

# Food Questionnaire Creator User Guide

It is strongly recommended that you read this document before creating a questionnaire using the Food Questionnaire Creator (FQC).

Before using a questionnaire in your research study we strongly recommend you first enter test data and check the output to ensure it is as expected. While we make every effort to ensure the FQC is error free, we cannot accept liability for errors or inaccuracy.

It is the responsibility of the researcher to ensure the output is accurate and as expected.

There is no support available for Nutritools.



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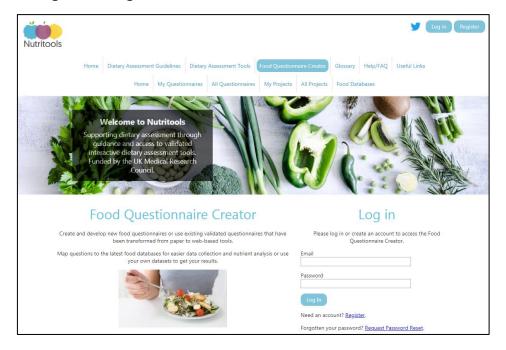
### 1. Introduction

### This guide

This help guide aims to navigate you through the various sections of the FQC in order to help you create your questionnaire. It is strongly recommended that you use this guide alongside completing your questionnaire, to ensure the process is as smooth as possible.

### What is the Food Questionnaire Creator?

The Food Questionnaire Creator (FQC) allows researchers to create, manage and use food frequency questionnaires or food checklists. To use the FQC researchers will need to register or login to Nutritools.



### Who can create questionnaires?

Registered users of Nutritools have the ability to create their own questionnaires using national dietary data to guide them and to aid with the nutritional analysis of results. If they wish, researchers can also share their questionnaires to allow others with similar research questions to view, use and modify them although this is not mandatory.

### What can be created using the FQC?

The type of questionnaires that can be created using the FQC are 'Food Frequency Questionnaires (FFQs) and 'Food Checklists'.

The FQC is able to create several different question types, for use in food questionnaires meaning the answers participants can give vary from radio buttons, multiple selects and comment text, with the ability to define portion sizes as well.

When you have created your questionnaire it can be disseminated online via a URL link for participants to complete online.

# How can dietary survey data be used to create a questionnaire?

The FQC has the ability to use results from existing dietary survey data to help Nutritools users create highly relevant food questionnaires based on current UK dietary intakes. The dietary survey database the FQC currently has access to is: National Dietary and Nutritional Survey: Year 6 (NDNS: Y6) results.

Users who are creating their own food questionnaires can use the NDNS: Y6 to inform:

- Average portion sizes for the population and for subgroups (i.e. males/females and different age groups)
- The % that food items contribute to the nutrient of interest and therefore estimate how effective the questions will be at capturing a significant proportion of nutrient intake
- The creation of specific food questionnaire questions/groups based on food contributions to nutrient intakes
- 'Food code mapping' linking food items/questions on the questionnaire to food codes on the database to estimate nutritional intake

# How does the FQC allow for easier food and nutrient analysis?

The FQC also has the ability to use dietary databases to make it easier to collect and analyse data from your participant. The dietary survey databases the FQC currently has access to are: NDNS: Y6 and McCance and Widdowson's 'The Composition of Foods' version 7. Users who are creating their own food questionnaires can use these databases to perform:

 'Food code mapping' – linking food items/questions on the questionnaire to food codes on the database to estimate nutritional intake

Users are also able to create and upload their own food database from scratch or extend an existing one to perform 'Food code mapping'.

### Example questionnaire

As an example, the Nutritools team have created a food questionnaire to assess energy intake in adults. This example questionnaire has been created using the "Create questions using dietary survey data" tab, within the "Questions" page of the Food Questionnaire Creator. Nutritools users may find this resource helpful when planning the creation of their own food questionnaires.

The finished questionnaire is called 'Adult 18-65 yrs FFQ (using NDNS energy contributions)'

Please note, this questionnaire has **not** been validated and is intended only to showcase the features the FQC can offer.

### 2. Glossary of Terms

FQC - Food Questionnaire Creator

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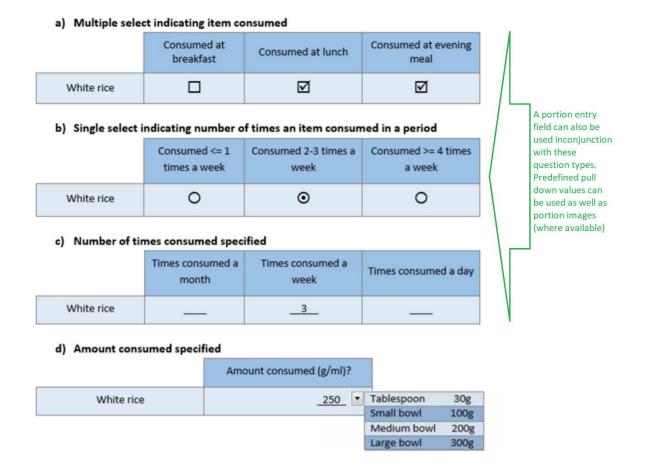
Food Group/Question ID – The individual ID assigned to the 'Group name', this will appear on the questionnaire and will be used as the numbering system for your questionnaire

Food Group/Question – The overall heading for each 'Group' of questions/items, used as a question or to define the items within the group

Food Item/Question ID - The individual ID assigned to the 'Food item', this will appear on the questionnaire and will be used as the numbering system for your questionnaire

Food Item/Question— The item that will appear in the rows of the first column, used as a food group/item or a question

Question type - The type of response for the questions in this group, including radio buttons, tick boxes and comment box:



Answer heading – The headings used for each of the answer columns on the questionnaire, e.g. used to define meal times, consumption frequencies etc. see p...

Portion description – The description given to the portion size to guide the participant in estimating portion size, this can be a written description (e.g. 'slice – thin') or a portion image (provided on the FQC)

Portion – The portion size linked to the portion description

Portion/Score – The portion or score used to calculate overall consumption. The portion or score can be used pro-rata for consumption over a common time period e.g. daily, yearly.

Define by category – The section used if you wish to define different portion sizes for males and females and/or different ages ('Use category lookup for portions' should be ticked)

Age / Sex field label – To be used when portion sizes are determined in 'Define by category'. The label used on the questionnaire to ask participants to confirm their age/sex.

Food code mapping – This section should be used to link the portion sizes and descriptions for each of the food items/groups described on the questionnaire with food items/codes from a dietary database on a pro-rata basis to allow for nutritional information to be calculated for consumed foods using the information from the dietary database.

Percentage weighting – This refers to the percentage contribution of a single food item to a "food group" and is used in the 'Food code mapping' process. For example the food item "white sliced bread" may contribute 50% to the "bread" food group, with "brown sliced bread" contributing another 50%. Percentage contributions to all food items within a "food group" should total 100%.

National Diet and Nutrition Survey (NDNS) – This is a continuous rolling programme funded by Public Health England and the UK Food Standards Agency. The cross-sectional survey collects detailed and quantitative information on food consumption, nutrient intake and nutritional status of the UK population, sampling approximately 1000 people annually. Questions can be created on the FQC using data from this survey, specifically in terms of contributions of food items to specific nutrient intakes.

# 3. Navigating through the Food Questionnaire Creator

There are 6 tabs belonging to the FQC, each with a different function:

#### Home

Allows quick access to the 4 main tabs and gives a brief overview of their function.

#### My Questionnaires

This tab is used to create and modify new and existing questionnaires. From here, questionnaires can be assigned to multiple projects. For example, the same questionnaire can be used for 3 different projects but each project can only have 1 questionnaire assigned to it. 'My Questionnaires' was designed to allow the user to complete each of the relevant tabs starting from left (Questionnaire details) to right (Finalise questionnaire).

#### All Questionnaires

Access to questionnaires created by other registered Nutritools users, where permissions allow. Depending on the permissions set by the original creator of the questionnaire, questionnaires found in 'My Questionnaires' can be viewed, copied, edited and assigned to a Project.

Before creating a questionnaire, it is recommended you look at 'All Questionnaires' to see if another researcher has created a questionnaire with a similar research question in mind. It may be useful to use this as a guide or if permissions allow to use and modify this questionnaire for your own research. If no questionnaire exists, 'My Questionnaires' should be used to create a new questionnaire from scratch.

#### My Projects

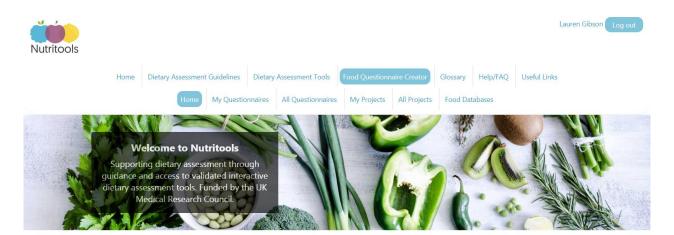
This tab lists projects created by the researcher with links to the relevant questionnaires. Participant responses can be exported from here alongside corresponding nutritional information.

#### All Projects

Grants access to projects created by other researchers, where permissions allow. Depending on the permissions set by the original creator of the project, projects can be copied and edited (the copied and modified version can be found in "My Projects").

#### Food Databases

Public databases can be viewed and extended here or new food databases can be created. There are several useful links to databases including international food composition databases under the 'Useful Links' section of the website.



#### Food Questionnaire Creator

Create and develop new food questionnaires or use existing validated questionnaires that have been transformed from paper to web-based tools.

Map questions to the latest food databases for easier data collection and nutrient analysis or use your own datasets to get your results.





#### My Questionnaires

Create new questions based on your research questions and the National Diet and Nutrition Survey (NDNS) dietary data. Questions can be mapped to McCance and Widdowson's the Composition of Foods and NDNS food reference tables.



#### My Projects

Create new projects to link your questionnaires and data collection to, you can also edit and view your current projects. Participant responses can be exported alongside corresponding nutritional information for easier analysis.



#### All Questionnaires

View and use questionnaires created by others with similar research questions and objectives. Promote sharing and collaboration with others by making your questionnaires visible here.



All Project

Where permissions have been set by project creators, view the title and email address of other projects and project creators to promote sharing and collaboration with those who have similar research questions and objectives.

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### 4. Creating a questionnaire

To guide you through the creation of a questionnaire, we recommend you follow each sub-tab in the order displayed:

- 1. Questionnaire details Basic information about the questionnaire
- 2. Questions Creating your food group/questions manually or using dietary survey data to inform your choice of food items/groups
- 3. Question type Defines the type of questions asked and the answer options available
- 4. Portions Define the portion sizes for each food item/question
- 5. Food code mapping Map food items/questions from your questionnaire to food items/codes on dietary databases for nutritional analysis
- 6. Documents Attach important documentation to your questionnaire (documents are not visible to participants).
- 7. Finalise questionnaire Preview your questionnaire and finalise ready to assign to a project for distribution

### 4.1. Step 1: Questionnaire details

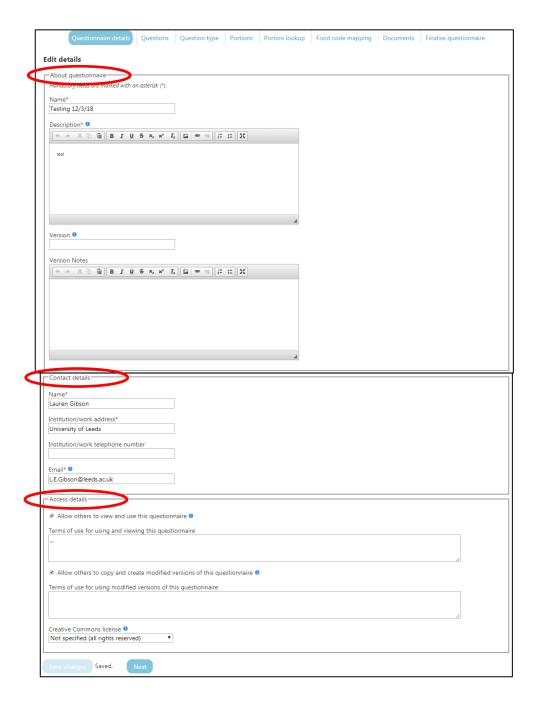
Here you will need to complete the following sections:

- About questionnaire: Give your questionnaire a name, description and version number.
  - The following information could be included: who was involved in the development of the questionnaire, what are the research objectives, what the questionnaire measures, participant characteristics and validation information. This information will **not** be displayed to participants however it will be useful for other researchers, should you wish share your questionnaire.
- Contact details: Should others wish to contact you about your questionnaire (if permissions have been set to allow sharing, researchers will only see the email address).
- Access details: This is where viewing, copying and modifying questionnaire permissions are selected.
  - The first statement should be selected if you wish to allow others to view and use your questionnaire but not to modify it (your questionnaire will appear in 'All Questionnaires')
  - The second statement should be selected if you wish to allow others to view, use, copy and modify your questionnaire (your questionnaire will appear in 'All Questionnaires')

 If you do not wish for anyone else to view your questionnaire both boxes should be left unticked (your questionnaire will **not** appear in 'All Questionnaires')

The terms of use refer to the conditions you wish to set others if they are to use your questionnaire. For example, you may require individuals who use your questionnaire to acknowledge that it was created by you.

