coffee' into the main diary, along with the time it was drunk.

During your first visit, perhaps when demonstrating the weighing and recording method to the respondent, you may be able to weigh a cup of tea or coffee. If not, you should try to weigh one when making your 24 hour call. Remember that respondents are likely to be grateful to stop weighing tea and coffee as soon as they can!

Recipe Sheets

The Recipe Sheets are provided for the respondent to record details of the types and amounts of ingredients that they use in any recipes that they make. They must be checked to ensure that the time, day and date have been entered on each sheet and that they have been completed in sufficient detail. See section `Recipes'.

The Food Scales

The food scales used in this survey are Soehnle digital scales weighing to 1g with a maximum weight of 2.5kg. The maximum cumulative weight of 2.5kg could be a potential problem if the respondent uses a heavy plate, and this should be pointed out in advance.

Each respondent will use a set of dietary scales fitted with a 9v battery. All equipment has been checked and fitted with new batteries, but please do a final check before going into the field. You will be given one spare battery.

If the respondent uses a large dinner plate they may find that it obscures the digital display. To overcome this problem, each set of scales comes with a plastic bowl which can be used as a spacer to raise the plate so that the display can be clearly seen. When using the spacer, the respondent should place the spacer onto the scale before turning the scale on and then continue to weigh as usual.

Using the scales and recording in the diary

1) To switch on the scale, press the word "on" firmly.
   The display will show `88888'.
   After a few seconds the display will read `0' and the scale is ready to weigh.

2) Write down the time and the type of container that you are going to eat your meal from, or drink a drink from, eg. plate, bowl, cup etc.

   ALL foods must be weighed on a container, this is so that the computer can tell whether the foods and drinks recorded have, or have not, been consumed together.

3) Place the container on the scale and write its weight in the diary on the same line, in the column marked "weight served" (in this example, Wt S):

Time	Brand Name	Food and Drink	Wt S	Wt LO
9 am		*Plate*	*345*	

4) Write down the brand name alongside in the "brand" column eg. Walls. Write down the description of the first food below the description of the container eg. two premium pork sausages, fried in lard.

5) Put the food on the plate (which should still be on the scale) and write down the weight:

Time	Brand Name	Food and Drink	Wt S	Wt LO
9 am		*Plate*	*345*	
	Walls	*2 premium pork sausages, fried in lard*	*425*	

6) On the next line write down the brand name and description of the next food item eg. Tesco, tinned plum tomatoes.

7) Place the helping of the food (in this case, tomatoes) on the plate and write down the weight.

8) For each item of food that you have please repeat the steps from 6) above.

When you are to use a different container for part of your meal then you should leave a blank line in the diary, enter the time and a description of the container and repeat from step 3).

Once you have finished your meal, weigh the plate with any leftovers (if there are any), write this weight next to the weight of the container or plate, in the column marked "weight leftover" (in this example Wt LO). Place a tick in this column next to any of the foods that have been left.

Time	Brand Name	Food and Drink	Wt S	Wt LO
9 am		*Plate*	*345*	*387*
	Walls	*2 premium pork sausages, fried in lard*	*425*	
	Tesco	*Tinned plum tomatoes*	*525*	✔
	Tesco	*One size 3 egg, fried in lard*	*585*	✔

To turn scale off, press the "zero" firmly so that the scale reads `0', then press "off". *Remember:* the scale automatically turns itself off after 2 minutes.

Example of Weighing: a cup of coffee

* Turn the scales on and wait until `0' is displayed
* Place your cup or mug on the scales and write the weight in the diary

* Write the type and brand of the coffee in the diary
* Put the coffee into the mug or cup and write the weight in the diary

* Write down the water used in the diary
* Add the water to the coffee in the mug and write the weight in the diary:

Time	Brand Name	Food and Drink	Wt S	Wt LO
3 pm		*Cup*	*234*	
	Co-op	*Instant coffee granules, decaffeinated*	*235*	
		Boiling water from the kettle	*425*	

NB: You can remove the cup or mug from the scales when you fill it with water as long as you put it back on the scales within 2 minutes.

If you have milk in your coffee then you would:

* Write down the type and brand of the milk in the diary.
* Add the milk to the coffee and water in the mug and write the weight in the diary:

Time	Brand Name	Food and Drink	Wt S	Wt LO
3 pm		*Cup*	*234*	
	Co-op	*Instant coffee granules, decaffeinated*	*235*	
		Boiling water from the kettle	*425*	
	Unigate	*Whole, fresh milk, pasteurised*	*450*	

You would follow this method if you then wanted to add sugar to your coffee:

* Write down the type and brand of the sugar in the diary
* Add the sugar to the coffee, water and milk and write the weight in the diary:

Time	Brand Name	Food and Drink	Wt S	Wt LO
3 pm		*Cup*	*234*	
	Co-op	*Instant coffee granules, decaffeinated*	*235*	
		Boiling water from the kettle	*425*	
	Unigate	*Whole, fresh milk, pasteurised*	*450*	
	Tate & Lyle	*White sugar, one level teaspoon*	*454*	

Artificial Sweeteners, Vitamin and Mineral Supplements and Medicines

Having weighed your food for 24 hours you may have already discovered that, as in the example below, artificial sweeteners do not seem to have a weight as they do not register on the scales. This occurs with vitamin and mineral supplements and medicines as well as sweeteners. We are therefore not asking respondents to weigh these items. You will need to probe to find out the amount served, ie. the number of tablets, drops, teaspoons etc. consumed. Please enter the amount in the description column.

Time	Brand Name	Food and Drink	Wt S	Wt LO
3 pm		*Cup*	*234*	
	Co-op	*Instant coffee granules, decaffeinated*	*235*	
		Boiling water from the kettle	*425*	
	Unigate	*Whole, fresh milk, pasteurised*	*450*	
	Sweetex	*Artificial sweetener, one tablet*		

Foods too Light to Weigh

If a food, such as coffee granules or mustard, does not register on the scales, because it is not heavy enough then you should put an asterisk (*) in the right margin on the same line as the missing weight. You should give a description of the amount served, a teaspoon of coffee or half a teaspoon of mustard. The nutritionists can then enter a suitable weight in the office.

Checking that Weighing has been done Correctly

You have been provided with a `portion size' check card (included in the food codelist ring binder) which gives the weights of typical servings of common foods. You should use this check card at the 24-hour checking call to assess the accuracy of the weights entered into the diary. You should also use the check card to check the weights of other foods when coding the diary pages at home.

NB: The weights given on the check card are NOT cumulative. You will therefore have to

calculate the weights served. To do this you should take the preceding weight away from the weight that you want to check and compare the resulting weight with those on the check list.

For example, the diary below has a weight of 259 recorded for milk and a weight of 234 for the cup it was weighed in. If you wanted to check that the weight of the milk was correct, you would take the weight of the cup away from the weight of the milk: 259-234 = 25.

Time	Brand Name	Food and Drink	Wt S	Wt LO
3 pm		*Cup*	*234*	
	Unigate	*Whole fresh milk, pasteurised*	*259*	
	Tetley	*Tea from pot, strong*	*449*	
	Tate & Lyle	*1 heaped teaspoon of white sugar*	*454*	

By using your check card you would see that this weight is acceptable for milk in tea or coffee. You would also have an indication that the respondent is weighing their food and drink correctly. If the weights given by the respondent seem very high or very low, the you should check that the respondent is using the correct procedure for weighing - they could just be having very small, or very large, portions! If not, you should give the respondent further instruction in using the scales.

Other Points to Remember when Weighing and Recording

REMEMBER: The respondent should always record each food item on a separate line and leave a line between each plate, cup or bowl of food.

The Order of Weighing and Recording

You should encourage the respondent to use the weighing and recording method explained previously, ie. they should write down the first food item, then its weight, then write down the next item and weigh it and so on. However, this can be time consuming if the respondent is weighing a complex meal. In this case, respondents can write down all the food items they are about to eat and then enter the weights one after the other. If this is the method chosen, then you should check to ensure that the respondent has weighed the food in the same order as they have recorded them, ie. that all the weights get progressively greater as you read down the list of items on the plate. If this is not the case, you will have to rewrite the foods in the correct order.

Second Helpings

Second helpings at meals should be treated in the same way as the first serving; the plate and any foods remaining on it should be reweighed and then each new item added separately and the weights recorded.

Removing the plate from the scale

The plate can be removed from the scale whilst weighing as long as it is returned to the scale within 2 minutes (the scale will automatically turn itself off after this time). If the scale does turn itself off whilst the respondent is putting another food item onto the plate, then the respondent needs to turn the scale back on WITHOUT the plate on it. They should then place the plate, with the food on it, back on the scale and record the weight against the description of the food added.

Leftovers

Respondents should be encouraged to record relevant descriptions of leftovers from meat, fish and fruit, such as bone, fat, skin or stone. These details help when coding the items since different codes apply, for example, to stoned fruits depending whether or not the weight includes the stone (see section 'Coding Instructions for Interviewers').

Outside provision

Many respondents will rely on outside provision for their meals, for example from Meals on Wheels or relatives. The respondent will probably find it difficult to weigh such meals, especially if they come as an entire meal on a single plate. In this case, you should ask the respondent to weigh the whole plate of food before eating and to weigh the plate and the leftovers once they have finished their meal. You will need to collect as much detail about the food portions as you can, as well as details of leftovers, so that the nutritionists can enter appropriate weights once the diary is returned to the office. You should also record the name of the organisation who provided the meal as you will be required to code this information.

When the Plate is not Weighed

Every entry must be served on, or in, a container, such as a plate, cup or bowl. This is the case even for those foods which are not normally eaten from a container, eg. bars of chocolate, pieces of fruit or packets of crisps. You should encourage the respondent to weigh every food on a plate. If the respondent forgets to weigh or write down the plate, you should enter the plate, along with the time. The respondent should be encouraged to leave a line between each plate of food so that you will have room to do this. If you are unsure whether the weight of the item recorded includes the forgotten plate or not then ask to weigh the plate used and enter the weight yourself. If you are sure that the weight recorded is that of the item only, then enter a weight of zero in the weight column on the plate time.

Foods in containers

It has already been stated that you should ensure that the respondent leaves a blank line between each plate of food. This is so that you are able to rewrite or alter entries if you need to. You will always need to alter entries when the respondent purchases a food in a container and then weighs it in that container.

Foods that are purchased and eaten from containers, such as yoghurts, will be weighed by the respondent as a complete item - container plus edible contents - and the weight entered in the 'weight served' column. The empty container will be then weighed at the end of the meal, along

with any leftovers:

Time	Brand Name	Food and Drink	Wt S
5 pm	*Ski*	*Low fat fruit yoghurt, sweetened with sugar*	*162*
		Empty yoghurt pot	*12*

You should transcribe the second (empty container) weight to the line above the first (container plus contents) weight. This weight has now become equivalent to the weight of a plate and so the time entry will also have to be transcribed so that it is on the same line. You should not tick the estimate column as the weight of the food eaten will be calculated by the computer and has not been estimated:

Time	Brand Name	Food and Drink	Wt S
5 pm		*Empty yoghurt pot*	*12*
5 pm	*Ski*	*Low fat fruit yoghurt, sweetened with sugar*	*162*
		Empty yoghurt pot	*12*

Completing the Eating Out Diary

If possible, the respondent should weigh everything that they can. The eating out diary is designed so that respondents can record all food items which are eaten away from home which cannot be weighed.

Foods 'eaten out' include all food purchased and eaten outside of the home
eg. restaurant meals, takeaways eaten out (NOT if bought out but eaten at home) meals eaten at the homes of relatives or friends and meals eaten at day centres and luncheon clubs.

The diary should also include all drinks, snacks and sweets etc. eaten outside of the home. It is important to record where the food was purchased so that you can code it (see section 'Coding Instructions for Interviewers').

A detailed description of each item eaten out is required, together with information on the portion size, the price of the item, where it is purchased, its brand name and any leftovers. An inch rule is printed along the bottom of each page of the Eating Out Diary pages. You should encourage respondents to use it to measure the size of foods that they consume out of the home such as slices of cake, sausage rolls, pies etc.

Before returning the diaries to the office all entries in the eating out diary should be transferred onto the yellow main diary pages. You should circle `Yes' next to `EO Diary' at the top right hand corner of the diary page to show that the foods listed were eaten out. These pages should then be inserted into the main food diary at the appropriate place.

REMEMBER: All entries will require a plate entry and all transferred items must be coded.

Most of the foods in the eating out diary will not have a weight. However, we would like weight information if at all possible. You will be able to provide weight information in one of two ways:

1) Bought Products: Bought snacks and drinks have weight information printed on their packaging. You have been provided with plastic bags in which you should encourage the respondent to collect such packets. You should enter such weights, along with details of leftovers, in the 'remarks' section of the diary page. Remember to enclose the bag of empty packets along with the diary when you return it to the office.
   A serial number label must be stuck on each returned plastic bag.