Based on the statement selected above, the appropriate Creative Commons licence will be available for selection.



**Note:** Publications resulting from questionnaires and projects creating using the FQC on Nutritools must acknowledge Nutritools, please see the 'Useful Links' tab, 'Citing content on Nutritools' for the citation and further details.

### 4.2. Step 2: Questions

Questions for your questionnaire can be created using two different tabs: 'Create questions' and 'Create questions using dietary survey data'.



'Create questions' allows you to create food questions where you already know the questions you wish to ask.

**Special considerations:** This tab may be more useful if you wish to ask about food groups for example 'Fruits', 'Vegetables'.

'Create questions using dietary survey data' allows you to create food questions using information from national survey data to inform your choice of food items/questions. Currently the FQC has access to the UK National Diet and Nutrition Survey: Year 6 (NDNS: Y6). If your research questions looks at a specific nutrient, consumption data from the NDNS can be used to help form your questionnaire. For example if you were interested in iodine, the NDNS data can be used to highlight the food items that make up the biggest contribution to iodine intake in the population. You can then create food questions based on these items to capture a large proportion of iodine intake.

**Special considerations:** The 'Create questions using dietary survey data' tab may be more useful if your research question is based on a macro/micronutrient and/or you wish to map items from your questionnaire to items on the NDNS for easier nutritional analysis

**Note:** When creating your questions, remember you may need to include reference to a 'standard' portion size if you are **not** asking the participant to specify their own portion.

### 4.2.1. Create questions

Questions can be created by the researcher using this tab. Below shows an example of how questionnaires appear to participants when completing. It is advised to refer to this throughout Steps 2-5 to ensure the format of your questionnaire is as desired.

**Note:** Throughout the process of creating the questionnaire, you will be able to go back to different steps to make alterations if needed. Please note that once questionnaires are finalised 'Step 7: Finalised questionnaire' they cannot be edited.

### Example of a questionnaire created using the FQC:

### Adult SFFFQ\_FQC Diet Quality 1

Thank you for helping us with our research.

Our research aims to develop simple methods to obtain information on the diets of local people. What people eat can have a major impact on their current and future health.

The questionnaire is filled in by placing a tick in the box next to your answer. If you are unsure about any answer, give the best answer you can. Do not spend too long thinking about each answer –what comes into your mind straight away is often the most accurate response.

2

The questions first focus specifically on things you might eat or drink in a typical week during the past month or so. This is <u>most likely to be last week</u>, but you can select a different week if you have been poorly or on holiday.

The next questions ask about your lifestyle and general health

The following questions ask about some foods & drinks you might have during a 'typical' week, over the past month or so. Do not be concerned if some things you eat or drink are not mentioned.

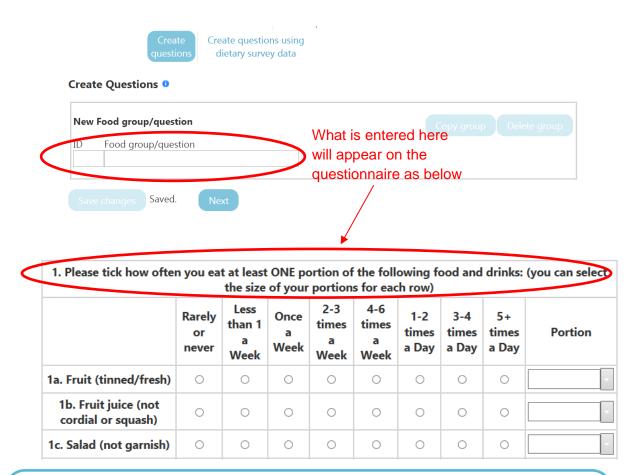
1. Please tick ho	w often (you ca								ood and drinks:
	Rarely or never	Less than 1 a Week	Once a Week	a C	4-6 times a Week		3-4 times a Day		Portion
5 1a. Fruit (tinned/fresh)	0	0	0	0	0	0	0	0	-
1b. Fruit juice (not cordial or squash)	0	0	0	0	<b>7</b>	0	0	0	8
1c. Salad (not garnish)	0	0	0	0	0	0	0	0	-

### Key:

Number	What this is	Where it is defined
1	Name of questionnaire	Step 1: Questionnaire details
2	Introduction for participants	Assigning the questionnaire to a project
3	Food group/question ID	Step 2: Questions. As defined in the 'New Food group/question ID field'
4	Food group/question	Step 2: Questions. As define in the 'Food group/question field'
5	Food item/question ID	Step 2: Questions. As define in the 'Food item/question ID'
6	Food item/question	Step 2: Questions. As define in the 'Food item/question ID'
7	Question type	Step 3: Question type. As defined on the question type tab by the pull down box of the same name.
8	Participant to specify portion consumed	Step 3: Question type. As defined on the question type tab by the tick box: 'Also require amount consumed to be specified'
9	Answer heading	Step 3: Question type. As defined on the question type tab by the 'Answer heading' fields

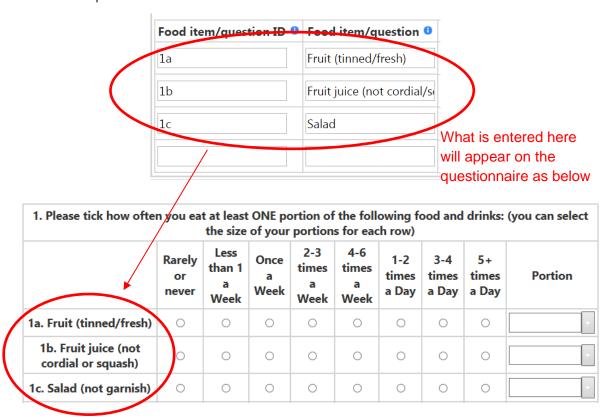
### Steps for creating your questionnaire:

1. Give your 'Food group/question' an ID (unique identifier and numbering system used by the FQC and will be displayed on the questionnaire) and write your food question or food group in the box.



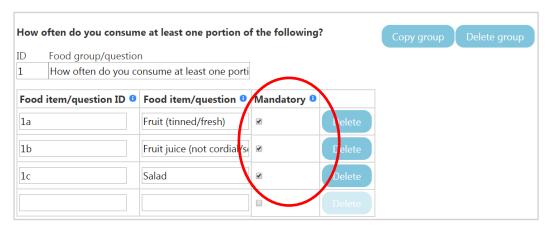
**Note:** This can be phrased as question about consuming food item/groups. For example 'When did you consume the following today?' 'How often did you consume this food last year?'. Alternatively this can be used to split your questionnaire into different sections, each section would capture information on a group of foods. For example 'Cereal', 'Bread', 'Snacks' etc.

2. Give your 'Food item/question' an ID (unique identifier and numbering system that will be displayed on the questionnaire), then complete the 'Food item/question' column.



3. Indicate whether the answer to the 'Food item/question' is mandatory by ticking/unticking the box. If ticked, remember to include 'Not consumed/Not applicable' as an answer heading.

**Note:** If a 'Food item/question' is mandatory and not completed, participants will not be able to submit their responses until it has been completed.



4. Create your next 'Food groups/questions' in the same way.

## 4.2.2. Create questions using dietary survey data

Questions can be created by the researcher using food items from dietary databases (e.g. NDNS). Questions created in this section will be displayed to participants in the same way as when created in the previous section. Creating questions in this way allows you to search and filter the database for food items that contribute to the dietary intake of your population of interest to help you create informed food questions.

**Note:** Creating questions using the NDNS: Y6 will mean the 'Food items from database' used to form your 'Food items/questions' will be used in Step 5 – Food code mapping to pre-populate percentage weightings based on typical NDNS consumption (When you reach this step, make sure the NDNS database stays ticked).

### Capturing food items that contribute to your nutrient of interest

The aim of this is to maximise the % of the nutrient captured by the questionnaire through the creation of informed questions.

1. Select the dietary database from the dropdown menu.



Note: Currently the FQC only has access to the NDNS: Y6 database.

2. The FQC will automatically show a list of foods that contribute to 'Energy (kcal)' as this is the default nutrient, items with highest contribution to 'Energy (kcal)' are shown in descending order.

**Note:** The 'Nutrient %' column indicates the % that the food item contributes to the nutrient selected in the population of interest based on consumption data from the NDNS: Y6. This can be used to estimate how much of the nutrient of interest is captured by your questionnaire.

	Create questions	Create questions using dietary survey data			
urvey based questions					
ietary Database National Diet and Nutrition Survey: Year 6	•				
n		Nutrient: Energy (kcal)  nat due to the vast size of the dietary da minutes. Thank you for your patience.	• atabase, searching Search	n	
-Create question from food items  Food item from database			Energy %↓ 0	Create Question	
BREAD, WHITE SLICED, NOT FORTIFIED			2.00		^
SUGAR WHITE			1.44		
BREAD WHITE TOASTED			1.41		
MILK SEMI-SKIMMED PASTEURISED SUM	MMER		1.41		
PASTA SPAGHETTI BOILED WHITE			1.38		
CHEESE CHEDDAR ANY OTHER OR FOR	RECIPES		1.38		
MILK SEMI-SKIMMED PASTEURISED WIN	NTER		1.35		
SAUSAGES, PORK, GRILLED			1.15		
DANIANIAC DANM ELECTI ONI V			117		*

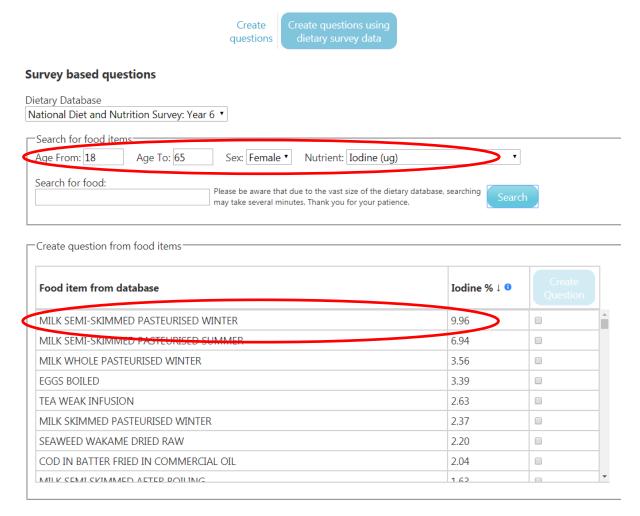
When 'Energy (kcal)' is the nutrient of interest 'Bread, white sliced, not fortified' is the top contributing food item to energy (kcal) intake in the general population according to the NDNS: Y6. By including 'Bread, white slice, fortified' to the questionnaire 2% of calorie intake for the population will be accounted for.

**Special considerations:** Due to the nature in which the NDNS codes food items, it is important to take care when selecting items. It is recommended that the selection of foods is based on both contribution by food item and contribution by food group. For example, minced beef would be listed as an individual food item but it would usually be part of a meal like lasagne, therefore this would need to be taken into consideration when choosing your foods.

3. Using the 'Search for food items' box, you can alter the population and nutrient of interest by typing in the age range and selecting the 'Sex' and 'Nutrient' from the dropdown menus. Click 'Search'.

**Note:** The search function allows for food items to be searched for based on sex and age for those wishing to create gender/age specific questionnaires. If however, the questionnaire is intended for both males and females, it is recommended to leave the 'Sex' box **blank**. If you would like to search an average for the population, please leave the age ranges and sex boxes **blank**.

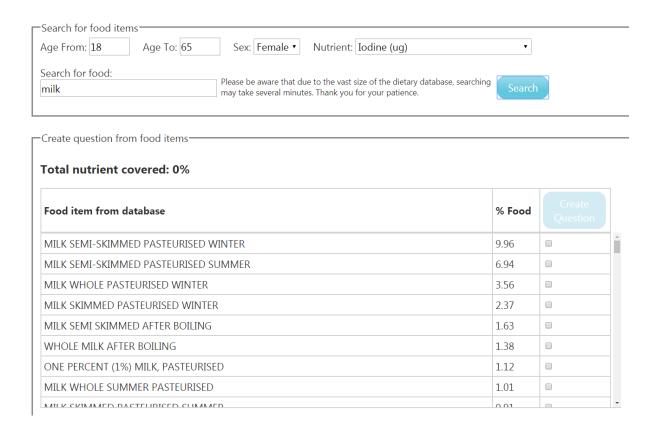
For example food items contributing to iodine intake in 18-65 year old women would be searched as below. (Searching may take a few minutes due to the size of the database.)



This shows that in 18-65 year old women, the top food item contributing to iodine intake is 'Milk semi-skimmed pasteurised winter' (9.96%), followed by 'Milk semi-skimmed pasteurised by summer' (6.94%).

**Note:** There are a choice of 52 nutrients available

**Note:** Specific food items within the nutrient of interest can also be searched for. You may wish to use the above as your initial search to get a feel for highly contributing items and then use a more specific search. For example we can see that semi-skimmed milk is a high contributing item, you may which to see how other milk forms contribute so you could search 'milk'.



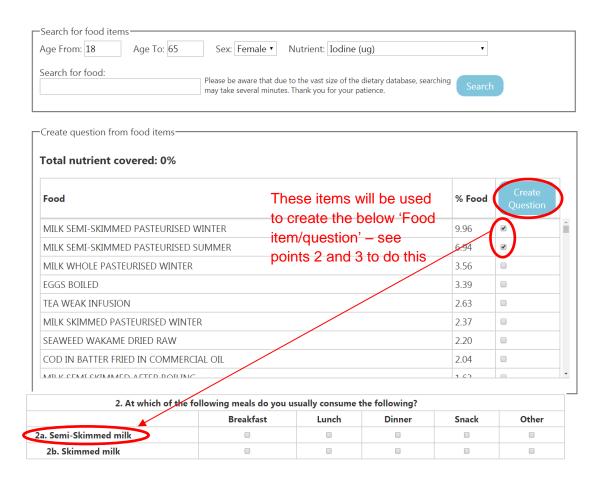
You can now see all the food items that have been coded as 'milk' and their contribution to iodine intake in 18-65 year old females.

4. Once you have identified the food items that contribute to your nutrient of interest in your population of interest, you can use these build your survey questions.

#### Creating questions based on your search

The food items that make up the highest contributions to the nutrient of interest for your indicated population or subgroup can be used to create the questionnaire.

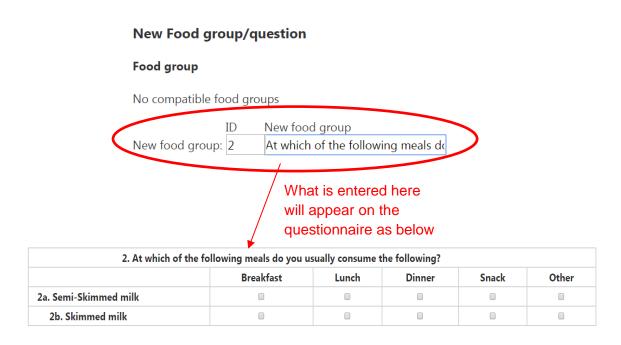
1. To do this tick the box for the food(s) you would like to base a 'Food group/question' on and click 'Create question'. (Multiple boxes can be ticked to group similar items e.g. 'bread, white sliced, not fortified' and 'bread white toasted could be grouped into the same 'Food group/question' – although these will **not** be displayed individually on the questionnaire, this is for researchers only).



**Note:** When creating a 'Food item/question' using multiple 'Food item from database' the individual 'Food items from database' will **not** be shown on the questionnaire, only the 'Food item/question' will be shown. Therefore create the 'Food item/question' using similar 'Food items from database'. For example, the food items from database 'Milk semi-skimmed pasteurised summer' and 'Milk semi-skimmed pasteurised winter' could be used to create the 'Food item/question' 'Semi-skimmed milk'.

**Note:** When creating a 'Food item/question' using multiple 'Food item from database', portion size information will need to be specified for each 'Food item/question' **not** for each 'Food item from database' (Step 4). Therefore create the 'Food item/question' using 'Food items from database' with similar portion sizes e.g. 'Bread, white slices, not fortified' and 'Bread white toasted'. **Not** 'Bread white French stick' and 'Wholemeal wheat tortilla wraps'.

2. Type in the 'ID' (a number that will appear on the questionnaire) and 'New food group' (a literal that the food will be listed under) and then press Enter on your keyboard or click outside of the text box. Remember this is not the 'Food item/question (e.g. Semi-skimmed milk), this is the food question.

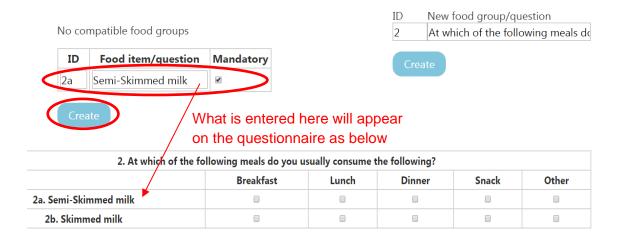


**Note:** If this is the first 'Food group/question' created in the 'Create questions using dietary survey data' tab, the message 'No compatible food groups' will appear. Once you have created a 'Food group/question', this message will no longer appear, instead previously created 'Food groups/questions' can be selected from the dropdown menu.



3. Then complete the 'Food item/question' and the ID. If you would like this 'Food item/question to be mandatory, tick the box. Then click 'Create'.

#### **Create Question**



4. After creating the 'Food item/question' you will be able to see how much of the nutrient of interest for your population of interest has been captured by your questionnaire so far...

			ng? 5	6
question	Mandatory	Food item added from database	Nutrient added % 0	Nutrient selected: Energy %
		MILK SEMI-SKIMMED PASTEURISED WINTER	9.96 Iodine	1.08
Semi-Skimmed milk		MILK SEMI-SKIMMED PASTEURISED SUMMER	6.94 <b>4</b> Iodine	1.51
		Total:	16.90 3	2.60
Food group total:				2.60
	ned milk	ned milk	med milk MILK SEMI-SKIMMED PASTEURISED SUMMER  Total:	MILK SEMI-SKIMMED PASTEURISED WINTER  9.96 Iodine  MILK SEMI-SKIMMED PASTEURISED SUMMER  6.94 Iodine  Total:  16.90 3

Once you have started to create the 'Food group/question(s)' and 'Food items/question(s)' the FQC will calculate how much of the nutrient of interest (e.g. iodine) has been captured in your population of interest (18-65 year old females) using NDNS: Y6 consumption information.

The above image shows the total amount of iodine captured by the questionnaire so far (1), the amount of iodine captured by each 'Food group/question' (2), the amount of iodine captured by each 'Food item/question' (3) and the amount of iodine captured by each 'Food item from database' (4).

For example, the questionnaire so far captures 16.90% of iodine consumption in 18-65 year old females. The Food group/question 'At which of the following meals do you usually consume the following?' captures 16.90% of iodine consumption in 18-65 year old females. The Food item/question 'Semi-skimmed milk' captures 16.90% of iodine consumption in 18-65 year old females. The Food item from database 'Milk semi-skimmed pasteurised winter' captures 9.96% of iodine consumption in 18-65 year old females.

The nutrient selected in the Search (in this case lodine) is captured in column (5). This column always captures the % displayed in the food list for the nutrient specified at the time the question was created. The values in column (5) do not change.

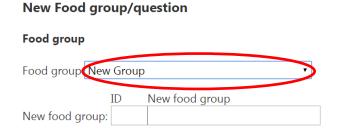
If a check is required to see how much Energy (for example) is capture by the questionnaire for the population selected, then changing the Nutrient in the Search to Energy will show the Energy figures in column (6).

In summary, column (5) details the nutrient selected when the items were added (and does not change), whereas column (6) shows the percentages from the currently selected nutrient in the Search and does change with the selection.

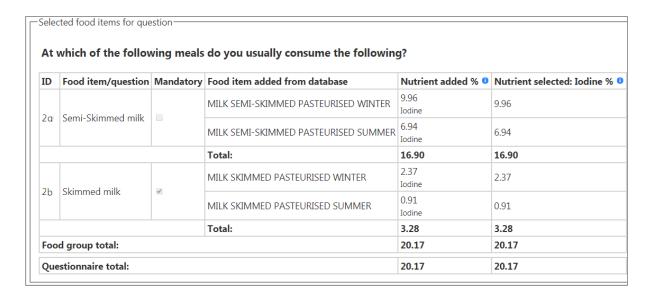
5. To add further 'Food items/questions' to your 'Food group/question' tick the box(es) for the 'Food item from database' you wish to use and click 'Create Question'. You will then be able to select the 'Food group/question' you would like to add to using the dropdown menu, enter the ID and 'Food item/question' and press 'Create'.



If you would like to create new 'Food group/question' choose 'New Group' from the dropdown and complete as point 2-3.

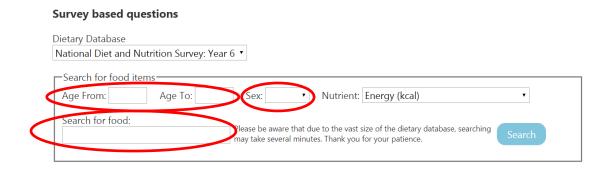


6. The 'Selected food items for question' table will now have updated to reflect the new 'Food group/question(s)' and/or 'Food item/question(s)' added to the questionnaire.



Now the questionnaire captures 20.17% of iodine consumption in 18-65 year old females. The Food group/question 'At which of the following meals do you usually consume the following?' captures 20.17% of iodine consumption in 18-65 year old females. The Food item/question 'Skimmed milk' captures 3.28% of iodine consumption in 18-65 year old females. The Food item from database 'Milk skimmed pasteurised winter' captures 2.37% of iodine consumption in 18-65 year old females.

7. Creating questions using dietary survey data also allows for more targeted identification of food items that contribute to the nutrient of interest e.g. searching for specific foods, age range and sex.



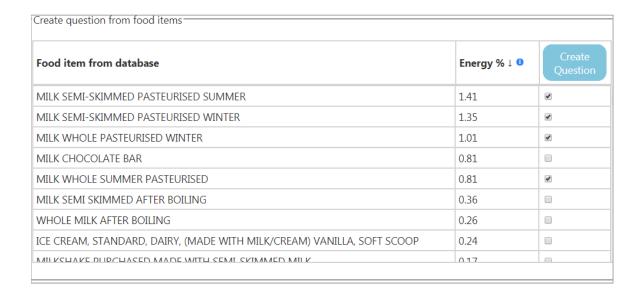
Following an initial search for foods contributing to energy intake, more specific searches can be performed using the 'Search for food' text box. For example 'milk whole summer pasteurised' is the 4<sup>th</sup> highest contributor to energy (kcal) intake. You may therefore want to group other types of milk into 1 'Food question' to capture a larger % contribution.

To do this type 'milk' into the search bar:

#### Survey based questions

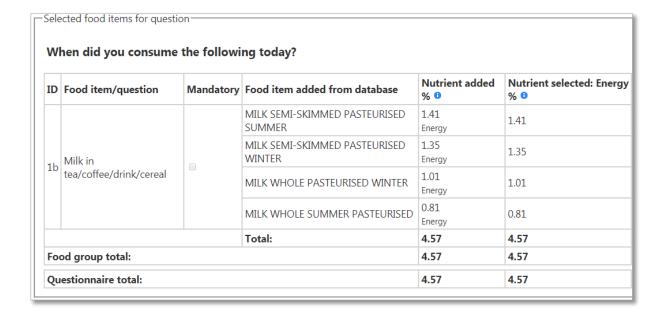


You will then see all of the foods from the NDNS: Y6 that contain 'milk' and their contribution to energy (kcal). The ones of interest can then be selected and a 'Food question' created from these.





You will then be able to see the % contribution of the 'Food questions' and 'NDNS food items' contribute to the nutrient of interest.



### 4.3. Step 3: Question type

This section defines the type of questions that will be asked and the answer options available for each.

### 4.3.1 Choosing the Question type

The different question types can be chosen using the dropdown menu:



There are 5 different 'Question types', each allows for a different way for the participant to respond:

- a. Multiple select indicating item consumed
- b. Single select indicating number of times an item consumed in a period
- c. Number of times consumed specified
- d. Amount consumed specified
- e. Text box

Question types can be selected and changed in the "Question Type" tab, following your creation of questions (in the "Questions" tab). When you select your question type you will also be asked about how your questionnaire will encompass portion size information and food mapping (using Tick-box options). These aspects will be described for each question type in this section.