2) Duplicate Items: You should encourage the respondent to record the place of purchase and the price of all items eaten outside of the home. You can then go to the place where the food was purchased, buy an identical, 'duplicate', item and weigh it. You should buy duplicates of foods such as sandwiches (weigh the bread and filling separately), buns, cakes and takeaway foods from local outlets, eg. fish and chips, pizzas etc. You should write the weight of the duplicate in the `weight served' column and place a tick in the `est' column. The `Duplicate Food Item Purchase Sheet' should be completed and returned to the office so that you will be reimbursed.

   Remember that you should code all the food items which are recorded in the diary; this means that when you visit an outlet to purchase a duplicate item you should ask for any information that you may require eg. the type of fat used to fry fish & chips.
   You do NOT need to purchase or weigh foods whose portion size is standard, such as cartons or cans of drink, bags of crisps, bars of chocolate or foods from national food chains such as McDonalds, Little Chef, Happy Eater etc. If you have any doubt as to whether or not to purchase a duplicate, telephone the office.

   You are NOT authorised to buy and weigh a complete meal in a restaurant or cafe; in this case, ask the respondent to give you as much detail as possible.

   Please split composite items, such as salads or sandwiches, into their component parts when you transfer the entries from the eating out diary to yellow diary pages (see section `Composite items').

Checks by the Interviewer

After you have demonstrated the use of the food scales and the procedure for completing both the main and the eating out diaries the respondent is asked to record all food and drink consumed during the next four days. They should weigh and record their food and drink during the remainder of the first day to practice; although the recording period starts from midnight.

Because of the complex nature of the weighing and recording procedure, a checking call after 24

hours is essential. This call serves two main purposes:

1) To give the respondent support and encourage them to continue

2) To discover and solve any difficulties that the respondent may be having

When you make your 24-hour checking call, you should read through both the home (main) food diary and the eating out diary while you are in the respondents home to check for difficulties in recording, to probe for more details of foods that are inadequately described, and to check that leftovers have been weighed where appropriate.

After the second visit you should call back on the respondent as often as you feel that you need to. You should make a minimum of 4 calls in total (this includes the first visit, 24-hour checking call and the final pick-up call). If the respondent has difficulty weighing (see section), you may have to call on the respondent every day. Try to arrange your visits to coincide with their main meal so that you can assist with weighing and recording.

At each call you should collect the completed diary pages and ensure that you leave spare pages in the respondent's food diary folder.

What if a Respondent Cannot Weigh?

It is important that we do not lose a respondent because they cannot weigh their food. In this age group, it is to be expected that some respondents will have problems with the weighing procedure. In the feasibility study, we found that a small proportion of respondents became very worried about using the food scales and writing in the diary. To prevent respondents dropping out, you can relieve the burden on them by allowing them to complete a **non-weighed diary** (which they may prefer to write on pieces of paper, which you should then copy into the main food diary).

In some cases you may be able to decide at your first visit that the respondent will not be able to manage. In other cases, this will not be apparent until you make further visits.

You will need to use your discretion to decide whether a respondent should be asked, or should continue to, weigh their food. You may find that the weights recorded by the respondent are very different to those on the portion size check card. In many cases, it may be that the respondent has not fully grasped the weighing and recording procedures and further examples may be needed. If, however, the respondent is clearly having problems weighing, then it may be that they will not be able to provide a weighed record.

If this is the case the respondent can produce a non-weighed diary. You should still encourage the respondent to write down all of the food and drinks that they consume in detail, but they should also include information about the size of their portions and any leftovers, eg, a small cup of milk, 1 scoop of mashed potato, 2 teaspoons of sugar, ½ large tin of semolina, a thick slice of white bread from a large loaf etc. These descriptions will be converted into weights in the office.

You should encourage the respondent to collect all food packaging which will also give an indication as to the weights of the foods. Plastic bags have been provided for this, please attach a serial number label before returning the bags to the office.

Remember: a non-weighed diary is not an easy option! If you decide that the respondent should keep a non-weighed diary then you will need to spend more time probing for the sizes of both the portions served and any leftovers. You should also try to time your visits so that they coincide with the meal times of the respondent, you will then be able to weigh some of their meals. You should try to weigh a typical example of each meal that the respondent has; breakfast, dinner, tea, supper etc. Respondents that cannot weigh may have outside help or a carer who might be persuaded to weigh food items if you, or the respondent, are not able to.

3.3 Coding Instructions for Interviewers.

All food and drink recorded in the diary is to be coded. Each code can have as many as 5 digits and is unique in that it specifically relates to only one food item. For example, code 759 can only be used for `egg fried in lard'. Each food code has information attached to it which details the nutrient content of the food. The nutrient information about each food is combined with the weight information to give the nutrient intake of each respondent. The accuracy of your coding is therefore very important.

The food diary has been designed with a grey shaded area on the right hand side which holds four columns. The 'Est tick box' (estimate) column should be ticked for all estimated or duplicate weights. This is discussed more fully in 'The Food and Drink Diaries' section. The other three columns, marked 'Source', 'Brand Code' and 'Food Code', are provided for coding purposes.

Containers, cups, plates, bowls etc. should always be coded as 9999.

You have been supplied with a Food Code List which contains a detailed list of individual food codes. Foods requiring a brand code appear in the code list with a `B' next to them. You have also been provided with Brand Code Lists for each of the types of foods that need to be brand coded. A Source Code List has been provided for those foods which need to be source coded. All these lists are included in the ring binder folder on coloured paper and are discussed in more detail below.

Source Coding

Many elderly people rely on outside provision for much of the food that they eat, for example meals on wheels, social clubs, relative and friends or commercial food providers such as cafes, restaurants or takeaways. We would like to collect information about the types of foods provided and who provided them, ie. the source. These 'source' codes are single digit codes, foods purchased from a restaurant or takeaway, for example, have the code 3.

Generally, most of the foods consumed by the respondent they will have purchased and prepared themselves. They will therefore have the source code 5, `other'. The one digit code should be entered into the 'source' column on the same line as the plate entry and it relates to all the foods on the plate. In cases where the foods served on a plate have been provided from different sources, eg. homemade pie and salad served with takeaway chips, use the code that applies to the majority of the foods on the plate, in this case 5.

All foods provided in this way should be coded, *regardless of whether they were eaten in or out of the home.*

Brand Coding

Brand names should have been recorded for all manufactured or processed foods. You will need to know the brand name for most foods to help you to food code them.

Brand coding is only required for the following:

* mineral waters
* soft drinks
* artificial sweeteners

Foods requiring a brand code are entered in the food code list with a `B' next to them. If a `B' is marked in the food code list you should look in the relevant brand code list for the brand code. Brand codes have a maximum of three digits and should be entered in the `Brand' column. If the food item does not need to be brand coded, leave this column blank.

In the case of mineral water, the brand code list includes the most popular brands, along with those of specific interest to MAFF. Any brands not listed should be recorded and the product coded according to whether it is a British product (code 318) or a foreign product (code 328).
Soft drinks are also brand coded and the list also contains the most popular brands. Soft drinks produced for retail outlets, ie. `own brand' products, can also be coded eg. Safeway soft drinks have the brand code 18. You have been supplied with a Soft Drinks Checklist which lists the most common types of soft drinks, along with both brand and food codes.

It is important to note that for artificial sweeteners the brand code also relates to the form in which it was used. You will need to probe as to whether the sweetener was in a liquid, tablet (or minicube) or granulated form. For example, Sweetex tablets have the brand code 513, whereas granulated Sweetex has the brand code 530. `Own brand' artificial sweeteners are coded to brand only, eg. All Asda granulated sweeteners are coded 1, as are Asda sweeteners in tablet form.

Please ensure that the respondent has given the correct brand name information. You should always check the name of a retail outlet if it is not specifically listed. Any brand not occurring on the code list should be coded 600.

The Food Code List

The food code list is provided in a ring binder folder. The code list is organised in such a way that similar foods are grouped together, and listed alphabetically in sections, such as "fruit" or "vegetables" etc. Within each section, each food item is described according to how it was purchased, eg. whether the food was purchased fresh, canned, frozen or dried etc. The code list also considers how each food is cooked, eg. whether it was fried, grilled, boiled or roasted etc; along with the fat content of each food, eg. whether it was a low fat product, whether meat was served with or without its fat etc.

Food Coding

In order to code every food, it is essential to have very detailed descriptions of each food. The respondents will not always record all the information needed and so it is the task of the interviewer to probe out the extra detail needed for foods to be correctly coded; you will be responsible for coding each food item correctly. You will be calling back on each respondent regularly and so will have the opportunity to probe inadequate food descriptions.

You should remove the previous days diary pages each time you make a call on the respondent. This gives you time to try to code them and to make a list of things you need to probe at your next visit. It is essential that you keep up with the coding on your diaries and do not leave the coding until the end of the recording period. If coding is left it will become onerous and the coding will be more difficult as the respondent will not be able to remember the items that you want to probe.

Food Codes

Every food recorded in the food diary should have its corresponding food code entered on the same line in the 'food code' column. You have been supplied with a Food Descriptions Prompt Card to remind you of the type of probing questions that you need to ask in order to get a detailed enough description to enable you to select the correct food code. During the briefing sessions, you will have the opportunity to complete exercises to help you code and you will also be asked to code your own food diary in advance of fieldwork.

Coding Leftovers

Ideally, when foods are weighed with parts that are not eaten eg. bananas weighed with skin, meat weighed with bone, peaches weighed with stones, the wastage or inedible portion should be weighed and shown as a leftover. Most food codes relate to the food which is consumed and do not account for any wastage. It is always best to try to get the respondent to weigh their food `as eaten' ie. without bone, fat, stone, core, or skin etc. However, if the respondent fails to do so, the item should be dealt with in the following way:

Example 1) Banana.

a) Typically, respondents will weigh a banana in its skin, but then only eat the flesh. This does not cause any problems if they then weigh the leftover skin and specify that it has been leftover. The weight of the leftover skin will be taken from the weight of the whole banana by the computer, to give the weight eaten ie. the weight of the edible flesh. The banana can be coded 1977, 'bananas, raw, flesh only, no skin or leftover skin weighed'. You will note that this code is the same as if the respondent had weighed the banana without its skin and then eaten it:

Food and Drink	Wt	Wt L/O	E	S	Brand	Food
Plate a)	*200*	*250*				*9999*
Banana, fresh, with skin	*350*	✔				*1977*

Remember that the respondent should give full details of the type and amount of the leftover in the `Remarks' section, eg. left all of banana skin.

b) If the respondent weighed the whole banana in its skin, but then forgot to weigh the leftover skin then the 1977 code cannot be used because this code can only be used for the flesh. In this case, code 1978 can be used. Code 1978 is for `bananas, raw, leftover skin not weighed' and it takes into account the fact that the skin was not weighed as a leftover:

Food and Drink	Wt	Wt L/O	E	S	Brand	Food
Plate b)	*200*					*9999*
Banana, fresh, with skin	*350*	✔				*1978*

Remember that the respondent should give full details of all leftovers, especially when they forget to weigh them, eg. left all of banana skin, forgot to weigh it as a leftover.

Example 2) Fried lamb chops.

a) In an ideal situation, the respondent will weigh the whole lamb chop, eat their meal and then weigh their leftovers, such as the bone and the fat. You can then use the code 986, `lamb chump chop, fried or grilled, lean only, no bone; or leftover bone weighed'. Because the leftovers were weighed, the weight of the meat portion is known. This is the same code that you would use if the respondent had removed the bone and fat before weighing it. It is important to probe as to whether the fat was eaten:

Food and Drink	Wt	Wt L/O	E	S	Brand	Food
Plate a)	*200*	*260*				*9999*
Lamb chump chop, fried, with bone and fat	*320*	✔				*986*

Remember that the respondent should give full details of the type and amount of the leftover in the `Remarks' section, eg. left all skin and bone.

b) A similar situation occurs when the fat has been eaten, but the bone has still been weighed as a leftover. The code 984, `lamb chump chop, fried or grilled, lean and fat, no bone or leftover bone weighed', should be used as the weight of the meat portion is again known:

Food and Drink	Wt	Wt L/O	E	S	Brand	Food
Plate b)	*200*	*260*				*9999*
Lamb chump chop, fried, with bone and fat	*320*	✔				*984*

In this case, the respondent would write that they had eaten the fat but had left the bone and weighed it as a leftover in the `Remarks' section.

c) However, the respondent may forget to weigh the leftovers. Assuming that both the fat and the bone were not eaten, then code 987 should be used. Code 987 is for `lamb chump chop, fried or grilled, lean only, leftover bone not weighed'. Again, you should check that all of the fat was left, this should be detailed in the `remarks' section.