#### a. Multiple select indicating item consumed

- Tick box option where several of the 'Answer headings' for each 'Food item/question' can be selected
- This question type is intended for questions that ask about meal events

Food group/question							
Answer heading Answer heading							
Food item/question	0						
Food item/question	0						

Table 1. Question type: Multiple select indicating item consumed							
Tick box options	What part	ticipant sees	Who defines the portion value				
☐ Also require amount consumed to be specified	breakfast	morning break	lunchtime	Researcher:			
Use category lookup for portions	•	•	•	'Portions – Define' tab			
$\ensuremath{\textit{\blacksquare}}$ Also require amount consumed to be specified	breakfast ı	morning break lu	nchtime Portion	Participant when			
Use category lookup for portions •	<b>⊘</b>		150	completing the questionnaire			
$\hfill \blacksquare$ Also require amount consumed to be specified	breakfast	morning break	lunchtime	Researcher:			
Use category lookup for portions	•	•	€	'Portions – Define by			
				category' tab			

## b. Single select indicating number of times an item consumed in a period

- Radio button option where only one of the 'Answer headings' can be selected for each 'Food item/question'
- This question type is intended to ask about frequency of consumption over a time period

Food group/question								
Answer heading Answer head								
Food item/question	0	0						
Food item/question	0	0						

Table 2. Question type: Single select indicating number of times an item consumed in a period

Tick box options	What partic	Who defines the portion value				
☐ Also require amount consumed to be specified	1-3 times a week	4-7 times a week	once a day		Researcher: 'Portions –	
Use category lookup for portions	0	0	•		Define' tab	
■ Also require amount consumed to be specified	1-3 times a week	4-7 times a week	once a	Portion	Participant when completing the	
Use category lookup for portions •	0	0	•	150	questionnaire	
Also require amount consumed to be specified	1-3 times a week	4-7 times a week	once a day		Researcher: 'Portions –	
Use category lookup for portions	0	0	•		Define by category' tab	

#### c. Number of times consumed specified

- Text box option where the participant specifies a number in the most appropriate 'Answer heading' for each 'Food item/question'
- This question type is intended to ask about frequency of consumption

Food group/question									
Answer heading Answer headin									
Food item/question									
Food item/question									

Table 3. Question type: Number of t	imes consume	d specified		
Tick box options	What participa	Who defines the portion value		
<ul> <li>Also require amount consumed to be specified</li> <li>Use category lookup for portions</li> </ul>	times a week	times a day		Researcher: 'Portions – Define' tab
<ul> <li>Also require amount consumed to be specified</li> <li>Use category lookup for portions</li> </ul>	times a week	times a day	Portion 150	Participant when completing the questionnaire
<ul> <li>Also require amount consumed to be specified</li> <li>Use category lookup for portions</li> </ul>	times a week	times a day		Researcher: 'Portions – Define by category' tab

#### d. Amount consumed specified

- Text box option where the participant specifies a number in one of the 'Answer headings' for each of the 'Food item/questions'
- This question type is intended to gain portion information only

Food group/question		
	Answer heading	
Food item/question		
Food item/question		

Table 4. Question type: Amount consumed specified			
Tick box options	What participant sees	Who defines the portion value	
<ul> <li>Also require amount consumed to be specified</li> <li>Use category lookup for portions •</li> </ul>	Amount consumed	Entered by participant when completing the questionnaire	

#### e. Text box

- Free text option for the participant to type freely in for each 'Food item/question', there are no 'Answer headings' for this option
- This question type is intended to be used as an 'Other' section to report any items commonly consumed that are not captured by the questionnaire.

Food grou	ıp/question
	Answer heading
Food item/question	
Food item/question	le de la companya de

Table 5. Question type: Text box  Tick box options	What participant sees	Who defines the portion value
<ul> <li>Also require amount consumed to be specified</li> <li>Use category lookup for portions</li> </ul>	A	Free typed response entered by the participant

### 4.3.2. Tick box options

After selecting the Question types you wish to use for each 'Food group/question', you can give your questions extra functionality using the tick box options. Each option will allow for a different function. The 3 options available are:

- a. Require amount consumed to be specified
- b. Use category lookup for portions
- c. Required to be mapped to a food code

Note: Depending on the question type some boxes may be greyed out

#### a. Require amount consumed to be specified

- Use (tick) if you would like the participant to define the portion of the 'Food item/question' they consumed, this will be displayed in a separate column on the questionnaire and will appear on the results output.
- This option is available for the following question types:

#### Table 6. Tick box option: Require amount consumed to be specified **Question Type** What the participant sees Multiple select indicating item Food group/question consumed Answer Answer **Portion** heading heading Food item/question Food item/question Single select indicating number Food group/question of times an item consumed in a **Answer** Answer period **Portion** heading heading Food item/question item/question

## Number of times consumed specified

Food group/question					
	Answer heading	Answer heading	Portion		
Food item/question					
Food item/question					

**Note:** This option **cannot** be used with the tick box option 'Use category lookup for portions'.

#### b. Use category lookup for portions

- This option should be used (ticked) only if you wish to define different portion sizes for different sub-groups (e.g. sex and age). For example a portion size of 10 g for 4 year olds and a portion size of 12 g for 5 year olds or 80 g for females and 100 g for males. The different portion are defined in the 'Define by category' sub-tab.
- This option is available for the following question types:

Table 7. Tick box option: U	se category lookup	o for portions		
Question Type	What the participant	sees		
Multiple select	Food group/question			
indicating item consumed		Answer heading	Answer heading	
	Food item/question	0		
	Food item/question			
Single select indicating number of times an item consumed in a period	Food group/question  Answer heading Answer heading  Food item/question   Food item/question			
Number of times	Foo	od group/question		
consumed specified		Answer heading	Answer heading	
	Food item/question			
	Food item/question			

**Note:** This option **cannot** be used with the tick box option 'Also require amount consumed to be specified'.

#### c. Required to be mapped to a food code

- Tick this box if you want the food items/questions to be mapped to food
  reference items from a dietary database, this allows nutritional information (if
  portion size is also determined) to be calculated and displayed on the results
  output. This is done in the "Food code mapping" tab
- This option is available for the following question types:

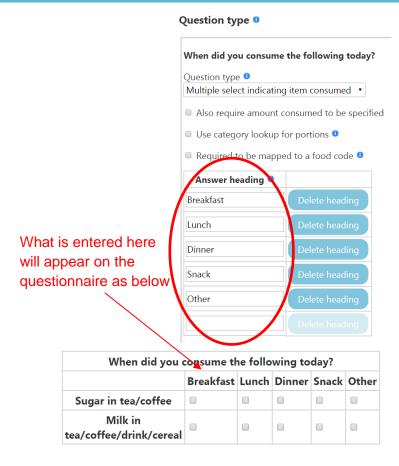
Table 8. Tick box option: F	Require to be mapp	ed to a f	ood cod	le		
Question Type	What the participar	nt sees				
Multiple select	Food group/question					
indicating item consumed		Answer	heading	Answ	er head	ling
omouniou	Food item/question					
	Food item/question					
Single select indicating	Fo	od group/	question			
number of times an item consumed in a period		Answer	heading	Answ	Answer heading	
	Food item/question	0		0		
	Food item/question	0		0		
Number of times	Food group/question					
consumed specified		Answer heading		Answer heading		ing
	Food item/question					
	Food item/question					
Amount consumed	Foo	d group/d	question			
specified			Ans	wer he	ading	
	Food item/questi	on				
	Food item/question					

**Note:** Not all questions should be mapped to a food code for example dietary quality indexes

## 4.3.3. Answer headings

Once you have chosen both your question type and selected the tick box options you wish to use, you can then begin typing in the 'Answer headings'. These will appear as column headings underneath each 'Food group/question' (except column 1 where 'Food item/questions' will be displayed).

**Note:** all the 'Food items/questions' within a 'Food group/question' must have the same answer heading.



## 4.4. Step 4: Portions

This section is used to define the portion size for each of the 'Food item/questions' of your questionnaire. This information will then be used by the system when the participant selects the corresponding option and will be displayed in the results output. If you intend to map your 'food item/questions' to food items/codes on a dietary database, the portion information defined here will be used to calculate the nutritional information on the results output.

Portions can be defined in two different sub-tabs depending on your research question. The sub-tab 'Define' is used to define portion sizes for the whole population of interest. However if you wish to define different portion sizes for specific sub-populations (for example different sexes or different ages) the sub-tab 'Define by category' should be used and the tick box 'Use category lookup for portions' should be ticked. The below table indicates which sub-tab should be used to define portions.

Question type	Tick box options	Sub-tab to define portions	How to define portions
Multiple select indicating item consumed	<ul><li>Also require amount consumed to be specified</li><li>Use category lookup for portions <sup>1</sup></li></ul>	Define	Portion score/value
oonoamou	Also require amount consumed to be specified	Define	Entered by participant
	<ul> <li>Use category lookup for portions</li> <li>Also require amount consumed to be specified</li> </ul>	Define by	Portion value by
	■ Use category lookup for portions  ■	category	sex/age defined on 'Define by Category' tab
Single select indicating number of	Also require amount consumed to be specified	Define	Portion score/value
times an item consumed in a period	<ul> <li>Use category lookup for portions</li> <li>Also require amount consumed to be specified</li> </ul>	Define	Entered by participant
period	Use category lookup for portions •		para a para a
	Also require amount consumed to be specified	Define by category	Portion value by sex/age defined
	■ Use category lookup for portions   •		on 'Define by Category' tab. In conjunction with multiplier defined on 'Define' tab
Number of times	Also require amount consumed to be specified	Define	Portion score/value
consumed specified	Use category lookup for portions •		
Specifica	Also require amount consumed to be specified	Define	Entered by participant
	Use category lookup for portions 0		
	Also require amount consumed to be specified	Define by category	Portion value by sex/age defined
	■ Use category lookup for portions  ■	category	on 'Define by Category' tab. In conjunction with multiplier defined on 'Define' tab
Amount consumed	Also require amount consumed to be specified	Define	Entered by participant
specified	<ul><li>Use category lookup for portions</li></ul>		
	Neither of the boxes can be ticked		
Text box	Also require amount consumed to be specified	N/A – This is a free typed response by	N/A
	<ul> <li>Use category lookup for portions</li> <li>Neither of the boxes can be ticked</li> </ul>	participants	
	iveither of the boxes call be ticked		

### 4.4.1. Define portions

Depending on the Question type and tick box options chosen the ways in which portion sizes are defined will differ, see table above. Below explains the different ways to define portion sizes:

- a. Portion score/value
- b. Portion description Manually entered by researcher
- c. Portion description- Images to guide participants
- d. Multiplier

**Note:** If 'Not applicable' type answers are used then a portions of '0' can be used.

**Special considerations:** If a portion value is entered, it is recommended that the corresponding question be mapped to a food code to enable the system to calculate nutrient values (to do this return to the Question type and tick the 'Required to be mapped to a food code' box). If a score value is entered, the corresponding should not be mapped to a food code, the score value will simply appear in the results output.

#### a. Portion score/value

Portion value/Score

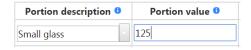
This is entered manually by the researcher for each answer heading and will be used by the system when the corresponding option is selected. Portion size information from the NDNS can be used to inform portion sizes (click the 'View' button on the 'Portions 'define' tab)

Answer Heading	Breakfast	Lunch	Dinner	Snack
Portion value/Score	200	200	200	200

#### b. Portion description – manually entered by researcher



Potential portion size options are chosen by the researchers along with a description of this, for example 'Small glass' and 'Large glass', these can be manually entered by the researcher. Portion size information from the NDNS can be used to inform portion sizes (click the 'View' button on the 'Portions 'define' tab). Participants will see all options chosen by the researchers and choose the most appropriate from a dropdown menu. Participants can also type in their own portion size, if they feel none of those offered are representative.



#### c. Portion description - Images to guide participants



Portion descriptions can also be a selection of portion images representing food items with varying weights and volumes. These can be chosen by the researcher to display to participants to aid with portion estimation. Participants will see all options chosen by the researcher and choose the most appropriate from a dropdown menu, this will auto-populate the corresponding portion value. Participants can also type in their own portion size, if they feel none of those offered are representative.





**Note:** Portion images are available for **some** foods, foods can be searched for by typing the item into the box and selecting from the dropdown menu.

#### d. Multiplier

Answer Heading	
Multiplier (used to multiply portion value with)	

This is used to multiply the portion value with to give a common timeframe. For example your answer headings may be '1-3 times a week', '4-7 times a week' and 'Once a day' the multiplier is used to calculate the portion for daily intake regardless of the timeframe option selected.

**Note:** a different multiplier should be given for each answer heading.

<b>Answer Heading</b>	Once a week	2-3 times a week	4-6 times a week	Daily
Multiplier (used to multiply portion value with)	0.14	0.36	0.7	1

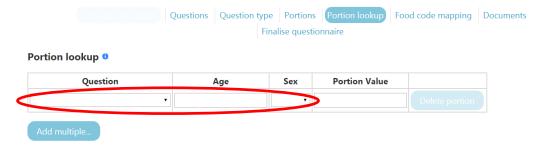
The multipliers above allow for portions to be calculated as daily consumption (i.e. 7 times a week). For example daily consumption for '4-6 times a week' was calculated as follows: 1/7x5 = 0.7 (7 represents the number of days in the week and 5 is the midpoint between 4 and 6). '2-3 times a week' would be calculated: 1/7x2.5 = 0.36.

### 4.4.2. Define by categories

If the tick box option 'Use category lookup for portions' has been selected then portions will need to be defined in this sub-tab. Define by categories was designed to allow different portion sizes to be defined for specific questions; ages and sexes. For example, if the population of interest is children between the ages of 4-10 years, you may wish to use a different portion size for each age i.e. 4 year olds, 5 year olds, 6 year olds etc. You may also wish to use different portion sizes for females and males.

In order to do this, you must define the different portion sizes for each of the anticipated 'categories' (age and/or sex). If 'Define by categories' is used to define portion sizes, the questionnaire will ask participants for their age and sex (you can customize how these questions are phrased – see below) at the start of the questionnaire. The age and sex of the participant along with the question id will be used by the system to determine which portion size is correct for the category (based on the portions you define in this section), this will be passed on to the results output.

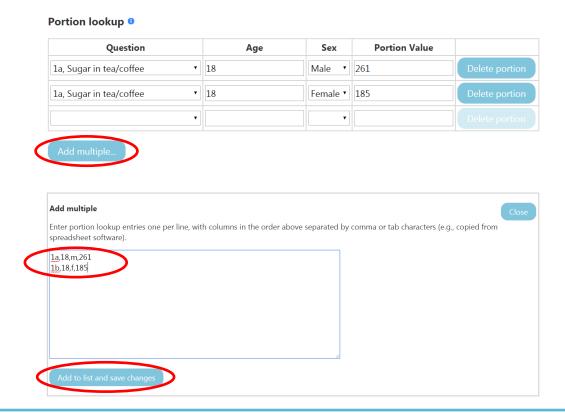
1. Select the 'Food item/question' from the dropdown menu and input the age and sex you wish to define the portion value for and then enter the corresponding portion value.





**Note:** the NDNS data can be used to inform average portion sizes, these can be gender and age specific. To view NDNS portion sizes, select the 'View' button on either portion screen.

2. Repeat for the next age/sex you wish to define a portion value for. Multiple portion values can be quickly defined using the 'Add multiple...' button. To do this, enter in the following format: Food item/question ID,Age,Sex,Portion Value - a comma should be used to delimit each e.g. 1a,4,m,120



**Note:** It may be worth defining all the portion sizes for the different ages/sexes on an excel spreadsheet and copying and pasting them in here.

**Note:** If your participants will be both males and females and you wish only to use different portion sizes for different ages, you will still need to define portion sizes for both males and females e.g. 1a,4,m,120, 1a,4,f,120, 1a,5,m,130, 1a,5,f,130

3. Once you have input all the different portion sizes for all of the different ages and/or sexes you anticipate that will complete the questionnaire you can customise the age and sex question labels.



**Note:** It is possible to input portion values for age ranges for example 80 g for 10-17 year olds 100 g for 18-65 year olds (1a,10-17,m,80 and 1a,18-65,m,100) but the ranges entered will be used to create the age label fields i.e. participants would only be able to select an range: 10-17 years or 18-65 years and **not** specify their age in years.

## 4.4.3. Using the NDNS as a guide to inform portion size

Data from the NDNS can be used to inform average portion size information for the population. Searches can also be age and gender specific if your research question and questionnaire requires a specific sub-group of the population e.g. 18-65 year old females.

Average portion sizes can determined for individual food items (e.g. Tea Strong Infusion) or for a group of similar food items (e.g. Tea (made-up weight) this is an average of all the teas listed above).

- 1. Click 'View'
- 2. Enter your criteria into the search box if applicable e.g. age and sex of participants and search for the food item of interest.

#### Define portions 0

View average portion size data from the National Diet and Nutrition Survey: Year 6 as a guide to help inform portion sizes:





This shows the average portion sizes for all 'tea' food items for 18-65 year old males and females. The items in bold represent the group average portion size for the above items.

**Note:** If your research question and questionnaire are **not** gender or age specific, leave these boxes blank to see an average for the UK population (remember this information is sourced from the NDNS).

## 4.5. Step 5: Food code mapping

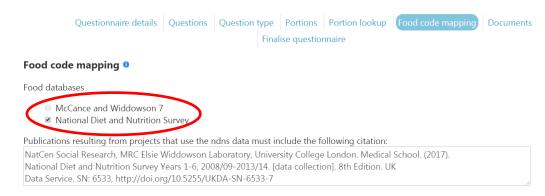
This section should be used if the box 'Required to be mapped to a food code' has been ticked on the 'Question type' tab. If this box was not ticked for any 'Food group/questions', you can move on to the next section. If you would like your 'Food items/questions' to be mapped to a food code, you can go back to the previous step and tick this box.

Food code mapping allows for food items/questions on the questionnaire to be mapped to food reference items from a dietary database. Along with the portion information, this allows the nutritional information of your food items to be determined for participants.

**Note:** It is recommended to base the mapping of foods and percentages on the typical consumption of those foods in the population being considered.

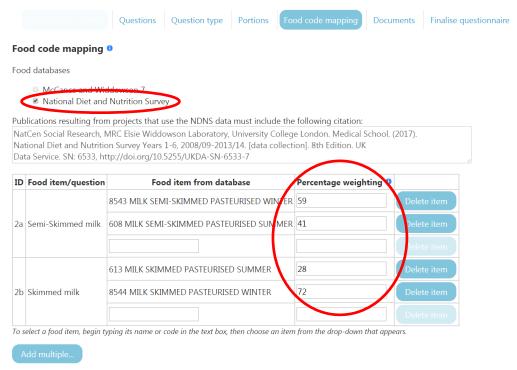
There are 2 databases available to use:

- McCance and Widdowson 7
- National Diet and Nutrition Survey
- 1. Tick the food database you wish to use



**Note:** The National Diet and Nutrition Survey can be used to determine how frequently foods are consumed in the UK population, this can be used to create questions and this can be used to inform the mapping process.

If food questions were created using the NDNS: Y6 data on the 'create questions using dietary survey data' tab then the NDNS database should also be used for the mapping process. The 'Percentage weighting' boxes for each 'Food item from database' will be pre-populated based on the NDNS: Y6 data (how frequently these items were consumed), therefore if you are happy with these weightings, you can move onto the next step 'Step 6 – Documents'



This question was created in the 'Create questions using dietary survey data' tab using the NDNS: Y6 database (please see below). Consumption percentages from the NDNS database (9.96% and 6.94%) have been used to pro-rata pre-populate the percentage weightings. 'Milk semi-skimmed pasteurised winter' has a suggested weighting 59% (100\*9.96/(9.96+6.94)) and 'Milk semi-skimmed pasteurised summer' has a suggested weighting 41% (100\*6.94/(9.96+6.94))

-Selected food items for question-

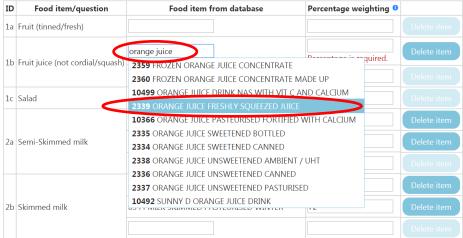
#### At which of the following meals do you usually consume the following?

ID	Food item/question	Mandatory	Food item added from database	Nutrient added %	Nutrient selected: Energy %
2a Semi-Skimmed milk		MILK SEMI-SKIMMED PASTEURISED WINTER	9.96 Iodine	1.08	
	ammed milk	MILK SEMI-SKIMMED PASTEURISED SUMMER	6.94 Iodine	1.51	
			Total:	16.90	2.60

The suggested % weighting can simply be overtyped with new values if required.

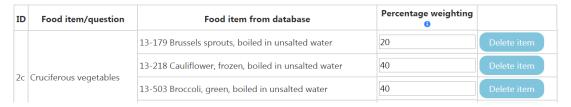
**Note:** The percentage mapping will not appear to participants on the questionnaire, it is used to calculate 'behind the scenes' nutritional information for food items.

2. If the 'Percentage weightings' are not pre-populated (i.e. you did not create questions using NDNS data and/or you wish to use McCance and Widdowson 7 as your food database, you can search for the food using the box and dropdown menu, you can do this by typing in the name of the food item (or the food code if this is known).



To select a food item, begin typing its name or code in the text box, then choose an item from the drop-down that appears.

3. Next enter the percentage weightings for each of the food items from the database in the column "Percentage weighting". The weightings for all of the food items from the database within the 'Food item/question' must add up to 100. Heavier weighting should be placed on more commonly consumed food items.



In this example, the food item/group 'Cruciferous vegetables' is made up of 3 different food items from the McCance and Widdowson 7 database. The percentage weightings for the food items from database add up to 100 (20 + 40 + 40 = 100).

## 4.6. Step 6: Documents

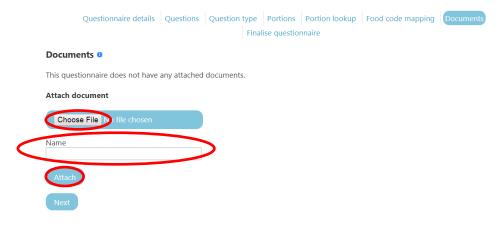
This step allows for supporting documentation to be attached to the questionnaire. Participants cannot see these documents however if permissions allow, other registered users will be able to see these.

Typically this section would include:

- An explanation of mapping decisions
- Printable layouts of the questionnaire
- Validation information
- Background and limitations of the questionnaire

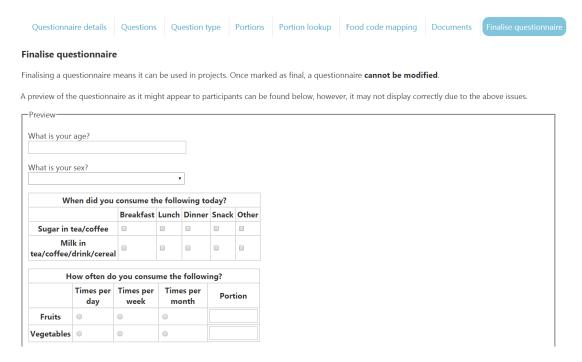
Providing the above information will aid other researchers who are wanting to use/modify the questionnaire.

To attach documentation to the questionnaire, click on "Choose File", remembering to give it an appropriate "Name" before clicking "Attach".

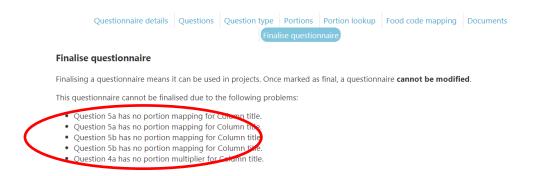


## 4.7. Step 7: Finalise questionnaire

After completing all the sections it is advised that you preview your questionnaire before finalising, a preview is visible at the bottom of the screen. If there is anything you are not happy with, go back and make the relevant changes. Once a questionnaire has been finalised, it cannot be modified further.

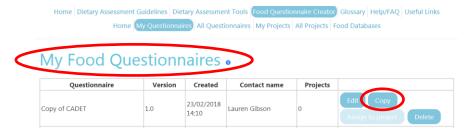


The questionnaire may not be finalised if the completed sections have errors in, these issues will be listed here for you to go back and change.



Once finalised, questionnaires can be assigned to projects where they can be used in research.

If changes to the questionnaire need to be made after finalising, a copy of the questionnaire can be made by going to "My Questionnaires", this version of the questionnaire can then be modified.