Food and Drink	Wt	Wt L/O	E	S	Brand	Food
Plate c)	*200*					*9999*
Lamb chump chop, fried, with bone and fat	*320*	✔				*987*

d) In the case where the leftovers are not weighed, the fat has been eaten and the bone is the only leftover, the code will be 985. Code 985 is used for `lamb chump chop, fried or grilled, lean and fat, leftover bone not weighed':

Description	Wt	Wt L/O	E	S	Brand	Food
Plate d)	*200*					*9999*
Lamb chump chop, fried, with bone and fat	*320*	✔				*985*

Foods that you Cannot Code

You may not be able to code all the foods in a diary because:

i) the code list does not cover every food item, only those which have been analyzed to determine their nutritional value or for which manufacturers give nutrient information

i) Food items not appearing in the code list:

New products or unusual foods may not appear in the code list. You should telephone the office to check that no code exists for an item, or if you are unsure about which code to use. If the office confirms that there is no code, you should write an asterisk (*) in the right margin of the diary to indicate where the food item occurs. Collect as much information about the food as you can, such as labels or packaging, and enclose it with the diary when you return it to the office.

ii) the food item recorded is composed of more than one food item. It may be a recipe like a homemade stew, cake or pie, or a composite dish such a salad. Some common recipes are included in the food code list, but you will be unable to code more unusual dishes

ii) Recipe and Composite items which do not have their own code:

<u>Recipes</u>

The prefix 'R' in the code list indicates that the code is a recipe item. Any dish which is homemade, ie. not manufactured, will have an 'R' next to its code and you will need to collect recipe information for these items. The recipe should be written on the pink recipes sheets provided at the back of each diary. Recipes should include details as to the type and amount of ingredients in a dish. The amounts can be recorded in grams, ounces or household measures such as tablespoons, cupfuls etc. Please mark all recipe items with a capital `R' in the right margin on the same line as the recipe.

You are especially asked to record the amount of liquid used in a dish, for example the amount of water or stock used in a soup, so that the `concentration' of the nutrients is known. Please state the size of eggs when used in dishes.

The type and amount of fats present in a dish is also important. Remember to probe for the type of meat used and whether its fat was removed; with mince dishes probe for whether regular or extra lean meat was used.

Composite Items

Some common dishes appear not to have any code. Examples of this might include Toad-in-the-hole or fruit in jelly. These items are not recipes but *composite* dishes. A composite dish is one where the individual components can be coded separately, although it cannot be coded as a whole dish. The nutritionists can advise you if you are unsure about whether a food is a composite or a recipe dish.

When composite items occur, you need to probe for information as to the relative quantities of each item. You then need to split out the separate food items and code them individually. The nutritionists will apportion the weights for each part of a composite dish, please put an asterisk in the margin next to composite dishes.

Examples of composite dishes:

1) Toad-in-the-hole: Split and code as sausages and yorkshire pudding. Remember to probe for the type and size of the sausages and how many there were, the quantity of yorkshire pudding and the type and amount of its ingredients etc.

2) Fruit in jelly: Split out fruit from jelly and code separately. Probe for type of fruit, was it fresh, frozen or tinned etc, what amount was used? How was jelly made up, with water only, or was fruit juice or milk added? What amount of jelly? etc.

Other dishes are often considered as composite items, although it would be possible to weigh their different components separately. You should try to encourage the respondent to weigh each part separately but if they are unable, such as when they are eating out, you should follow the examples below:

Mixed salad: Ideally, the respondent will weigh the components of a salad individually. If they do not, you will have to split out and code all the vegetables in the salad separately eg. lettuce, tomatoes, cucumber etc. Probe for amounts used in the whole salad eg. 8 large lettuce leaves, 2 medium tomatoes, half a large cucumber. Was it served with dressing?

Sandwiches: Split and code, probe type and amount of bread, spread, filling etc.

IF YOU HAVE ANY PROBLEMS OR QUESTIONS WHILE YOU ARE CODING THE FOOD DIARIES PLEASE CONTACT THE SURVEY NUTRITIONIST.

3.4 Food and Drink Weighing and Recording Procedures (Institution Sample).

Collecting the Dietary Information

The feasibility study carried out in March required carers to weigh and record the food and drinks consumed by a respondent if they were unable to do so themselves. However, we found that the food diaries were incomplete. Because of this, a different method of collecting food intake information is now being used for the institution sample. This method was proved successful during a pilot study carried out during August 1994.

As with the free living sample, a Food and Drink Diary and an Eating Out Diary have been supplied for each respondent. These diaries are different from those issued to the free living sample as they are blue, not green. Also, the food and drink diary does not have recipe pages at the back (these are provided separately).

The following additional documents have been produced for use only in institutions:

- a Food Provider's Questionnaire (yellow)

- a Food Record (blue)

You will use the information entered in the food record and the food providers questionnaire to produce a complete food and drink diary. The food diary is kept for 4 days and the food and drink intake information is collected as follows:

(i) at the end of the first visit, having completed one or more parts of the main interview, you leave the Food Record with the respondent, with instructions of when to begin recording. You also leave an Eating Out Diary, if appropriate.

(ii) you visit for one meal every day during the 4 day recording period and weigh the respondent's meal and leftovers yourself.

(iii) when you are not at the institution, you must ensure that the institution staff/respondents record details of the types and amounts of foods and drinks consumed by the respondent on the food record (these entries do not need to be weighed).

(iv) you contact the `food provider' and ask him/her to complete the Food Providers Questionnaire

(v) you transfer the information from the Food Record and Eating Out Diary into the Main (Food and Drink) Diary.

(vi) you must ensure that all foods entered into the diary that haven't been weighed include an estimate of portion size in their description. These estimates will be converted into weights by the nutritionists.

(vii) as with the free living sample, you will be responsible for trying to ensure that respondents' records are accurate and that omissions, vague entries and errors are corrected. You should code all the food entries appropriately.

The food provider's questionnaire.

In order to complete the food diary it is necessary to collect information from the food provider about the ingredients used and the portion sizes served. For this reason we have produced a food providers questionnaire for the person responsible for food provision in the institution to give information about the meals they provide.

The questionnaire is self-explanatory and designed for self completion by the person responsible for preparing the meals within the institution (the cook or catering manager etc.). However, if the food provider is reluctant to complete the questionnaire themselves, you can complete it on their behalf.

The questionnaire has two sections, the first asks about the types of foods consumed in the institution, whilst the second asks for information about the typical portion sizes served. Interviewers in the pilot found the questionnaire useful as it gave the food provider an idea of the types of information and level of detail required.

You should get the food provider to fill the questionnaire in as early as possible as the information given in the questionnaire will help you to code the food diaries.

You will also need to ask the food provider for:

* recipe details for all meals consumed by the respondent during the recording period

* copies of the menus that he/she has planned so that you can plan which meals you need to weigh

Remember to attach an institution serial number label to the questionnaire and the menus before you return them to the office.

The Food Record

Food Record cards have been produced for you to leave with the respondent. You must remember to enter the date and the name of the respondent on it, before you leave it with the respondent. You have been supplied with five cards per respondent, one for each day of the recording period and one spare. They should be held together at the top with the bull dog clips provided and hung in a position where they will be not be forgotten.

The institution staff should be asked to record all the food and drink consumed by the respondent on the food record cards. Please encourage them to give as much detail as possible. You will be responsible for transferring all the information from the food record into the food diary and will have to probe for more information on portion sizes, the amounts of leftovers and any snacks eaten between meals.

The weights of the meals that you do not weigh will be estimated by the nutritionists once the food diaries have been returned to the office. To do this, they will use the information gathered in the food providers questionnaire, and in the food diary (into which you will have copied all the information given on the Food Record cards). It is therefore essential that the portion sizes of unweighed foods are described accurately. Try to use household measures such as tablespoons, cupfuls, pints etc. Describe leftovers as proportions or household measures, eg. left ½, left a tablespoon of gravy etc.

Examples: Household Measures

cup
mug
pint
ml.
fl oz.
tablespoon
dessertspoon
teaspoon
lengths (cms, inches etc.)
scoops (for ice cream or mashed potato)

You must stick a serial number to the back of each page of the Food Record before returning it to the office.

Which meals should you weigh?

You will visit the respondent for one meal every day during the 4 day recording period and weigh the respondent's meal and leftovers yourself. We are most interested in meals that provide a significant contribution to the total nutrient intake of the respondent, typically breakfast, lunch and evening meals. You should therefore weight the foods and drinks consumed at one of each of these meals every day.

The Food and Drink Diary should therefore contain weighed entries for **at least**:

one breakfast,
one light meal,
and one cooked (main) meal.

From our experience in the feasibility study, we found that the main cooked meals (such as stews, casseroles, puddings and custards) tended to vary the most and to be more difficult to estimate than other meals. We would therefore prefer it if you weighed this meal on two occasions. The main cooked meal is usually served in the middle of the day. You will need to collect the menus for the days of recording so that you can decide which meals to weigh and time your visits accordingly. If you are unsure about which meals to weigh, contact the nutritionists.

If the respondent has the same foods in similar amounts at a mealtime every day, eg. breakfast, then you should copy over the weights from the meal that you weighed. These weights should be considered estimates as, although they are not the weights of the actual foods consumed, they are a good approximation of the weight. *Remember to tick the `estimate' column when you copy over weights.*

Transcribing into the food and drink (main) diary

Before you begin the four day recording period, you should complete the front cover of the main diary, noting the days on which you are recording and the age and sex of the respondent.

Please remember to start a new page for each new day and to complete the top section of the diary

on every page of every day (ie. day, date, how the respondent is feeling).

You are responsible for ensuring that all foods entered into the diary that haven't been weighed include an estimate of portion size in their description. Without an idea of the portion size of each food served, the nutritionists will be unable to enter a reasonable estimate of the weight into the diary and the nutrient information we get it will become less reliable. The lines of the diary should provide enough room for you to record both the description of the food and an estimate of its weight, although you can use more than one line if you need to.

The Food Providers Questionnaire and the Food Record should provide you with details of the portion sizes served. If the information given in the Food Providers Questionnaire and the Food Record are insufficient however, you must probe with the food provider, the respondent or the care staff to obtain an estimate of the portion size served and the amount leftover.

During the feasibility study, it was noted that in between meal snacks were frequently omitted from the Food Record. It is therefore very important that you check to see if the respondent has been eating between meals. Biscuits may well be served with morning coffee or cakes with afternoon tea or it may be the case that visitors have brought gifts of fruit or sweets which the respondent eats throughout the day - these need to be recorded!

Other Points to Note

Recording the Food Intake: As you will be weighing the food of two, or three, respondents at once, it can be difficult to keep a tidy food diary. You have been provided with an exercise book to record the weights and make rough notes in. You can, of course, enter the weights directly into the main diary if you prefer.

Recipe Items: You should ask the food provider to give you details of all the recipes consumed by the respondents. You are provided with a pad of pink `Recipe Sheets' for you to record all such recipe dishes. The sheets are carbonized, so that you do not have to copy out the same recipe for each respondent.

Once you have copied a recipe onto the sheets, you should ensure that a serial number is stuck onto the back of each recipe sheet before you attach them to the end of the food diaries. All food diaries of respondents that consume a recipe dish, will therefore have a pink recipe sheet giving details of the recipe, attached to them.

Tea and Coffee Record: Like the free living sample, you are also required to complete a `Tea and Coffee Record' for each respondent. You should weigh a standard cup of tea and coffee for each respondent and enter it into the white Tea and Coffee Record page. Once you have weighed a cup of tea or coffee, when subsequent cups are consumed you need only enter `cup of tea/coffee' into the main diary along with its code (9991 for a cup/mug of tea, 9992 for a cup/mug of instant coffee and 9993 for a cup/mug of fresh coffee). Please write down extra detail for any cups of tea/coffee made in a different way to normal or served in a different cup or mug.

Section 4: Database structure, derived variables and contents of SPSS files

4 DATA SETS IN THE ARCHIVE

4.1 Introduction

The data has a hierarchical structure:

PERSON
|
DAY – up to 4 days of diary data collected
|
PLATE – concept used to group foods consumed at the same serving
|
FOOD ITEM – the individual food items

There are two groups of data sets. The primary data sets contain the data in the format originally collected. The derived data sets contain variables derived from the original data sets. The date sets are listed below. The sections that follow provide more information about each of the data sets.

Primary data:

NDNSQRE.DAT	- person level - main questionnaire data. (Section 4.2.1)
DIARY.DAT	- person level - day/date the diary started. (Section 4.2.2)
DAY.DAT	- day of food diary. 0-4 per person (Section 4.2.2)
PLATE.DAT	- 'plate' - one record for each plate (Section 4.2.2)
FOOD.DAT	- food items within plate (Section 4.2.2)
AN.DAT	- blood analyte data (Section 4.2.3)
NUTRIENT.DAT	- MAFF nutrient database – used to convert food weights to nutrient intake. (Section 4.2.4)

Except for an.dat the primary data have no SPSS or other software meta data.

Derived data sets:

DERIVED.CSV	- the main standard breaks used in the published report plus some other derived variables. (Section 4.3).
ANUT.CSV	- average daily nutrient intake for each person (Section 4.4.1)
GWT.CSV	- estimate of 7 day intake of food sub-groups for each person (Section 4.4.2)
NDNS97.POR	- An SPSS portable file containing the variables in The 3 data files above.
NUT.CSV	- nutrient intake calculated from weight of food consumed using MAFF nutrient database. Food item level data. (Section 4.4.3)
NUTGS	- Data sets for 38 nutrients – Average daily intake from food types (Section 4.4.4).

These data sets have SPSS data descriptions.

4.2 STRUCTURE OF PRIMARY DATA SETS

The data were analysed at the National Centre for Social Research using the Quantum system, which has powerful facilities for handling hierarchical data. The Quantum code used to derive variables is in file appenf.txt for reference purposes. As Quantum is not in common use outside the private sector the data has been split into records at different levels to make it easier to import into different analysis systems. Records at different levels can be linked using serial number, day number, plate number within day and food sequence number within plate.

The data are in fixed format – i.e. data for each variable are in fixed column locations on data records as listed in the paper questionnaires or for diary data as described in section 4.2.2.

Data are available at four different levels. All records have serial number in columns 1-5 and a record type number in columns 6-7.

The different levels of data are held on different record types.

The full data set has the following record types:

level	record types
person	01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 27, 28, 36, 37, 38, 39, 40, 41, 43, 44, 45, 46, 49
day	50
plate	51
food	52

Nutrient intake variables are derived from recorded food consumption weights, which are converted to 55 nutrient values using the nutrient conversion database supplied by MAFF. The nutrient values are provided in the derived variable data sets.

Quantum was used for derived variables and table generation. Not all users will have facilities to analyse data held in a single data file with the above structure so a number of different 'flat' data sets have been created from data at different levels. These data sets are described in the following sections.

4.2.1. Data from the survey questionnaires

File: **ndnsqre.dat**

Other documentation needed: Full set of paper questionnaires,

Code frames for open ended questions, medicines etc

The full set of data from paper questionnaires includes:

Data Source	Number	Record Types
Main Questionnaire	2060	3-19
Self Completion Booklet (depression questionnaire)	1761	22
Bowel Movement Record Sheet	1670	23
Memory Questionnaire	1860	24
Final Visit Questionnaire	1925	27-28
Nurse Schedule	1526	36-41
Medicine code sheet	1691	43
Medicine dosages	1684	44
Extra medicine codes	58	45-46
Survey Administrative data	2060	1-2

In file ndnsqre.dat dummy records have been generated when whole schedules are missing. These records will have serial numbers and record types in columns 1-7 but will have all other columns blank. This has been done to make the data easier to analyse with packages such as SPSS, which expect *flat* datasets. I.e. ndnsqre.dat has exactly 2060 lines of data for each record type.

Data are in fixed format as defined on the printed questionnaires. All records have serial number in columns 1-5 and a record type number in columns 6-7. Numbers printed in the right hand columns of the questionnaires identify the record type and column location within that record for the responses from each question. Examples:

Sex of respondent is in column 13 on record type 3. Questionnaire has 313 on right hand side.

Reasons why weight not measured recorded in columns 46-55 on record type 37 of the Nurse Schedule. Up to 5 reasons may be recorded. Nurse schedule has 3746-3755 printed on right hand side. The first response is in columns 47-47, the second in 48-49 etc.

Not Answered is coded 9, 99, 999 etc depending on numbers of columns allocated.

If any question within a questionnaire is not applicable the allocated columns are blank. For missing schedules all columns are blank.

The respondent weights/grossing factors are in columns 81-86 on record type 3. The weights are given to 3 decimal places and the decimal point is included in the data.

Record types 1 and 2 contain survey administrative data. The useful fields in this data are:

var	Record Type	Columns	Contents
samptype	1	2	1 – Free Living Sample 2 – People in Institutions
admin2	1	20-21	Outcome of main survey: 51 – Full Interview/Full Diary 52 – Full Interview/Part Diary 53 – Full Interview/No Diary 54 – Part Interview/Full Diary 55 – Part Interview/Part Diary 56 – Part Interview/No Diary
admin1	1	8-9	Sample point. Contains values in range 1-80.
adnurs1	2	15-16	Outcome of Nurse Visit. 81 – Nurse schedule completed.
adnurs2	2	22	1 – Blood pressure measured
adnurs3	2	23	1 – Height measurements obtained
adnurs4	2	24	1 – Weight measurements obtained
adnurs5	2	25	1 – Demi-span measurements obtained
adnurs6	2	26	1 – Waist measurements obtained
adnurs7	2	27	1 – Hip measurements obtained
adnurs8	2	28	1 – Mid-upper arm measurements obtained
adnurs9	2	29	1 – Grip strength measurements obtained
adnurs10	2	30	1 – Blood sample obtained
adnurs11	2	31	1 – 24 hour urine sample obtained
adnurs12	2	32	1 – Visual acuity measurements obtained

4.2.2. Data from the food diaries

The food diary data set contains the following files:

diary.dat	- one record per person. Date and day diary started
day.dat	- one record for each diary day. Maximum of 4 days per person
plate.dat	- one record for each *plate* in each day
food.dat	- one record for each of the food entries in a *plate*

The data has a hierarchical structure. *Plate* is a concept used to link items in the same dish. For example a cup of instant coffee might have one plate level record and four food level records for the coffee, water, sugar and milk. Links between the different levels can be made by referencing the fields serial number, day number, plate number within day and food sequence number within plate. The contents of the data files are described in the following sections.

All data fields are in fixed format, that is variables held in defined columns with no separators.

Level person – diary.dat

Columns	Contents	var
1-5	Serial number	serial
6-7	Record type – always 49	cardno49
8-10	Blank	
11-12	Date of first day of diary – day – 1-31	day49
13-14	Date of first day of diary – month – 1-12	mon49
15-18	Date of first day of diary – year – 1994, 1995	year49
19-28	Survey admin data – National Centre use only	
29-31	Day of week diary started – text. Sun, Mon, Tue etc.	weekday
32	Whether standard drink 1 defined – 1=yes	std1
33	Whether standard drink 2 defined – 1=yes	std2
34	Whether standard drink 3 defined – 1=yes	std3
35-36	Survey admin data – National Centre use only	

Level day – day.dat

Columns	Description	
1-5	Serial number	serial
6-7	Record type – always 50	cardno50
8	Day number 1-4 e.g. 1 for first day of diary data	dayno
9	Day of week number – Sunday=1, Monday=2 etc.	daywk
10	How well feel today compared to usual	howfeel
	1 - Better	
	2 - Same	
	3 - Worse	

Level plate – plate.dat

Columns	Contents
1-5	Serial number serial
6-7	Record type – always 51 cardno51
8	Day number 1-4 dayno
9-10	Plate number within day planum
13-16	Plate time – 24 hour clock platim
17-20	Plate weight – used to calculate actual food weights from the cumulative weights that the respondent recorded. Not needed for analysis but provided for completeness. plawei
21-25	Sum of plate weight plus left over weight. Not needed for analysis but provided for completeness. plasum
26	T (standard tea or coffee drink) if plate generated from standard drinks section. Respondents were able to record up to 3 types of plate consumed on a regular basis (E.g. cups of tea or coffee). Used to avoid repeated weighing. t
27-30	Always 9999
31-35	Always 0
36	Whether weight estimated weiest 1 - Estimated 2 – Not estimated
37	Source of food sfood 1 – Meals on wheels 2 – Luncheon Club 3 - Restaurant 4 – Relative/Friend/Neighbour 5 – No outside source
38-41	Blank
42	How well feel today compared to usual howfee 1 - Better 2 - Same 3 - Worse
43	Eating out eatout 1 – Eaten out 2 – Not eaten out
44	Plate day of week. Sunday=1, Monday=2 etc. weekd
46-50	Weight of tap water (food code 5000) in *plate*. Used to convert instant coffee/tea and squash cordials to weight *as drunk*. wdrunk

Level food – food.dat

Columns	Contents
1-5	Serial number serial
6-7	Record type – always 52 cardno52
8	Day number 1-4. E.g. 1 is first day of diary data dayno
9-10	Plate number within day planum
11-12	Food sequence number within plate foodseq
13-16	Time of food – same as corresponding plate time tfood
17-20	Cumulative weight served as recorded by respondent and used to calculate the actual food weight consumed. Not needed for analysis but provided for completeness. foodw
21-25	0 – no leftovers. 9999 – some food leftover lefto
26	T (standard tea or coffee drink) if food record generated from standard drinks section tea
27-30	Food code foodco
31-35	Weight of food in grams – adjusted for leftovers foodwe
36	Whether weight estimated wheest 1 - Estimated 2 – Not estimated
37	Source of food foodso 1 – Meals on wheels 2 – Luncheon Club 3 - Restaurant 4 – Relative/Friend/Neighbour 5 – No outside source
38-41	Brand code – see brand code frame branco
42	How well feel today compared to usual howwel 1 - Better 2 - Same 3 - Worse
43	Eating out eatou 1 – Eaten out 2 – Not eaten out
44	Day of week – 1-Sunday, 2-Tuesday etc. dayowk
45-49	Unadjusted weight served – blank if no leftovers. Leftover weights were subtracted from constituent food weights in proportion to the food weights as served. Probably not needed for analysis. unwei

4.2.3 Blood analytes

DATA FILE : AN.DAT - Free format, space separated.
META DATA: AN.SPS
LEVEL : PERSON

Missing values set to value -1.

an1 Haemoglobin concentration (g/dl)
an2 Platelet count (10^9/l)
an3 Red cell count (10^{12}/l)
an4 Mean corpuscular volume (fl)
an5 Blood haematocrit (l/l fractional volume)
an6 Mean cell haemoglobin (pg)
an7 White cell count (10^9/l)
an8 Neutrophil count (10^9/l)
an9 Lymphocyte count (10^9/l)
an10 Monocyte count (10^9/l)
an11 Eosinophil count (10^9/l)
an12 Basophil count (10^9/l)
an13 Prothrombin time (sec)
an14 Activated partial thromboplastin time (sec)
an15 Fibrinogen (g/l)
an16 Serum vitamin B_{12} (pmol/l)
an17 Serum folate (nmol/l)
an18 Serum ferritin (μg/l)
an19 Plasma total cholesterol (mmol/l)
an20 Plasma triglycerides (mmol/l)
an21 Plasma creatinine (μmol/l)
an22 Plasma high density lipoprotein cholesterol (mmol/l)
an23 Total plasma alkaline phosphatase activity (IU/l)
an24 Plasma calcium (μmol/l)
an25 Plasma phosphorus (mmol/l)
an26 Plasma iron (μmol/l)
an27 UIBC
an28 Total iron binding capacity (μmol/l)
an29 Iron % saturation
an30 Plasma γ -glutamyl transferase (IU/l)
an31 P-UREA
an32 U-CREAT
an33 α_1-antichymotrypsin (g/l)
an34 Plasma albumin (g/l)
an35 Plasma ascorbate (μmol/l) (Vitamin C)
an36 Plasma copper (μmol/l)
an37 Plasma zinc (μmol/l)
an38 Urine sodium (mmol/l)
an39 Urinary sodium/urinary creatinine ratio
an40 Urine potassium (mmol/l)
an41 Urinary potassium/urinary creatinine ratio
an42 Plasma 25-hydroxyvitamin D (nmol/l)
an43 Red cell folate (nmol/l)
an44 Plasma retinol (vitamin A) (μmol/l)

an45 Plasma retinol palmitate (μmol/l)
an46 Plasma α-tocopherol (vitamin E) (μmol/l)
an47 Plasma γ-tocopherol (vitamin E) (μmol/l)
an48 Plasma α-cryptoxanthin (μmol/l)
an49 Plasma β-cryptoxanthin (μmol/l)
an50 Plasma lutein (μmol/l)
an51 Plasma lycopene (μmol/l)
an52 Plasma α-carotene (μmol/l)
an53 Plasma β-carotene (μmol/l)
an54 Mean cell haemoglobin concentration (g/dl)
an55 Plasma LDL(-calc) cholesterol concentration (mmol/l)
an56 Erythrocyte glutathione reductase activation coefficient (EGRAC)
an57 Blood glutathione reductase
an58 Tocopherol/cholesterol ratio (μmol/mmol)
an59 Erythrocyte transketolase basal activity (ETK-B) (μmol/min/g haemoglobin)
an60 Erythrocyte transketolase activation coefficient (ETKAC)
an61 Urinary sodium/urinary potassium ratio

Full names given above when analyte used in published report.
Other analytes may have abbreviated names.

4.2.4 MAFF nutrient data base

FILE: NUTRIENT.DAT

A look up file provided by MAFF to convert food weights to nutrient values. The file contains the following fields separated by the # character.

1. Food code – up to 4 digits fcode
2. Food sub group fsubgrp
3. Food name fname
4. Base unit – usually 100 grams. bunit
5. Diary measure – not used. diarym
6. Units food measured in – usually grams. unitfo
7. Dilution factor – not used dilfac
8. Maximum weight in one serving – used in diary data edit system to flag large values of weight. maxw

9-63 Nutrient content per base unit of food consumed. nut1-nut54

The nutrients provided are listed in section 4.4.3. This file is provided for reference purposes only. File nut.csv (Section 4.4.3) contains the nutrient contribution of each food item after conversion.

4.3. DERIVED VARIABLES FROM THE QUESTIONNAIRES

DATA FILE : DERIVED.DAT
SPSS COMMANDS : DERIVED.SPS
LEVEL : PERSON

Includes variables based on the standard breaks on tables in the published report and variables derived from the questionnaire data. The actual Quantum commands used to create the derived variables are listed in Appendix F (file appenf.txt).