# 5. Assigning questionnaires to projects

## Why assign questionnaires to projects?

Questionnaires are created and saved in 'My Questionnaires' or 'All Questionnaires'. These tabs allow for questionnaires to be viewed, modified or copied by the researcher but participant responses are not collected here (they are stored within projects). To collect participant responses, a questionnaire must be assigned to a project (questionnaires can be stored against multiple projects). Projects can be created and saved in 'My Projects'. Once a questionnaire has been assigned to a project a URL for the questionnaire will be created allowing for online completion and responses to be collected. Participant responses can be viewed and edited by the researcher in 'My Projects'. Once all responses have been collected, the researcher can download the participant responses using 'Export summary' or 'Export detail'

## Creating a project

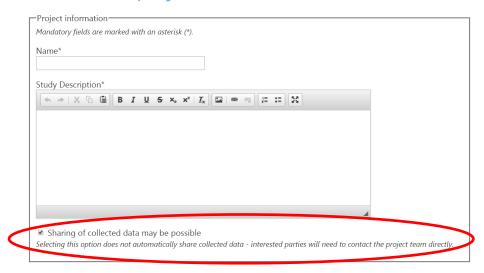
1. Go to 'My Projects' and click 'Create New Project'



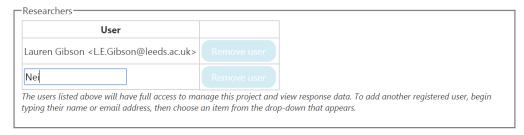
2. Complete the 'Project information' fields remembering to include important information in the 'Study Description' box. For example, the aims of the questionnaire, the intended participants, validation information etc.

**Note:** By ticking the 'Sharing of collected data may be possible' box, data will **not** automatically be shared, instead other registered members of Nutritools will see that you would be willing to share data (This will appear in 'All Projects' next to your Project title) and if they are interested will contact you via email.

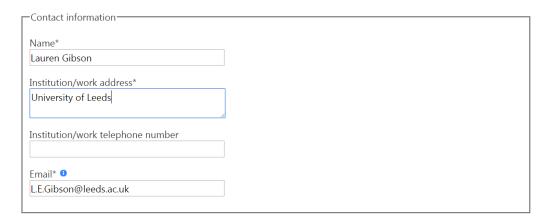
#### Create new project



3. The FQC will auto populate your name and email address as the 'User' under the 'Researchers' section. If you would like to allow other **registered** users of Nutritools access to your project (they will be able to view and export responses), type in their names in the box below yours and select from the dropdown box.



**4.** Complete your 'Contact information' some of which will be auto populated, remembering to include the mandatory field 'Institution/work address'.

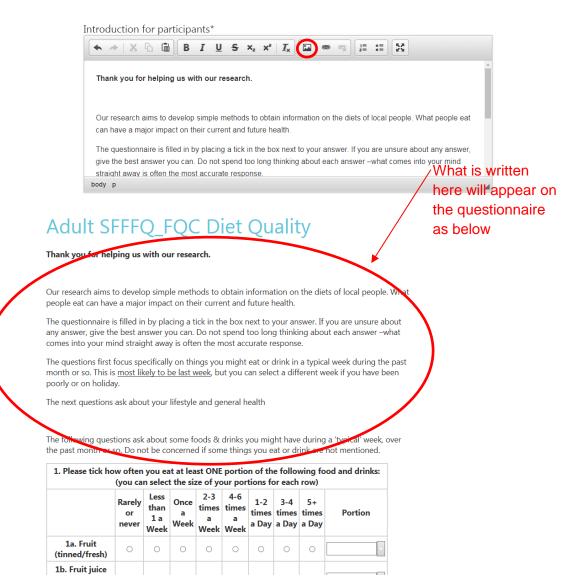


5. The 'Questionnaire content' section allows you to choose the questionnaire you would like to assign to the project. You can do this using the dropdown menu (Those questionnaires present in 'All questionnaires' (that other researchers have made available to use) and 'My questionnaires' will be shown here).



**Note:** Questionnaires must be finalised before you can assign them to a project

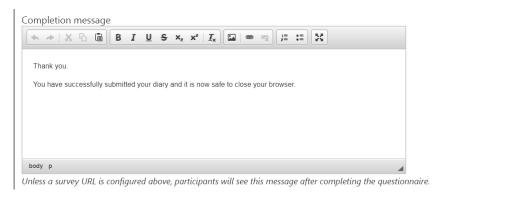
6. If you would like to give an introduction to participants, you can add this here. (This will appear at the top of the questionnaire that participants complete). For example, thanking them for taking part and giving them instructions on how to complete. Images can also be inserted using the button.



7. If you are using another survey tool e.g. to assess general lifestyle questions, that are not captured by the FQC, you can direct participants to this after completing your questionnaire. To do this, copy and paste the URL of the survey (from the other survey tool, **not** the FQC URL) you wish for participants to complete. Remembering to add '{participantId}' to the end of the URL to insert identifiers that will allow you to match the participant responses from each of the questionnaires.

Completion survey URL	
Participants will be sent to this address after completing the questionnaire. Use {projectId} and {partici}, Leave blank to show the message below instead.	pantId} to insert identifiers.

8. However, if you do not intend to direct participants to another survey tool after completing, leave the 'Completion survey URL' box blank and instead personalise the 'Completion message' to thank participants for taking part once completing the questionnaire.



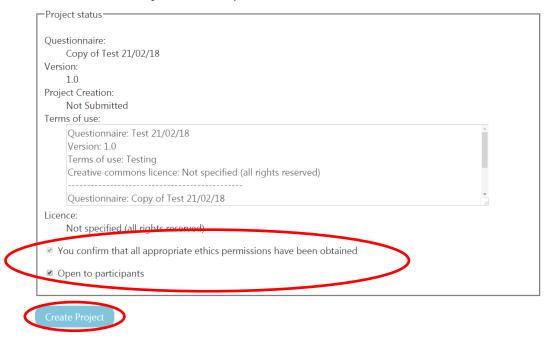
9. A 'Project ID' will be given, but this can be changed (but not after the project is created) to a more memorable or appropriate ID if you wish. Remember this will appear at the end of the URL used for participant online completion.



10. 'Project Status' recaps some of the general information about the questionnaire and the 'Terms of Use' that were set (these cannot be altered here). 11. Before project creation can be completed, you must confirm that appropriate ethical permission has been obtained by ticking the box.

Note: All research with human subjects requires ethical approval.

- **12.** You can then click 'Open to participants' to receive the questionnaire URL to send to participants for completion.
- 13. Click 'Create Project' to complete.



**Note:** Only 1 questionnaire can be linked to 1 project

## 6. Questionnaire URLs

## 6.1. Creating Participant IDs

'My Projects' lists projects created only by the researcher, each project can have 1 questionnaire assigned to it. Once a project is created and 'open to participants', a url link to the questionnaire to be used bythe participant will be presented here. If the participant receives the exact URL shown on Nutritools (with *{participantId}}*), each participant will have a randomly generated Participant ID (i.e. the completed questionnaire will be anonymous)

#### My Projects •



#### For example:

https://nutritools-test.azurewebsites.net/p/zyfehslm/{participantId} – Nutritools will generate a random ID for each participant, the randomly generated ID will appear on the results output for this participant.

To assign a specific and predefined ID, the *{participantId}* should be replaced by a predefined ID at the end of the URL.

#### For example:

https://nutritools-test.azurewebsites.net/p/zyfehslm/001 - The participant will have the predefined ID of 001, 001 will appear on the results output for this participant.

If there are many participants, this can be handled by using a mail merge (outside of the Nutritools system) and sending out individual emails to each participant containing unique ids at the end of the 'URL for Nutritools FFQ'

## 6.2. Passing from the FQC questionnaire to another survey tool

If you wish to collect other non-food information from the participant that the FQC questionnaire does not capture, for example lifestyle information, you can pass participants onto a different survey tool like Online Surveys (OS) after they have completed the FQC questionnaire. To do this you will need to add a 'Completion URL' to the 'Project' ('My Projects' > 'Create Project' / 'Edit' a current project). The Completion URL should be the URL link to the survey you have created using a different tool for example OS.

Completion survey URL	
https://leeds.onlinesurveys.ac.uk/cua4djq7r2-11	

If you wish to match participant responses from the FQC questionnaire to the responses from the other survey tool, you will need to add identifiers to the Completion URL to pass on the unique Participant ID (this will have been generated by Nutritools or defined by the researcher). The identifier you will need to add the following to the end of the Completion URL is: /?token={participantId}

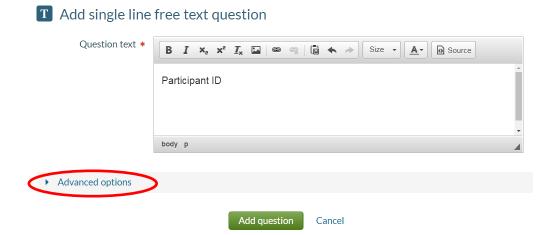
This means that Nutritools will pass the Participant ID 'token' over to the other survey tool so responses can be matched by ID.

Completion survey URL	
https://leeds.onlinesurveys.ac.uk/test-2/?token={participantId}	
Participants will be sent to this address after completing the questionnaire. Use {projectId} and {participants will be sent to this address after completing the questionnaire.	ipantId} to insert identifiers

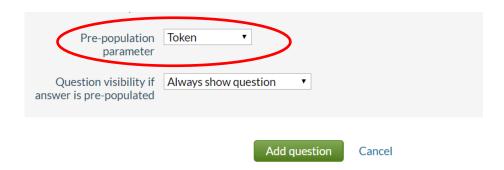
**Note:** If the participant ID is not passed onto the survey tool using the token, you will not be able to link the responses to the correct participants.

To enable the survey tool to display the Participant ID 'token' that has been passed to it by Nutritools, you will need to create a question that this information can be passed to. The below uses OS as an example.

 Create a question in OS for example 'Participant ID', select 'Advanced options'.



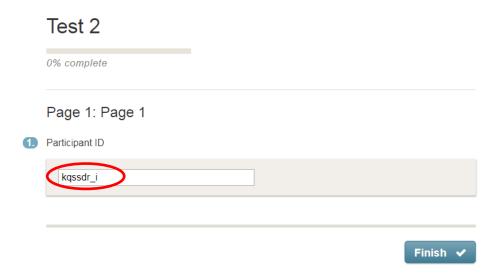
2. Choose 'Token' from the 'Pre-population parameter' dropdown



**Note:** You may wish for this question to be hidden from participants this can be altered using the dropdown menu for 'Question visibility if answer is prepopulated'. This Question **must** be question 1 on the survey.

3. Click 'Add question'. Create the rest of the survey as normal.

The participant ID used for the FQC questionnaire will now be passed onto OS and would be displayed on OS as below (question not hidden in below example):

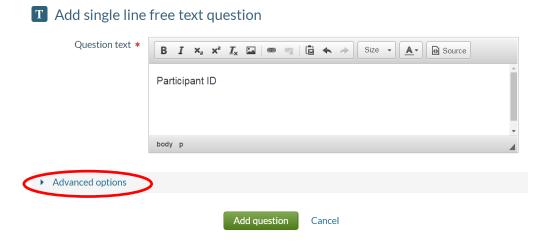


## 6.3. Passing from another survey tool to the FQC questionnaire

If you wish to collect non-food information from the participant that the FQC questionnaire does not capture, for example lifestyle information, participants can complete this information using a different survey tool like Online Surveys (OS) before completing the FQC questionnaire. To do this you will need to link your FQC questionnaire to the survey you create on OS. You will also need to pass the Participant ID 'token' from OS to the FQC to allow you to match responses between the two result outputs.

**Note:** If the participant ID is not passed onto the survey tool using the token you will not be able to link the responses to the correct participants.

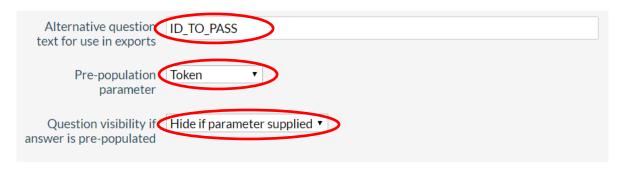
1. Create a question that will be used for the Participant ID and select 'Advanced options'.



**Note:** This question **must** be question 1 on the survey to enable to Participant ID to be passed between the tools.

- 2. Type in 'ID TO PASS' in 'Alternative question text for use in exports'
- 3. Choose 'Token' from the 'Pre-population parameter' dropdown

4. Select 'Hide if parameter supplied'



**Note:** By choosing 'Hide if parameter supplied' you allow for Participant IDs to be passed on from for example a mail merge containing the OS URL (with the participant's id appended) to OS to Nutritools (i.e. each participant ID has been predefined by the researcher and is included in the OS link appended by /?token= e.g. for Participant ID 101 the link would be: https://leeds.onlinesurveys.ac.uk/study2/?token=101).

Alternatively the participant could be prompted to specify their ID in OS (i.e. if the link did not include the predefined Participant ID) so the participant entered ID could be passed to Nutritools.

- 5. Click 'Add question'. Create the rest of the survey as normal.
- 6. Once you have created your survey questions click 'Add page', then 'Add item' and select 'Note' as the style.