Variable	Description
serial	serial
Region	Region
Flinst	Whether free living or institutional participant
sex	Sex of participant
agegpfl	Age Groups used for Free-living Tables
agegpi	Age Groups used for Institution Tables
brk2	Region
brk3	Household composition
brk4	Social class (of head of household)
brk5a	Annual income before tax
brk5	Annual income before tax
brk6	Receipt of benefits
brk7	Well or Unwell
brk8	Highest educational qualification
brk9	Wave of fieldwork
brk11	Whether in 4 day diary sample
brk12	Depression - number of negative statements
brk13	Number of cigarettes currently smoked
brk15	Self-reported health
brk24	Maximum intensity of physical activity
brk32ty	Type of institution - Registration
brk32ma	Type of institution - Management
brk32re	Type of institution - Residents 65+
brk33	Proxy information (main interview)
brk34	Visits outside institution
alclev	Alcohol consumption level
sports	Physical activity associated with sports
housewk	Physical activity associated with housework
garden	Physical activity associated with gardening
walks	Physical activity associated with walking
mipa	Maximum intensity of physical activity
prewt	Weighting factor for grossing up
weight0	ignore - same as prewt
age	Age of participant
ddays	Number of completed diary days 0-4
depress	Depression index - number of negative statements
noadults	Number of adults in household
alcunit	Estimate of alcoholic units consumed per week
meninhh	Number of men in household
wominhh	Number of women in household
totinhh	Number of people in household

hip3	Derived hip measurement (cm)
bmrn	basal metabolic rate
weight	weight (kgs)
BMI	body mass index
height	height (cm)
grip	hand grip strength
MUAC	mid-upper arm circumference (cm)
whratio	waist/hip circumference ratio
demisp	demi-span (cm)
mindex	mindex
demiq	demiq
htodemi	height demispan ratio
bowelm	average number of bowel movements per week
syst	Systolic blood pressure
dias	Diastolic blood pressure
meanbp	Mean blood pressure
medtyp1	Number of cardio-vascular medicines taken
medtyp2	Number of gastrointestinal medicines taken
medtyp3	Number of respiratory medicines taken
medtyp4	Number of central nervous system medicines taken
medtyp5	Number of infections medicines taken
medtyp6	Number of endocrine medicines taken
medtyp7	Number of obstetrics & gynaecology medicines taken
medtyp8	Number of cytoxic drugs medicines taken
medtyp9	Number of nutrition and blood medicines taken
medtyp10	Number of musculoskeletal medicines taken
medtyp11	Number of eye, ear, nose & throat medicines taken
medtyp12	Number of skin medicines taken
medtyp13	Number of other medicines taken
medtyp14	Number of aspirin medicines taken
medtyp16	Number of unspecified medicines taken
med1	Medicine code 1 - number of times recorded
med2	Medicine code 2 - number of times recorded
med3	Medicine code 3 - number of times recorded
med4	Medicine code 4 - number of times recorded
med5	Medicine code 5 - number of times recorded
med6	Medicine code 6 - number of times recorded
med7	Medicine code 7 - number of times recorded
med8	Medicine code 8 - number of times recorded
med9	Medicine code 9 - number of times recorded
med10	Medicine code 10 - number of times recorded
med11	Medicine code 11 - number of times recorded
med12	Medicine code 12 - number of times recorded
med13	Medicine code 13 - number of times recorded
med14	Medicine code 14 - number of times recorded
med15	Medicine code 15 - number of times recorded
med16	Medicine code 16 - number of times recorded
med17	Medicine code 17 - number of times recorded
med18	Medicine code 18 - number of times recorded
med19	Medicine code 19 - number of times recorded
med20	Medicine code 20 - number of times recorded
med21	Medicine code 21 - number of times recorded
med22	Medicine code 22 - number of times recorded

med23	Medicine code 23 - number of times recorded
med24	Medicine code 24 - number of times recorded
med25	Medicine code 25 - number of times recorded
med26	Medicine code 26 - number of times recorded
med27	Medicine code 27 - number of times recorded
med28	Medicine code 28 - number of times recorded
med29	Medicine code 29 - number of times recorded
med30	Medicine code 30 - number of times recorded
med31	Medicine code 31 - number of times recorded
med32	Medicine code 32 - number of times recorded
med33	Medicine code 33 - number of times recorded
med34	Medicine code 34 - number of times recorded
med35	Medicine code 35 - number of times recorded
med36	Medicine code 36 - number of times recorded
med37	Medicine code 37 - number of times recorded
med38	Medicine code 38 - number of times recorded
med39	Medicine code 39 - number of times recorded
med40	Medicine code 40 - number of times recorded
med41	Medicine code 41 - number of times recorded

4.4. AGGREGATE VARIABLES DERIVED FROM THE FOOD DIARY DATA

Files **anut.csv** and **gwt.csv** contain person level variables derived from the food level data as described in the following sections.

The variables in these data sets form the basis of the food and nutrient tables in the published reports. SPSS data definition files are available but the variables have already been set up in the SPSS portable file **NDNS97.POR** which also contains variables for the standard breaks used in the reports and a number of other derived variables.

Note that these data sets contain food and nutrient summaries aggregated over all foods consumed in a day.

Analyses which need information on combinations of foods eaten together or on times at which foods are taken need to use the full food diary data set. Data at the food item level is in the file food.dat described in 4.2.2 and in file nut.csv which is described later in this section.

4.4.1 Average daily intake of nutrients

DATA FILE: ANUT.CSV
META DATA: ANUT.SPS
LEVEL : PERSON

Average daily intake of nutrients - averaged over 4 days

ANUTPV1 to ANUTPV63 - exclude prescribed food supplements
ANUTP1 to ANUTP63 - food sources only
ANUTPM1 to ANUTPM63 - all sources

Missing values set to -1.

The nutrients corresponding to each of the sets of 63 variables are listed below. See section 4.4.3 for more complete names of nutrients and units of measurement (i.e. the units to which food weights in grams are converted to get nutrient intake – g, mg, μgrams).

Nutrients from the original MAFF nutrient database are numbered 9 to 63.
Nutrients 1-6 were derived from the original MAFF nutrients.

1 Sum of nutrients 11+62
2 Sum of *cis* polys 44+45.
3 Vitamin A - derived from nutrients 29 and 30. 29 + 30/6
4 Ratio Haem/Non haem iron. 59/60.
5 Total fatty acids 42+43+44+45+46.
6 Ratio Vitamin E to total poly. 36/2
7 Not used.
8 Not used.
9 Water.
10 Total sugars.
11 Starch.
12 Fibre Southgate.
13 Energy kcal.
14 Energy kj.
15 Protein.
16 Fat.
17 Carbohydrate.
18 Alcohol.
19 Na.
20 K.
21 Ca.
22 Mg.
23 P.
24 Fe.
25 Cu.
26 Zn.
27 Cl.
28 I.
29 Retinol.
30 Carotene.
31 Vitamin D.

32 Thiamin.
33 Riboflavin.
34 Niacin equiv.
35 Vitamin C.
36 Vitamin E.
37 Vitamin B_6.
38 Vitamin B_{12}.
39 Folate.
40 Pantothenic acid.
41 Biotin.
42 Saturated fatty acids.
43 *Cis* monos.
44 *Cis* n-3 poly.
45 *Cis* n-6 poly.
46 Trans fatty acids.
47 Cholesterol.
48 Glucose.
49 Sucrose.
50 Fructose.
51 Lactose.
52 Maltose.
53 Others.
54 Fibre Englyst.
55 Mn.
56 β carotene.
57 α carotene.
58 β cryptoxanthin.
59 Haem iron.
60 Non haem iron.
61 non milk extrinsic sugars.
62 intrinsic and milk sugars.
63 Total N.

The average daily intakes can be used to compute various other derived variables used in the published reports. The rest of this section shows how these variables were derived from the basic nutrient summary variables. The indices used in the derivations correspond to the nutrient numbers listed above.

PERCENTAGE OF TOTAL ENERGY INTAKE FROM VARIOUS NUTRIENTS

Carbohydrate,fat and protein, sugars etc

anutpv(10)*100*16/anutpv(14) i.e. % of total energy intake from sugars
anutpv(11)*100*16/anutpv(14)
anutpv(15)*100*17/anutpv(14)
anutpv(16)*100*37/anutpv(14)
anutpv(17)*100*16/anutpv(14)
anutpv(18)*100*29/anutpv(14)
anutpv(42)*100*37/anutpv(14)
anutpv(43)*100*37/anutpv(14)
anutpv(44)*100*37/anutpv(14)
anutpv(45)*100*37/anutpv(14)

anutpv(46)*100*37/anutpv(14)
anutpv(47)*100*37/(anutpv(14)*1000.0)
anutpv(61)*100*16/anutpv(14)
anutpv(62)*100*16/anutpv(14)
anutpv(2)*100*37/anutpv(14)
anutpv(5)*100*37/anutpv(14)
anutpv(1)*100*16/anutpv(14)

PERCENTAGE OF FOOD ENERGY INTAKE FROM VARIOUS NUTRIENTS

(i.e. Excludes energy intake from alcohol)

Food Energy:
fooden = (anutpv(15)*17) + (anutpv(16)*37) + (anutpv(17)*16)

anutpv(10)*100*16/fooden
anutpv(11)*100*16/fooden
anutpv(15)*100*17/fooden
anutpv(16)*100*37/fooden
anutpv(17)*100*16/fooden
anutpv(42)*100*37/fooden
anutpv(43)*100*37/fooden
anutpv(44)*100*37/fooden
anutpv(45)*100*37/fooden
anutpv(46)*100*37/fooden
anutpv(47)*100*37/(fooden*1000.0)
anutpv(61)*100*16/fooden
anutpv(62)*100*16/fooden
anutpv(2)*100*37/fooden
anutpv(5)*100*37/fooden
(anutpv(11) + anutpv(62)) *100*16/fooden

AVERAGE ENERGY AS PERCENTAGE OF EAR

Male 65-74 - anutpv(14)*100.0/9710
Male 75 and over - anutpv(14)*100.0/8770
Female 65-74 - anutpv(14)*100.0/7960
Female 75 and over - anutpv(14)*100.0/7610

INTAKES OF NUTRIENTS AS PERCENTAGE OF RNIs

Male - 100.0*(anutp(3)/700.0)
Female - 100.0*(anutp(3)/600.0)
Male - 100.0*(anutpv(3)/700.0)
Female - 100.0*(anutpv(3)/600.0)
Male - 100.0*anutpv(15)/53.3
Female - 100.0*anutpv(15)/46.5
Male - 100.0*anutp(15)/53.3
Female - 100.0*anutp(15)/46.5
All - 100.0*(anutp(19)/1600.0)
All - 100.0*(anutpv(19)/1600.0)
All - 100.0*(anutp(20)/3500.0)
All - 100.0*(anutpv(20)/3500.0)

All - 100.0*(anutp(21)/700.0)
All - 100.0*(anutpv(21)/700.0)
Male - 100.0*(anutp(22)/300.0)
Female - 100.0*(anutp(22)/270.0)
Male - 100.0*(anutpv(22)/300.0)
Female - 100.0*(anutpv(22)/270.0)
All - 100.0*(anutp(23)/550.0)
All - 100.0*(anutpv(23)/550.0)
All - 100.0*(anutp(24)/8.7)
All - 100.0*(anutpv(24)/8.7)
All - 100.0*(anutp(25)/1.2)
All - 100.0*(anutpv(25)/1.2)
Male - 100.0*(anutp(26)/9.5)
Female - 100.0*(anutp(26)/7.0)
Male - 100.0*(anutpv(26)/9.5)
Female - 100.0*(anutpv(26)/7.0)
All - 100.0*(anutp(27)/2500.0)
All - 100.0*(anutpv(27)/2500.0)
All - 100.0*(anutp(28)/140.0)
All - 100.0*(anutpv(28)/140.0)
All - 100.0*(anutp(31)/10.0)
All - 100.0*(anutpv(31)/10.0)
Male - 100.0*(anutp(32)/0.9)
Female - 100.0*(anutp(32)/0.8)
Male - 100.0*(anutpv(32)/0.9)
Female - 100.0*(anutpv(32)/0.8)
Male - 100.0*(anutp(33)/1.3)
Female - 100.0*(anutp(33)/1.1)
Male - 100.0*(anutpv(33)/1.3)
Female - 100.0*(anutpv(33)/1.1)
Male - 100.0*(anutp(34)/16.0)
Female - 100.0*(anutp(34)/12.0)
Male - 100.0*(anutpv(34)/16.0)
Female - 100.0*(anutpv(34)/12.0)
All - 100.0*(anutp(35)/40.0)
All - 100.0*(anutpv(35)/40.0)
Male - 100.0*(anutp(37)/1.4)
Female - 100.0*(anutp(37)/1.2)
Male - 100.0*(anutpv(37)/1.4)
Female - 100.0*(anutpv(37)/1.2)
All - 100.0*(anutp(38)/1.5)
All - 100.0*(anutpv(38)/1.5)
All - 100.0*(anutp(39)/200.0)
All - 100.0*(anutpv(39)/200.0)

4.4.2 Intake of food sub groups

DATA FILE: GWT.CSV
META DATA: GWT.SPS
LEVEL : PERSON

Estimated 7 day intakes in grams of food subgroups.

The data file is restricted to the 1687 participants who provided 4 day food diaries.

Food group totals can be obtained by adding the appropriate subgroups.
e.g. gwt28+gwt29 to get intake for food group 16 - Eggs and Egg dishes.

Variables:

SERIAL
FLINST Free living or institution
SEX
AGE
PREWT Grossing factors used in reports
gwt1 1A PASTA
gwt2 1B RICE
gwt3 1C PIZZA
gwt4 1R OTHER CEREALS
gwt5 2R BREAD - WHITE
gwt6 3R BREAD - WHOLEMEAL
gwt7 4A SOFT GRAIN BREAD
gwt8 4R OTHER BREAD
gwt9 5R BREAKFAST CEREALS - WHOLEGRAIN AND HIGH FIBRE
gwt10 6R BREAKFAST CEREALS - OTHER
gwt11 7R BISCUITS
gwt12 8A FRUIT PIES
gwt13 8R BUNS, CAKES AND PASTRIES
gwt14 9A CEREAL BASED MILK PUDDINGS
gwt15 9B SPONGE TYPE PUDDINGS
gwt16 9R OTHER PUDDINGS CONTAINING CEREAL
gwt17 10R MILK - WHOLE
gwt18 11R MILK - SEMI-SKIMMED
gwt19 12R MILK - SKIMMED
gwt20 13B CREAM (INCLUDING IMITATION CREAM)
gwt21 13R OTHER MILK
gwt22 14A COTTAGE CHEESE
gwt23 14R OTHER CHEESE
gwt24 15A FROMAGE FRAIS
gwt25 15B YOGURT
gwt26 15R OTHER DAIRY DESSERTS
gwt27 53R ICE CREAM
gwt28 16A EGGS
gwt29 16B EGG DISHES
gwt30 17R BUTTER
gwt31 18A POLYUNSATURATED MARGARINE
gwt32 18B POLYUNSATURATED OILS
gwt33 19A POLYUNSATURATED LOW FAT SPREAD

gwt34 19R LOW FAT SPREAD NOT POLYUNSATURATED
gwt35 20A BLOCK MARGARINE
gwt36 20B SOFT MARGARINE NOT POLYUNSATURATED
gwt37 20C OTHER COOKING FATS AND OILS NOT POLYUNSATURATED
gwt38 21A REDUCED FAT SPREAD (POLYUNSATURATED)
gwt39 21B REDUCED FAT SPREAD (NOT POLYUNSATURATED)
gwt40 22R BACON AND HAM
gwt41 23R BEEF, VEAL AND DISHES
gwt42 24R LAMB AND DISHES
gwt43 25R PORK AND DISHES
gwt44 26R CHICKEN - COATED
gwt45 27R CHICKEN AND TURKEY DISHES
gwt46 28R LIVER AND DISHES, LIVER PATE AND LIVER SAUSAGE
gwt47 29R BURGERS AND KEBABS
gwt48 30R SAUSAGES
gwt49 31R MEAT PIES AND PASTRIES (INCL CHICKEN PIES)
gwt50 32R MEAT - OTHER. MEAT PRODUCTS (INCL. GAME AND OFFAL, EXCL. LIVER)
gwt51 33R FISH - WHITE. COATED OR FRIED (INCLUDING FISH FINGERS)
gwt52 34B SHELLFISH
gwt53 34A OTHER WHITE FISH AND FISH DISHES
gwt54 35R FISH - OILY (INCL CANNED)
gwt55 36A CARROTS (RAW)
gwt56 36B SALAD AND OTHER VEGETABLES (RAW)
gwt57 36C TOMATOES (RAW)
gwt58 37A PEAS (NOT RAW)
gwt59 37B GREEN BEANS (NOT RAW)
gwt60 37C BAKED BEANS
gwt61 37D LEAFY GREEN VEGETABLES (INCL. BROCCOLI) (NOT RAW)
gwt62 37E CARROTS (NOT RAW)
gwt63 37F TOMATOES (NOT RAW)
gwt64 37G VEGETABLE DISHES
gwt65 37R OTHER VEGETABLES
gwt66 38A POTATO CHIPS
gwt67 38B FRIED OR ROAST POTATOES AND FRIED POTATO PRODUCTS
gwt68 38R POTATO PRODUCTS, NOT FRIED
gwt69 39R POTATOES - OTHER (EG BOILED, BAKED), POTATO SALADS AND DISHES
gwt70 42R CRISPS AND SAVOURY SNACKS
gwt71 40A APPLES & PEARS (NOT CANNED)
gwt72 40B CITRUS FRUIT (NOT CANNED)
gwt73 40C BANANAS
gwt74 40D CANNED FRUIT IN JUICE
gwt75 40E CANNED FRUIT IN SYRUP
gwt76 40R OTHER FRUIT
gwt77 56R NUTS AND SEEDS (INCLUDING FRUIT AND NUT MIXES)
gwt78 41A SUGAR
gwt79 41B PRESERVES
gwt80 41R SWEET SPREADS, FILLINGS AND ICING
gwt81 43R CONFECTIONERY - SUGAR
gwt82 44R CONFECTIONERY - CHOCOLATE
gwt83 45R DRINKS - FRUIT JUICE
gwt84 46A SOFT DRINKS, NOT DIET

gwt85 46B DIET SOFT DRINKS
gwt86 47A LIQUEURS
gwt87 47B SPIRITS
gwt88 48A WINE
gwt89 48B FORTIFIED WINE
gwt90 48C LOW ALCOHOL AND ALCOHOL FREE WINE
gwt91 49A BEERS AND LAGERS
gwt92 49B LOW ALCOHOL AND ALCOHOL FREE BEER AND LAGER
gwt93 49C CIDER AND PERRY
gwt94 49D LOW ALCOHOL AND ALCOHOL FREE CIDER AND PERRY
gwt95 51A COFFEE (MADE UP WEIGHT)
gwt96 51B TEA (MADE UP WEIGHT)
gwt97 51C HERBAL TEA (MADE UP WEIGHT)
gwt98 51D BOTTLED WATER, STILL OR CARBONATED, NOT SWEETENED
gwt99 51R TAP WATER ONLY
gwt100 50A BEVERAGES (DRY WEIGHT)
gwt101 50B SOUPS
gwt102 50R SAVOURY SAUCES, PICKLES, GRAVIES AND CONDIMENTS
gwt103 54A VITAMIN/MINERAL SUPPLEMENTS - TABLET FORM
gwt104 54B VITAMIN/MINERAL SUPPLEMENTS - SYRUP/OIL FORM
gwt105 54C VITAMIN/MINERAL SUPPLEMENTS - DROPS
gwt106 54R NUTRITIONALLY COMPLETE SUPPLEMENTS
gwt107 55R SWEETENERS - ARTIFICIAL

ADJWATER - TAP WATER - ADJUSTED

Some foods were converted to made up weights by adding the weight of water recorded with the 'plate'. adjwater excludes the weight of water already contributing to other gwt variables.

The food codes involved are:

304, 2308, 2316, 8314, 8318, 2331, 2346, 2348, 2349, 2351, 2353, 2651,7906, 7911, 7913 -7915, 7917, 7919, 8458, 8460, 8462, 8464, 8466, 8468, 8471, 8485, 8491, 8608, 8610, 8616, 8706, 8760, 8788, 8791, 8792, 8850, 9005, 9170, 9183, 9187

For these food codes the weight of tap water (code 5000) was added to the corresponding food group weight. ADJWATER is the total weight of tap water excluding any tap water consumed in the same 'plate' (i.e. cup/glass etc).

FLUID WEIGHT OF FLUID CONSUMED - DERIVED AS SHOWN BELOW

fluid=gwt(17)+gwt(18)+gwt(19)+gwt(21)+gwt(83)+gwt(84)+gwt(85)+gwt(86)+ gwt(87)+gwt(88)+gwt(89)+gwt(90)+gwt(91)+gwt(92)+gwt(93)+gwt(94)+gwt(95) +gwt(96)+gwt(97)+gwt(98)+adjwater+gwt(101)+gwt(106)

4.4.3 Intake of nutrients from each food item

DATA FILE : NUT.CSV
SPSS COMMANDS : NUT.SPS
LEVEL : FOOD - 210394 records

This file contains one record for each food item consumed.
The intake of nutrients from each food item was calculated from the weight of food consumed and the MAFF nutrient database which contained nutrient contents per 100g for each food code.

SERIAL Serial number
DAY Day Number 1-4
PLATE Plate number within day
FOODSEQ Food sequence number within plate
FOODCODE Food code number
FOODWT Weight of food consumed in grams
FSUBGRP Food subgroup code
FOODNAME Food name - first 39 characters
NUT9 Water (g)
NUT10 Total sugars (g)
NUT11 Starch (g)
NUT12 Fibre Southgate (g)
NUT13 Energy (kcal)
NUT14 Energy (kj)
NUT15 Protein (g)
NUT16 Fat (g)
NUT17 Carbohydrate (g)
NUT18 Alcohol (g)
NUT19 Sodium (mg)
NUT20 Potassium (mg)
NUT21 Calcium (mg)
NUT22 Magnesium (mg)
NUT23 Phosphorus (mg)
NUT24 Iron (mg)
NUT25 Copper (mg)
NUT26 Zinc (mg)
NUT27 Chloride (mg)
NUT28 Iodine (µgrams)
NUT29 Retinol (µgrams)
NUT30 Carotene (µgrams)
NUT31 Vitamin D (µgrams)
NUT32 Thiamin (mg)
NUT33 Riboflavin (mg)
NUT34 Niacin equivalent (mg)
NUT35 Vitamin C (mg)
NUT36 Vitamin E (mg)
NUT37 Vitamin B_6 (mg)
NUT38 Vitamin B_{12} (µgrams)
NUT39 Folate (µgrams)
NUT40 Pantothenic acid (mg)
NUT41 Biotin (µgrams)

NUT42 Saturated fatty acids (g)
NUT43 *Cis* monounsaturated (g)
NUT44 *Cis* n-3 polyunsaturated (g)
NUT45 *Cis* n-6 polyunsaturated (g)
NUT46 Trans fatty acids (g)
NUT47 Cholesterol (mg)
NUT48 Glucose (g)
NUT49 Sucrose (g)
NUT50 Fructose (g)
NUT51 Lactose (g)
NUT52 Maltose (g)
NUT53 Others (g)
NUT54 Non starch polysaccharides (g)
NUT55 Manganese (mg)
NUT56 β carotene (μgram)
NUT57 α carotene (μgram)
NUT58 β cryptoxanthin (μgram)
NUT59 Haem iron (mg)
NUT60 Non haem iron (mg)
NUT61 non milk extrinsic sugars (g)
NUT62 intrinsic and milk sugars (g)
NUT63 Total N. (g)

4.4.4 Average daily intake of nutrients from food sub groups

Some tables in the published report (e.g. Table 5.19) show the percentage contribution of food types to the average daily intake (ADI) of certain nutrients. These percentages were calculated using derived variables of the ADI of each nutrient from all food types (see section 4.4.1) and the ADI of each nutrient contributed by each of 107 food subgroups.

For the 38 nutrients listed below a person level data file and corresponding SPSS command file are available. Each file contains 107 variables – one for each food subgroup. The variables have names of the form:

AN*nn***S***sg* where *nn* is the nutrient number (3-62) and *sg* is the food subgroup number (1-107).

For example variableAN62S59 (files NUTGS62.CSV and NUTGS62.SPS) contains the average daily intake in grams of nutrient 62 (intrinsic and milk sugars) from food subgroup 59 (green beans).

The food subgroup names are listed as comments in the SPSS command files and in section 4.4.2.

The 38 pairs of data files and SPSS commands are:

DATA AND SPSS COMMANDS	ADI OF NUTRIENT
NUTGS3.CSV, NUTGS3.SPS	- Vitamin A (retinol equivalents)
NUTGS10.CSV, NUTGS10.SPS	- Total sugars
NUTGS11.CSV, NUTGS11.SPS	- Starch
NUTGS14.CSV, NUTGS14.SPS	- Energy kj
NUTGS15.CSV, NUTGS15.SPS	- Protein
NUTGS16.CSV, NUTGS16.SPS	- Fat
NUTGS17.CSV, NUTGS17.SPS	- Carbohydrate
NUTGS19.CSV, NUTGS19.SPS	- Na - Sodium
NUTGS20.CSV, NUTGS20.SPS	- K - Potassium
NUTGS21.CSV, NUTGS21.SPS	- Ca - Calcium
NUTGS22.CSV, NUTGS22.SPS	- Mg - Magnesium
NUTGS23.CSV, NUTGS23.SPS	- P - Phosphorus
NUTGS24.CSV, NUTGS24.SPS	- Fe - Iron
NUTGS25.CSV, NUTGS25.SPS	- Cu - Copper
NUTGS26.CSV, NUTGS26.SPS	- Zn - Zinc
NUTGS27.CSV, NUTGS27.SPS	- Cl - Chloride
NUTGS28.CSV, NUTGS28.SPS	- I - Iodine
NUTGS30.CSV, NUTGS30.SPS	- Carotene (β carotene equivalents)
NUTGS31.CSV, NUTGS31.SPS	- Vitamin D
NUTGS32.CSV, NUTGS32.SPS	- Thiamin
NUTGS33.CSV, NUTGS33.SPS	- Riboflavin
NUTGS34.CSV, NUTGS34.SPS	- Niacin equiv
NUTGS35.CSV, NUTGS35.SPS	- Vitamin C
NUTGS36.CSV, NUTGS36.SPS	- Vitamin E
NUTGS37.CSV, NUTGS37.SPS	- Vitamin B_6
NUTGS38.CSV, NUTGS38.SPS	- Vitamin B_{12}
NUTGS39.CSV, NUTGS39.SPS	- Folate

NUTGS42.CSV, NUTGS42.SPS - Saturated fatty acids
NUTGS43.CSV, NUTGS43.SPS - *Cis* monounsaturated fatty acids
NUTGS44.CSV, NUTGS44.SPS - *Cis* n-3 polyunsaturated fatty acids.
NUTGS45.CSV, NUTGS45.SPS - *Cis* n-6 polyunsaturated fatty acids
NUTGS46.CSV, NUTGS46.SPS - Trans fatty acids
NUTGS54.CSV, NUTGS54.SPS - Non starch polysaccharides
NUTGS55.CSV, NUTGS55.SPS - Mn - manganese
NUTGS59.CSV, NUTGS59.SPS - Haem iron
NUTGS60.CSV, NUTGS60.SPS - Non haem iron
NUTGS61.CSV, NUTGS61.SPS - non milk extrinsic sugars
NUTGS62.CSV, NUTGS62.SPS - intrinsic and milk sugars

These data sets only contain records for the 1687 participants who provided 4 days of food diary information.