**Note:** This will be shown to participants once they've clicked 'Finish' to submit their responses

7. Click the 'Source' button and copy and paste the following:

insert your message here;<a href="insert your FQC URL link here/[ID\_TO\_PASS]">here</a>/p>



For example entering the following into the source box:

Thank you for taking part in the questionnaire so far. Please click <a href="https://nutritools.azurewebsites.net/p/\_es9tusc/[ID\_TO\_PASS]">here</a>to complete your Food Frequency Questionnaire.

Note: You will be directed to a different webpage once you have followed the above link.

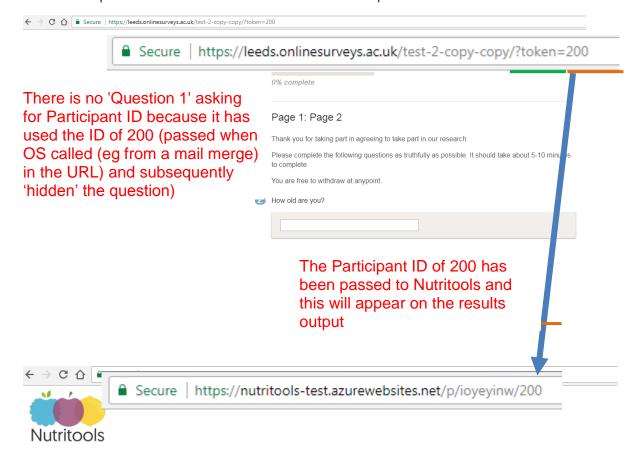
Would look like this to participants:

### Thank you

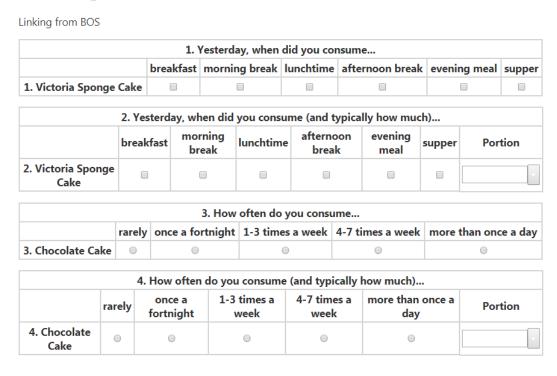
Thank you for taking part in the questionnaire so far. Please click <u>here</u> to complete your Food Frequency Questionnaire.

Note: You will be directed to a different webpage once you have followed the above link.

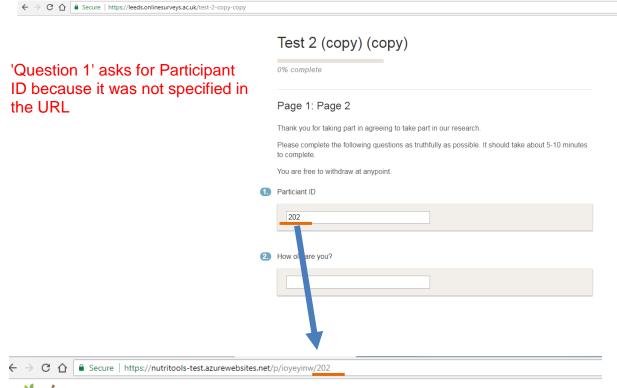
The Participant ID used in the OS link will now be passed onto Nutritools:



## Linking from BOS



The Participant ID typed in by the participant will be passed to Nutritools:

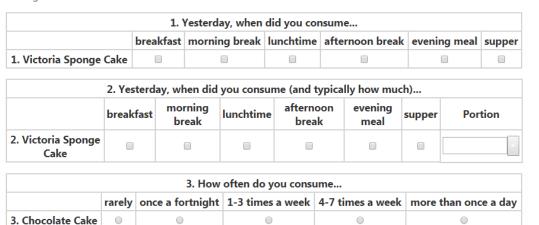




## Linking from BOS

The Participant ID of 202 has been passed to Nutritools and this will appear on the results output

Linking from BOS



# 7. Exporting Participant Responses

The FQC offers 3 different ways for participant responses to be viewed and downloaded:

- Directly viewing the online responses as completed on the questionnaire
- Exporting a spreadsheet listing all participant responses for each question with comprehensive nutritional information (providing food code mapping was used)
- Exporting a spreadsheet listing comprehensive nutritional information (providing food code mapping was used) for each participant

## 7.1. Viewing responses

It is possible for the researcher to access a completed online version of all participants' questionnaires and to edit these.

- 1. These can be accessed by going to the 'My Projects' tab
- 2. Select the questionnaire you wish to view responses for
- 3. Click 'View responses'
- 4. Choose the response you would like to view using the participant ID as a guide and click 'View/edit response'.

**Note:** You can also see the age, gender and completion time for each response.



#### My Projects •

Filter projects:



#### Responses

#### Project ID: bl6kstyj

Filter responses:

Participant Id	Age	Gender	Completion Time	View/Edit
6zarpj00	Age not specified	Gender not specified	12/03/2018 10:14	View/edit response
8asamdzi	Age not specified	Gender not specified	Not completed	View/edit response
8-d1enjg	Age not specified	Gender not specified	Not completed	View/edit response
a5eoe2o5	Age not specified	Gender not specified	Not completed	View/edit response
l1gtsaoz	Age not specified	Gender not specified	Not completed	View/edit response
oqja2d8p	Age not specified	Gender not specified	06/03/2018 14:22	View/edit response
zswawyqf	Age not specified	Gender not specified	Not completed	View/edit response

#### Phase 3

#### Test

	Which of the followi	ng drinks have you consumed today?	
	I have consumed this today	I have not consumed this today	Portion
Tea	0	•	200.00
Coffee	0	0	200.00
Soft drink	0	0	300.00
Fizzy drink	0	0	100.00
Water	0	0	500.00

When die	d you consumed the	following f	ruits and veg	etable toda	y?
	Breakfast	Lunch	Dinner	Snack	Portion
Green leafy vegetables			<b>8</b>		80.00
Root vegetables		€			80.00
Cruciferous vegetables			0	×	80.00
Citrus fruits	<b>2</b>		0		80.00
Berries		<b>8</b>	0	×	80.00
Apples/Pears	∞	0	<b>8</b>	0	80.00

	I	How often do	you usually co	nsume the foll	owing?		
	More than once a day	Once a day	Several times a week	Once a week	Several times a month	Once a month	Portion
Sweets/confectionary	1	-		-		-	80.00
Pastries/buns	-		2				40.00
Fruit/vegetables	-	-		80			80.00
Breads/pizzas		-			3		80.00

	How much do you usually consume in a portion of the follow?
	Amount per portion
Rice	61.74
Pasta	101.3
Bread	50
Cereal	22.75

## 7.2. Output: Export detail

It is possible for researchers to export participant responses to an excel spreadsheet that details:

- Participant ID, age and sex
- All participants' responses to each of the questions
- A calculated portion or score value for each participant for every 'Food item/guestion' answered
- Comprehensive nutritional information for each participant for every 'Food item/question' answered (providing food code mapping was used)

**Note:** The output on the excel spreadsheet does not detail what the 'Answer headings' were named as, instead they are 'Multi-response 1, 2' etc., 'Single response 1, 2' etc. 'Typed Response 1, 2' etc. therefore it make analysis easier, you should have a copy of the questionnaire (as shown to participants) to hand when analysing to refer back to.

To view this type of output follow these steps:

- 1. Go to the 'My Projects' tab
- 2. Select the questionnaire you wish to download responses for
- 3. Click 'Export detail'

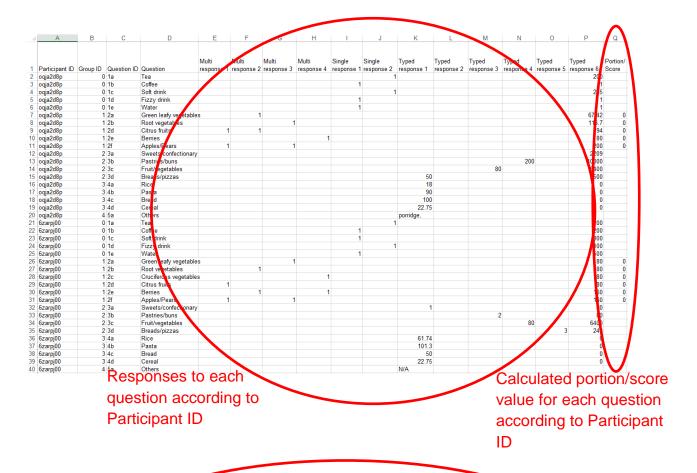


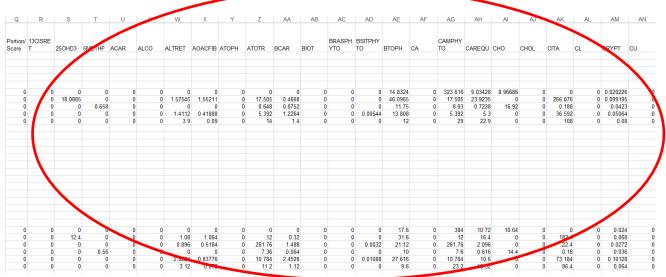
#### My Projects •

Filter projects:



The exported excel spreadsheet will have be in a similar format to the below:





Nutritional information for each question according to Participant ID (Note: Nutrients are displayed in alphabetical order)

**Note:** When using the databases for nutrient analysis please be aware that the following assumptions were made:

- If Tr was shown in the database for a nutrient, a value of 0 was used
- If a blank value was found in the database for a nutrient, a value of 0 was used
- If N was used in the database suggesting the nutrient was present but the quantity at which is unknown, a value of 0 was used
- If an estimated value was used in the database, this value was taken
- If a 'Less than' was used, the value given was halved e.g. <0.5 then 0.25 will have been used

## 7.3. Output: Export summary

It is possible for researchers to export just the nutritional information for each participant to another excel spreadsheet that details:

- Participant ID, age and sex
- Comprehensive nutritional information for each participant (providing food code mapping was used)

To view this output follow these steps:

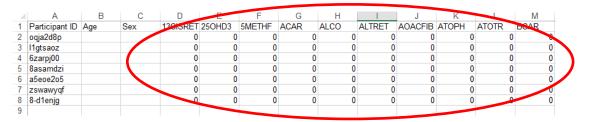
- 1. Go to the 'My Projects' tab
- 2. Select the questionnaire you wish to download responses for
- 3. Click 'Export summary'



#### My Projects •



The exported excel spreadsheet will have be in a similar format to the below:



Nutritional information according to Participant ID (Note: Nutrients are displayed in alphabetical order)

## 8. Permissions

The Food Questionnaire Creator has the ability to allow you to share the questionnaires you create with other researchers. If you decide to allow this, other researchers will either be able to view and use (but not change) your questionnaire or be able to copy and modify a version of your questionnaire. This will depend on the permissions you set in 'Questionnaire Details'.

**Note:** If you agree to share your questionnaire the data from respondents are not shared (the data is held against projects).

#### 8.1. Permissions Statements

If you wish to allow other registered users of Nutritools to use your questionnaire for future work, please tick one of the two tick box options. By selecting one of the tick boxes the questionnaire and the Creative Commons license will be visible to other registered users of Nutritools.

Access details

☐ Allow others to view and use this questionnaire 
☐ Allow others to view, use and modify this questionnaire 
☐

Allow others to view and use this questionnaire - Selecting this option will make the questionnaire visible to other users. They will be able to use this questionnaire on their projects, but will not be able to copy or amend it in anyway.

The Creative commons licences that complies with this option are:

- Attribution-NoDerivs
- Attribution-NonCommercial-NoDerivs

Allow others to copy and create modified versions of this questionnaire - Selecting this option will make the questionnaire visible to other users. They will be able to use, copy and modify the questionnaire.

The Creative commons licences that complies with this option are:

- Attribution
- Attribution-ShareAlike
- Attribution-NonCommercial
- Attribution-NonCommercial-ShareAlike

Once you have selected one of the boxes, you can set terms of use for using the questionnaire, for example acknowledging the questionnaire is yours.

-Access details ————————————————————————————————————	
Allow others to view and use this questionnaire	
f arphi Allow others to view, use and modify this questionnaire $f arphi$	
Terms of use for using modified versions of this questionnaire	
When using this questionnaire, it should be acknowledged that the questionnaire was originally creat by Lauren Gibson. Please contact me regarding the reference.	ed

If you do not wish for others to view, modify or use your questionnaire, leave the tick boxes and terms of use blank. Select 'Not specified (all rights reserved)' as the Creative Commons licence.

### 8.2. Creative Commons Licenses

After deciding on which (if any) 'Permission Statement' is most appropriate for your questionnaire, a representative 'Creative Commons license' should also be chosen.