SOC CODES

NOTES ON THE STANDARD OCCUPATIONAL CLASSIFICATION

The codes for SOC are split into three defined groups. These are:

One digit codes for major groups of occupation
Two digit codes for minor groups of occupation
Three digit codes for constituent unit groups of occupation

Abbreviations
NES Not elsewhere stated

ONE DIGIT CODES FOR MAJOR GROUPS OF OCCUPATION

CODE	OCCUPATION
1	Managers & administrators
2	Professional occupations
3	Associate professional & technical occupations
4	Clerical & secretarial occupation
5	Craft & related occupations
6	Personal & protective service occupations
7	Sales occupations
8	Plant & machine operatives
9	Other occupations

TWO DIGIT CODES FOR MINOR GROUPS AND THREE DIGIT CODES FOR CONSTITUENT UNIT GROUPS OF OCCUPATION

CODE	DESCRIPTION	MANUAL	NON-MANUAL
10	GENERAL MANAGERS AND ADMINISTRATORS IN NATIONAL AND LOCAL GOVERNMENT, LARGE COMPANIES AND ORGANISATIONS		
100	General administrators; national government (Assistant Secretary/Grade 5 & above)		✓
101	General managers; large companies and organisations		✓
102	Local government officers (administrative & executive functions)		✓
103	General administrators; national government (HEO to Senior Principal/Grade 6)		✓
11	PRODUCTION MANAGERS IN MANUFACTURING, CONSTRUCTION, MINING AND ENERGY INDUSTRIES		
110	Production, works & maintenance managers		✓
111	Managers in building & contracting		✓
112	Clerks of works		✓
113	Managers in mining & energy industries		✓
12	SPECIALIST MANAGERS		
120	Treasurers & company financial managers		✓
121	Marketing & sales managers		✓
122	Purchasing managers		

123	Advertising & public relations managers		✓
124	Personnel, training & industrial relations managers		✓
125	Organisation & methods & work study managers		✓
126	Computer systems & data processing managers		✓
127	Company secretaries		✓
13	FINANCIAL INSTITUTION AND OFFICE MANAGERS, CIVIL SERVICE EXECUTIVE OFFICERS		
130	Credit controllers		✓
131	Bank, Building Society & Post Office managers (except self-employed)		✓
132	Civil Service executive officers		✓
139	Other financial institution & office managersnes		✓
14	MANAGERS IN TRANSPORT AND STORING		
140	Transport managers		✓
141	Stores controllers		✓
142	Managers in warehousing & other materials handling		✓
15	PROTECTIVE SERVICE OFFICERS		
150	Officers in UK armed forces		
151	Officers in foreign & Commonwealth armed forces		
152	Police officers (inspector & above)		✓
153	Fire service officers (station officer & above)		✓
154	Prison officers (principal officer & above)		✓
155	Customs & excise, immigration service officers (customs: chief preventive officer & above; excise: surveyor & above)		✓
16	MANAGERS IN FARMING, HORTICULTURE, FORESTRY AND FISHING		
160	Farm owners & managers, horticulturists		✓
169	Other managers in farming, horticulture, forestry & fishing nes		✓
17	MANAGERS AND PROPRIETORS IN SERVICE INDUSTRIES		
170	Property & estate managers		✓
171	Garage managers & proprietors		✓
172	Hairdressers' & barbers' managers & proprietors		✓
173	Hotel & accommodation managers		✓
174	Restaurant & catering managers		✓
175	Publicans, innkeepers & club stewards		✓
176	Entertainment & sports managers		✓
177	Travel agency managers		✓
178	Managers & proprietors of butchers & fishmongers		✓
179	Managers & proprietors in service industriesnes		✓
19	MANAGERS AND ADMINISTRATORS NEC		
190	Officials of trade associations, trade unions, professional bodies & charities		✓
191	Registrars & administrators of educational establishments		✓
199	Other managers & administratorsnes		✓

20	NATURAL SCIENTISTS		
200	Chemists		✓
201	Biological scientists & biochemists		✓
202	Physicists, geologists & meteorologists		✓
209	Other natural scientists nes		✓
21	ENGINEERS AND TECHNOLOGISTS		
210	Civil, structural, municipal, mining & quarry engineers		✓
211	Mechanical engineers		✓
212	Electrical engineers		✓
213	Electronic engineers		✓
214	Software engineers		✓
215	Chemical engineers		✓
216	Design & development engineers		✓
217	Process & production engineers		✓
218	Planning & quality control engineers		✓
219	Other engineers & technologists nes		✓
22	HEALTH PROFESSIONALS		
220	Medical practitioners		✓
221	Pharmacists/pharmacologists		✓
222	Ophthalmic opticians		✓
223	Dental practitioners		✓
224	Veterinarians		
23	TEACHING PROFESSIONALS		
230	University & polytechnic teaching professionals		✓
231	Higher & further education teaching professionals		✓
232	Education officers, school inspectors		✓
233	Secondary (& middle school deemed secondary) education teaching professionals		✓
234	Primary (& middle school deemed primary) & nursery education teaching professionals		✓
235	Special education teaching professionals		✓
239	Other teaching professionals nes		✓
24	LEGAL PROFESSIONALS		
240	Judges & officers of the court		✓
241	Barristers & advocates		✓
242	Solicitors		✓
25	BUSINESS AND FINANCIAL PROFESSIONALS		
250	Chartered & certified accountants		✓
251	Management accountants		✓
252	Actuaries, economists & statisticians		✓
253	Management consultants, business analysts		✓
26	ARCHITECTS, TOWN PLANNERS AND SURVEYORS		
260	Architects		✓
261	Town planners		✓
262	Building, land, mining & general practice surveyors		✓

27	LIBRARIANS AND RELATED PROFESSIONALS		
270	Librarians		✓
271	Archivists & curators		✓
29	PROFESSIONAL OCCUPATIONS NEC		
290	Psychologists		✓
291	Other social & behavioural scientists		✓
292	Clergy		✓
293	Social workers, probation officers		✓
30	SCIENTIFIC TECHNICIANS		
300	Laboratory technicians		✓
301	Engineering technicians		✓
302	Electrical/electronic technicians		✓
303	Architectural & town planning technicians		✓
304	Building & civil engineering technicians		✓
309	Other scientific technicians nes		✓
31	DRAUGHTS PERSONS, QUANTITY AND OTHER SURVEYORS		
310	Draughts persons		✓
311	Building inspectors		✓
312	Quantity surveyors		✓
313	Marine, insurance & other surveyors		✓
32	COMPUTER ANALYSTS/PROGRAMMERS		
320	Computer analyst/programmers		✓
33	SHIP AND AIRCRAFT OFFICERS, AIR TRAFFIC PLANNERS AND CONTROLLERS		
330	Air traffic planners & controllers		✓
331	Aircraft flight deck officers		✓
332	Ship & hovercraft officers		✓
34	HEALTH ASSOCIATE PROFESSIONALS		
340	Nurses		✓
341	Midwives		✓
342	Medical radiographers		✓
343	Physiotherapists		✓
344	Chiropodists		✓
345	Dispensing opticians		✓
346	Medical technicians, dental auxiliaries		✓
347	Occupational & speech therapists, psychotherapists, therapists nes		✓
348	Environmental health officers		✓
349	Other health associate professionals nes		✓
35	LEGAL ASSOCIATE PROFESSIONALS		
350	Legal service & related occupations		✓
360	Estimators, valuers		✓
36	BUSINESS AND FINANCIAL ASSOCIATE PROFESSIONALS		
361	Underwriters, claims assessors, brokers, investment analysts		✓

362	Taxation experts		✓
363	Personnel & industrial relations officers		✓
364	Organisation & methods & work study officers		✓
37	SOCIAL WELFARE ASSOCIATE PROFESSIONALS		
370	Matrons, houseparents		✓
371	Welfare, community & youth workers		✓
38	LITERARY, ARTISTIC AND SPORTS PROFESSIONALS		
380	Authors, writers, journalists		✓
381	Artists, commercial artists, graphic designers		✓
382	Industrial designers		✓
383	Clothing designers		✓
384	Actors, entertainers, stage managers, producers & directors		✓
385	Musicians		✓
386	Photographers, camera, sound & video operators		✓
387	Professional athletes, sports officials		✓
39	ASSOCIATE PROFESSIONAL AND TECHNICAL OCCUPATIONS		
390	Information officers		✓
391	Vocational & industrial trainers		✓
392	Careers advisers & vocational guidance specialists		✓
393	Driving instructors (excluding HGV)		✓
394	Inspectors of factories, utilities & trading standards		✓
395	Other statutory & similar inspectors nes		✓
396	Occupational hygienists & safety officers (health & safety)		✓
399	Other associate professional & technical occupations nes		✓
40	ADMINISTRATIVE/CLERICAL OFFICERS AND ASSISTANTS IN CIVIL SERVICE AND LOCAL GOVERNMENT		
400	Civil Service administrative officers & assistants		✓
401	Local government clerical officers & assistants		✓
41	NUMERICAL CLERKS AND CASHIERS		
410	Accounts & wages clerks, book-keepers, other financial clerks		✓
411	Counter clerks & cashiers		✓
412	Debt, rent & other cash collectors		✓
42	FILING AND RECORDS CLERKS		
420	Filing, computer & other records clerks (inc. legal conveyancing)		✓
421	Library assistants/clerks		✓
43	CLERKS (NOT OTHERWISE SPECIFIED)		
430	Clerks (nes)		✓
44	STORES AND DESPATCH CLERKS, STOREKEEPERS		
440	Stores, despatch & production control clerks		✓

441	Storekeepers & warehousemen/women	✓	
45	SECRETARIES, PERSONAL ASSISTANTS, TYPISTS, WORD PROCESSOR OPERATORS		
450	Medical secretaries		✓
451	Legal secretaries		✓
452	Typists & word processor operators		✓
459	Other secretaries, personal assistants, typists, word processor operators nes		✓
46	RECEPTIONISTS, TELEPHONISTS AND RELATED OCCUPATIONS		
460	Receptionists		✓
461	Receptionist/telephonists		✓
462	Telephone operators		✓
463	Radio & telegraph operators, other office communication system operators		✓
49	CLERICAL AND SECRETARIAL OCCUPATIONSNES		
490	Computer operators, data processing operators, other office machine operators		✓
491	Tracers, drawing office assistants		✓
50	CONSTRUCTION TRADES		
500	Bricklayers, masons	✓	
501	Roofers, slaters, tilers, sheeters, cladders	✓	
502	Plasterers	✓	
503	Glaziers	✓	
504	Builders, building contractors	✓	
505	Scaffolders, stagers, steeplejacks, riggers	✓	
506	Floorers, floor coverers, carpet fitters & planners, floor & wall tilers	✓	
507	Painters & decorators	✓	
509	Other construction trades nes	✓	
51	METAL MACHINING, FITTING AND INSTRUMENT MAKING TRADES		
510	Centre, capstan, turret & other lathe setters & setter-operators	✓	
511	Boring & drilling machine setters & setter-operators	✓	
512	Grinding machine setters & setter-operators	✓	
513	Milling machine setters & setter-operators	✓	
514	Press setters & setter-operators	✓	
515	Tool makers, tool fitters & markers-out	✓	
516	Metal working production & maintenance fitters	✓	
517	Precision instrument makers & repairers	✓	
518	Goldsmiths, silversmiths, precious stone workers	✓	
519	Other machine tool setters & setter-operators nes (inc CNC setter-operators)	✓	
52	ELECTRICAL/ELECTRONIC TRADES		
520	Production fitters (electrical/electronic)	✓	
521	Electricians, electrical maintenance fitters	✓	
522	Electrical engineers (not professional)	✓	

523	Telephone fitters	✓	
524	Cable jointers, lines repairers	✓	
525	Radio, TV & video engineers	✓	
526	Computer engineers, installation & maintenance	✓	
529	Other electrical/electronic tradesnes	✓	
53	METAL FORMING, WELDING AND RELATED TRADES		
530	Smiths & forge workers	✓	
531	Moulders, core makers, die casters	✓	
532	Plumbers, heating & ventilating engineers & related trades	✓	
533	Sheet metal workers	✓	
534	Metal plate workers, shipwrights,riveters	✓	
535	Steel erectors	✓	
536	Barbenders, steel fixers	✓	
537	Welding trades	✓	
54	VEHICLE TRADES		
540	Motor mechanics, auto engineers (inc. road patrol engineers)	✓	
541	Coach & vehicle body builders	✓	
542	Vehicle body repairers, panel beaters	✓	
543	Auto electricians	✓	
544	Tyre & exhaust fitters	✓	
55	TEXTILES, GARMENTS AND RELATED TRADES		
550	Weavers	✓	
551	Knitters	✓	
552	Warp preparers, bleachers, dyers & finishers	✓	
553	Sewing machinists, menders,darners & embroiderers	✓	
554	Coach trimmers, upholsterers & mattress makers	✓	
555	Shoe repairers, leather cutters & sewers, footwear lasters, makers & finishers, other leather making & repairing	✓	
556	Tailors & dressmakers	✓	
557	Clothing cutters, milliners, furriers	✓	
559	Other textiles, garments & related tradesnes	✓	
56	PRINTING AND RELATED TRADES		
560	Originators, compositors & printpreparers	✓	
561	Printers	✓	
562	Bookbinders & print finishers	✓	
563	Screen printers	✓	
569	Other printing & related tradesnes	✓	
57	WOODWORKING TRADES		
570	Carpenters & joiners	✓	
571	Cabinet makers	✓	
572	Case & box makers	✓	
573	Pattern makers (moulds)	✓	

579	Other woodworking trades nes	✓	
58	FOOD PREPARATION TRADES		
580	Bakers, flour confectioners	✓	
581	Butchers, meat cutters	✓	
582	Fishmongers, poultry dressers	✓	
59	OTHER CRAFT AND RELATED OCCUPATIONS		
590	Glass product & ceramics makers	✓	
591	Glass product & ceramics finishers & decorators	✓	
592	Dental technicians	✓	
593	Musical instrument makers, piano tuners	✓	
594	Gardeners, groundsmen/groundswomen	✓	
595	Horticultural trades	✓	
596	Coach painters, other spray painters	✓	
597	Face trained coal mining workers, shotfirers & deputies	✓	
598	Other machinery mechanics	✓	
599	Other craft & related occupations nes	✓	
60	NCOS AND OTHER RANKS, ARMED FORCES		
600	NCOs & other ranks, UK armed forces		
601	NCOs & other ranks, foreign & Commonwealth armed forces		
61	SECURITY AND PROTECTIVE SERVICE OCCUPATIONS		
610	Police officers (sergeant & below)		✓
611	Fire service officers (leading fire officer & below)		✓
612	Prison service officers (below principal officer)		✓
613	Customs & excise officers, immigration officers (customs: below chief preventive officer; excise: below surveyor)		✓
614	Traffic wardens	✓	
615	Security guards & related occupations	✓	
619	Other security & protective service occupationsnes	✓	
62	CATERING OCCUPATIONS		
620	Chefs, cooks	✓	
621	Waiters, waitresses	✓	
622	Bar staff	✓	
63	TRAVEL ATTENDANTS AND RELATED OCCUPATIONS		
630	Travel & flight attendants	✓	
631	Railway station staff	✓	
64	HEALTH AND RELATED OCCUPATIONS		
640	Assistant nurses, nursing auxiliaries		✓
641	Hospital ward assistants	✓	
642	Ambulance staff	✓	
643	Dental nurses		✓
644	Care assistants & attendants	✓	
65	CHILDCARE AND RELATED OCCUPATIONS		

650	Nursery nurses	✓	
651	Playgroup leaders		✓
652	Educational assistants	✓	
659	Other childcare & related occupationsnes	✓	
66	HAIRDRESSERS, BEAUTICIANS AND RELATED OCCUPATIONS		
660	Hairdressers, barbers	✓	
661	Beauticians & related occupations	✓	
67	DOMESTIC STAFF AND RELATED OCCUPATIONS		
670	Domestic housekeepers & related occupations	✓	
671	Housekeepers (non domestic)	✓	
672	Caretakers	✓	
673	Launderers, dry cleaners, pressers	✓	
69	PERSONAL AND PROTECTIVE SERVICE OCCUPATIONS NES		
690	Undertakers	✓	
691	Bookmakers	✓	
699	Other personal & protective service occupationsnes	✓	
70	BUYERS, BROKERS AND RELATED AGENTS		
700	Buyers (retail trade)		✓
701	Buyers & purchasing officers (not retail)		✓
702	Importers & exporters		✓
703	Air, commodity & ship brokers		✓
71	SALES REPRESENTATIVES		
710	Technical & wholesale sales representatives		✓
719	Other sales representatives nes		✓
72	SALES ASSISTANTS AND CHECKOUT OPERATORS		
720	Sales assistants		✓
721	Retail cash desk & check-out operators		✓
722	Petrol pump forecourt attendants		✓
73	MOBILE, MARKET AND DOOR-TO-DOOR SALESPERSONS AND AGENTS		
730	Collector salespersons & credit agents		✓
731	Roundsmen/women & van salespersons	✓	
732	Market & street traders & assistants		✓
733	Scrap dealers, scrap metal merchants		✓
79	SALES OCCUPATIONS NEC		
790	Merchandisers		✓
791	Window dressers, floral arrangers		✓
792	Telephone salespersons		✓
80	FOOD, DRINK AND TOBACCO PROCESS OPERATIVES		
800	Bakery & confectionery process operatives	✓	
801	Brewery & vinery process operatives	✓	
802	Tobacco process operatives	✓	
809	Other food, drink & tobacco process operativesnes	✓	

81	TEXTILES AND TANNERY PROCESS OPERATIVES		
810	Tannery production operatives	✓	
811	Preparatory fibre processors	✓	
812	Spinners, doublers, twisters	✓	
813	Winders, reelers	✓	
814	Other textiles processing operatives	✓	
82	CHEMICALS, PAPER, PLASTICS AND RELATED PROCESS OPERATIVES		
820	Chemical, gas & petroleum process plant operatives	✓	
821	Paper, wood & related process plant operatives	✓	
822	Cutting & slitting machine operatives (paper products etc)	✓	
823	Glass & ceramics furnace operatives, kilnsetters	✓	
824	Rubber process operatives, moulding machine operatives, tyre builders	✓	
825	Plastics process operatives, moulders & extruders	✓	
826	Synthetic fibre makers	✓	
829	Other chemicals, paper, plastics & related process operatives nes	✓	
83	METAL MAKING AND TREATING PROCESS OPERATIVES		
830	Furnace operatives (metal)	✓	
831	Metal drawers	✓	
832	Rollers	✓	
833	Annealers, hardeners, temperers (metal)	✓	
834	Electroplaters, galvanisers, colour coaters	✓	
839	Other metal making & treating process operatives nes	✓	
84	METAL WORKING PROCESS OPERATIVES		
840	Machine tool operatives (inc CNC machine tool operatives)	✓	
841	Press stamping & automatic machine operatives	✓	
842	Metal polishers	✓	
843	Metal dressing operatives	✓	
844	Shot blasters	✓	
85	ASSEMBLERS/ LINEWORKERS		
850	Assemblers/ lineworkers (electrical/electronic goods)	✓	
851	Assemblers/ lineworkers (vehicles & other metal goods)	✓	
859	Other assemblers/ lineworkers nes	✓	
86	OTHER ROUTINE PROCESS OPERATIVES		
860	Inspectors, viewers & testers (metal & electrical goods)	✓	
861	Inspectors, viewers, testers & examiners (other manufactured goods)	✓	
862	Packers, bottlers, canners, fillers	✓	
863	Weighers, graders, sorters	✓	
864	Routine laboratory testers	✓	

869	Other routine process operatives nes	✓	
87	ROAD TRANSPORT OPERATIVES		
870	Bus inspectors	✓	
871	Road transport depot inspectors & related occupations	✓	
872	Drivers of road goods vehicles	✓	
873	Bus & coach drivers	✓	
874	Taxi, cab drivers & chauffeurs	✓	
875	Bus conductors	✓	
88	OTHER TRANSPORT AND MACHINERY OPERATIVES		
880	Seafarers (merchant navy); barge, lighter & boat operatives	✓	
881	Rail transport inspectors, supervisors & guards	✓	
882	Rail engine drivers & assistants	✓	
883	Rail signal operatives & crossing keepers	✓	
884	Shunters & points operatives	✓	
885	Mechanical plant drivers & operatives (earth moving & civil engineering)	✓	
886	Crane drivers	✓	
887	Fork lift & mechanical truck drivers	✓	
889	Other transport & machinery operatives nes	✓	
89	PLANT AND MACHINE OPERATIVES NES		
890	Washers, screeners & crushers in mines & quarries	✓	
891	Printing machine minders & assistants	✓	
892	Water & sewerage plant attendants	✓	
893	Electrical, energy, boiler & related plant operatives & attendants	✓	
894	Oilers, greasers, lubricators	✓	
895	Mains & service pipe layers, pipe jointers	✓	
896	Construction & related operatives	✓	
897	Woodworking machine operatives	✓	
898	Mine (excluding coal) & quarry workers	✓	
899	Other plant & machine operatives nes	✓	
90	OTHER OCCUPATIONS IN AGRICULTURE, FORESTRY AND FISHING		
900	Farm workers	✓	
901	Agricultural machinery drivers & operatives	✓	
902	All other occupations in farming & related	✓	
903	Fishing & related workers	✓	
904	Forestry workers	✓	
91	OTHER OCCUPATIONS IN MINING AND MANUFACTURING		
910	Coal mine labourers	✓	
911	Labourers in foundries	✓	
912	Labourers in engineering & allied trades	✓	
913	Mates to metal/electrical & related fitters	✓	

919	Other labourers in making & processing industries nes	✓	
92	OTHER OCCUPATIONS IN CONSTRUCTION		
920	Mates to woodworking trades workers	✓	
921	Mates to building trades workers	✓	
922	Rail construction & maintenance workers	✓	
923	Road construction & maintenance workers	✓	
924	Paviors, kerb layers	✓	
929	Other building & civil engineering labourersnes	✓	
93	OTHER OCCUPATIONS IN TRANSPORT		
930	Stevedores, dockers	✓	
931	Goods porters	✓	
932	Slingers	✓	
933	Refuse & salvage collectors	✓	
934	Driver's mates	✓	
94	OTHER OCCUPATIONS COMMUNICATIONS		
940	Postal workers, mail sorters	✓	
941	Messengers, couriers	✓	
95	OTHER OCCUPATIONS IN SALES AND SERVICES		
950	Hospital porters	✓	
951	Hotel porters	✓	
952	Kitchen porters, hands	✓	
953	Counterhands, catering assistants	✓	
954	Shelf fillers		✓
955	Lift & car park attendants	✓	
956	Window cleaners	✓	
957	Road sweepers	✓	
958	Cleaners, domestics	✓	
959	Other occupations in sales & servicesnes	✓	
99	OTHER OCCUPATIONS NES		
990	All other labourers & related workers	✓	
999	All others in miscellaneous occupationsnes	✓	

SEG CODES

Table showing social class based on occupation;Socio-Economic Group codes

CODES	DESCRIPTION
I	Professional
II	Management and technical
IIIN	Skilled non-manual
IIIM	Skilled manual
IV	Partly skilled
V	Unskilled
7	Armed Forces
8	Inadequate description

Table showing social class based on occupation;Socio-Economic Group codes for the 1991 Census

CODES	SUBSECTION	DESCRIPTION
1		Employers and managers in central and local government, industry, commerce – large establishments
	1.1	Employers
	1.2	Managers
2		Employers and managers in central and local government, industry, commerce – small establishments
	2.1	Employers
	2.2	Managers
3		Professional workers: self employed
4		Professional workers: employees
5		Intermediate non-manual workers
	5.1	Ancillary workers and artists
	5.2	Foremen and supervisors
6		Junior non-manual workers
7		Personal service workers
8		Foreman and supervisors: manual
9		Skilled manual workers
10		Semi-skilled manual workers
11		Unskilled manual workers
12		Own account workers (other than professional)
13		Farmers: employers and managers
14		Farmers: own account
15		Agricultural workers
16		Members of armed forces
17		Inadequately described and not stated occupations

ES CODES

Table showing employment status codes

CODES	DESCRIPTION
1	Self-employed (25+ employees)
2	Self-employed (1-24 employees)
3	Self-employed (no employees)
4	Self-employed (number of employees not known)
5	Manager (establishment of 25+ employees)
6	Manager (establishment of 1-24 employees)
7	Manager (size of establishment not known)
8	Foreman/supervisor
9	Other employee
10	Employee (not known if manager/foreman/other)
11	NA/insufficient information to code more specifically