A Creative Commons license is a public copyright license that enables the sharing and use of creativity and knowledge in a standardised way. There are several different licenses available, allowing for different degrees of sharing. Pick the most appropriate license from the dropdown box.



**Note:** Depending on the 'Permission Statement' chosen, only certain creative Commons licenses will be available for selection.

Attribution (CC BY) – This allows others to distribute, remix, tweak and build on your work (including commercially) on the basis that you are credited for the original creation. (Recommended if you wish to maximise dissemination and use of material.)

Attribution-ShareAlike (CC BY-SA) - This allows others to remix, tweak and build on your work (including commercially) on the basis that you are credited and their creation is licensed on identical terms. (This license is used by Wikipedia and is recommended if content is incorporated from Wikipedia and similarly licensed projects.)

Attribution-NoDerivs (CC BY-ND) – This allows others to distribute (including commercially) as long as it remains unchanged and intact and you are credited.

Attribution-NonCommercial (CC BY-NC) - This allows others to remix, tweak and build on your work (excluding commercially) on the basis that you are acknowledged but derivative work does not need to be licensed on the same terms.

Attribution-NonCommercial-ShareAlike (CC BY-NC-SA) - This allows others to remix, tweak and build on your work (excluding commercially) on the basis that you are acknowledged and that new work is licensed under the same terms.

Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) – This allows others to download your work and share it as long as you are credited, the work cannot be changed or used commercially.

Not specified (all rights reserved) – This should be used if you do not wish for others to view, use or modify your work.

## 9. Citing content on Nutritools

## 9.1. Acknowledging Nutritools

#### General citation

Example of general citation of the Nutritools website where several areas of the website have been accessed:

Nutritools. 2018. Nutritools website. [online]. [Date accessed]. Available from: <a href="https://www.nutritools.org/">https://www.nutritools.org/</a>

#### **Specific citation**

Example of targeted citation of the Nutritools website where just one aspect has been access (in this case Food Question Creator):

Nutritools. 2018. Nutritools website: Food Question Creator. [online]. [Date accessed]. Available from: <a href="https://www.nutritools.org/questionnaires">https://www.nutritools.org/questionnaires</a>

## 9.2. Acknowledging the NDNS

If projects and questionnaires created on Nutritools using the FQC and data from the National Diet and Nutrition Survey are published, the following citation must be included:

NatCen Social Research, MRC Elsie Widdowson Laboratory, University College London. Medical School. (2017). National Diet and Nutrition Survey Years 1-6, 2008/09-2013/14. [data collection]. 8th Edition. UK. Data Service. SN: 6533, http://doi.org/10.5255/UKDA-SN-6533-7

# 9.3. Acknowledging UK Food Composition Tables

If projects and questionnaires are created on Nutritools using the Food Questionnaire Creator and results from the The McCance and Widdowson's Composition of Foods Integrated Dataset are published, the following citation must be included:

Finglas, P., Roe, M., Pinchen, H., Berry, R., Church, S., Dodhia, S., Powel, N., Farron-Wilson, M., McCardle, J., Swan, G. (2015) McCance and Widdowson's The Composition of Foods Integrated Dataset 2015. (including foods from 2008 CoFID not reviewed or validation in 2015 CoFID)

URL: <a href="https://www.gov.uk/government/publications/composition-of-foods-integrated-dataset-cofid">https://www.gov.uk/government/publications/composition-of-foods-integrated-dataset-cofid</a>

# 9.4. Acknowledging uploaded nutritional data

If projects and questionnaires are created on Nutritools using food tables uploaded by the researcher, then the source of the food tables should be appropriately referenced.

# 9.5. Acknowledging the food portion images

If projects and questionnaires are created on Nutritools using food images in the FQC and results are published the following citation must be included:

Foster, E., 2017, Young Person's Food Atlas: Relative Validation Against Weighed Food Diaries, 2007-2009, [data collection], UK Data Service, [Date accessed]. SN: 8126, <a href="http://doi.org/10.5255/UKDA-SN-8126-1">http://doi.org/10.5255/UKDA-SN-8126-1</a>

# 9.6. Acknowledging dietary assessment tools

Any dietary assessment tools used in research should be appropriately referenced.

## 10. Appendix

## 10.1. List of foods with portion images

The FQC has access to portion images for the following food items:

**Baked beans** 

Baked beans and sausages

Baked potato Boiled potatoes Broccoli, boiled Cabbage, boiled

Cake

Canned Fruit
Carrots, boiled
Carrots, Raw
Cauliflower, boiled

Change Change

Cheese Chips

Cod battered Cook in sauces

Cooked chicken / turkey

Cornflakes Cucumber, raw

Custard Grapes Gravy

**Hoop / Loop Cereals** 

Ice Cream Ice-cream Jelly Ketchup Lasagne

Macaroni cheese Mashed potato

Melon

Lettuce

Milk pudding

Mince

Mixed vegetables New potatoes

**Noodles** 

Pasta (no sauce)

Pasta with tomato sauce Pasta, canned in sauce

Peas Popcorn Porridge Raisins

Ravioli, canned

Rice

Rice krispies
Roast meat

Roasted potatoes Runner beans

Salmon

Scrambled egg Shepherds pie Shreddies

Soup

Sponge pudding

Stew

Stewed apple Sugar puffs Sweetcorn

Tuna

# 10.2. List of food codes for excel output

The Food database that was chosen in the 'Food code mapping' section of creating your questionnaire will determine both the number of macro and micronutrients analysed and the format these are presented in. Please see below for a list of the short names that will appear on the excel output for each of the nutrients and their relevant long name and unit measurement.

**Note:** The order shown below is the order each will appear on the excel output

## 10.2.1. Using the McCance and Widdowson 7 database for Food code mapping

If McCance and Widdowson 7 was selected in Food code mapping, the below names and units will apply:

Short name	Long name	Unit
13CISRET	13-cis-retinol	μg
25OHD3	25-hydroxy vitamin D3	μg
5METHF	5-methyl folate	μg
ACAR	Alpha-carotene	μg
ALCO	Alcohol	g
ALTRET	All-trans-retinol	μg
AOACFIB	AOAC fibre	g
ATOPH	Alpha-tocopherol	mg
ATOTR	Alpha-tocotrienol	mg
BCAR	Beta-carotene	μg
BIOT	Biotin	μg
BRASPHYTO	Brassicasterol	mg
BSITPHYTO	Beta-sitosterol	mg
ВТОРН	Beta-tocopherol	mg
CA	Calcium	mg
CAMPHYTO	Campesterol	mg
CAREQU	Carotene	μg
СНО	Carbohydrate	g
CHOL	Cholesterol	mg
CITA	Citric acid	g
CL	Chloride	mg
CRYPT	Cryptoxanthins	μg

CU	Copper	mg
D5AVEN	Delta-5-avenasterol	mg
D7AVEN	Delta-7-avenasterol	mg
D7STIG	Delta-7-stigmastenol	mg
DEHYRET	Dehydroretinol	<u>μg</u>
DTOPH	Delta-tocopherol	mg
EDPOR	Edible proportion	ilig
LDI OIL	Edible proportion	
ENGFIB	Non-starch polysaccharide	g
FAC10:0	Decanoic acid per 100g fatty acids	g
FAC10:1	Decenoic acid per 100g fatty acids	g
FAC10:1c	cisDecenoic acid per 100g fatty acids	g
FAC11:0xb	olog coolisis dola poi loog lally dolas	<del>g</del> 
FAC12:0	Dodecanoic acid per 100g fatty acids	<del>g</del>
FAC12:0xb	ex Br Dodecanoic acid per 100g fatty acids	<del>g</del> 
FAC12:1	Dodecenoic acid per 100g fatty acids	<del>g</del> 
FAC12:1c	cisDodecenoic acid per 100g fatty acids	<del>g</del> 
FAC13:0	Tridecanoic acid per 100g fatty acids	<del>g</del> 
FAC13:0xb	ex Br Tridecanoic acid per 100g fatty acids	<del>g</del> 
FAC14:0	Tetradecanoic acid per 100g fatty acids	<del>g</del> 
FAC14:0xb	ex Br Tetradecanoic acid per 100g fatty	<del>g</del> 
	acids	ਬ
FAC14:1	Tetradecenoic acid per 100g fatty acids	g
FAC14:1c	cisTetradecenoic acid per 100g fatty acids	g
FAC15:0	Pentadecanoic acid per 100g fatty acids	g
FAC15:0xb	ex Br Pentadecanoic acid per 100g fatty	g
	acids	
FAC15:1	Pentadecenoic acid per 100g fatty acids	g
FAC15:1c	cisPentadecenoic acid per 100g fatty acids	g
FAC16 poly	unknown C16 polyunsaturated fatty acids per 100g fatty acids	g
FAC16:0	Hexadecanoic acid per 100g fatty acids	g
FAC16:0xb	ex Br Hexadecanoic acid per 100g fatty acids	g
FAC16:1	Hexadecenoic acid per 100g fatty acids	g
FAC16:1c	cisHexadecenoic acid per 100g fatty acids	g
FAC16:2	Hexadecadienoic acid per 100g fatty acids	g
FAC16:2c	cis Hexadecadienoic acid per 100g fatty	g
	acids	
FAC16:3c	cis Hexadecatrienoic acid per 100g fatty acids	g
FAC16:4	Hexadecatetraenoic acid per 100g fatty	g
FAC16:4c	acids cis Hexadecatetraenoic acid per 100g fatty	0
1 AC 10.46	acids	g
FAC17:0	Heptadecanoic acid per 100g fatty acids	g
FAC17:0xb	ex Br Heptadecanoic acid per 100g fatty	g
	acids	
FAC17:1	Heptadecenoic acid per 100g fatty acids	g
FAC17:1c	cisHeptadecenoic acid per 100g fatty acids	g
FAC18 poly	unknown C18 polyunsaturated fatty acids	g
<b></b>	per 100 fatty acid	
FAC18:0	Octadecanoic acid per 100g fatty acids	g
FAC18:0xb	ex Br Octadecanoic acid per 100g fatty	g
	acids	

FAC18:1	Octadecenoic acid per 100g fatty acids	g
FAC18:1c	cisOctadecenoic acid per 100g fatty acids	g
FAC18:1n7	n-7 Octadecenoic acid per 100g fatty acids	g
FAC18:1n9	n-9 Octadecenoic acid per 100g fatty acids	g
FAC18:2	Octadecadienoic acid per 100g fatty acids	g
FAC18:2cn6	cis n-6 Octadecadienoic acid per 100g fatty	g
FAC18:3	acids Octadecatrienoic acid per 100g fatty acids	g
FAC18:3cn3	cis n-3 Octadecatrienoic acid per 100g fatty	g
	acids	9
FAC18:3cn6	cis n-6 Octadecatrienoic acid per 100g fatty acids	g
FAC18:4	Octadecatetraenoic acid per 100g fatty acids	g
FAC18:4cn3	cis n-3 Octadecatetraenoic acid per 100g fatty acids	g
FAC19:0 (labelled as FOD19:0)	Nonadecanoic acid per 100g fatty acids	g
FAC20 poly	unknown C20 polyunsaturated fatty acid per 100 fatty acid	g
FAC20:0	Eicosanoic acid per 100g fatty acids	g
FAC20:0xb	ex Br Eicosanoic acid per 100g fatty acids	g
FAC20:1	Eicosenoic acid per 100g fatty acids	g
FAC20:1c	cisEicosenoic acid per 100g fatty acids	<u>g</u>
FAC20:2	Eicosadienoic acid per 100g fatty acids	<u>g</u>
FAC20:2cn6	cis n-6 Eicosadienoic acid per 100g fatty acids	g 
FAC20:3	Eicosatrienoic acid per 100g fatty acids	g
FAC20:3cn6	cis n-6 Eicosatrienoic acid per 100g fatty acids	9
FAC20:4	Eicosatetraenoic acid per 100g fatty acids	g
FAC20:4cn6	cis n-6 Eicosatetraenoic acid per 100g fatty acids	g
FAC20:5	Eicosapentaenoic acid per 100g fatty acids	g
FAC20:5cn3	cis n-3 Eicosapentaenoic acid per 100g fatty acids	g
FAC21:5	Heneicosapentaenoic acid per 100g fatty acids	g 
FAC21:5cn3	cis n-3 Heneicosapentaenoic acid per 100g fatty acids	g 
FAC22 poly	unknown C22 polyunsaturated fatty acid per 100g fatty acid	9
FAC22:0	Docosanoic acid per 100g fatty acids	g
FAC22:0xb	ex Br Docosanoic acid per 100g fatty acids	g
FAC22:1	Docosenoic acid per 100g fatty acids	g
FAC22:1c	cisDocosenoic acid per 100g fatty acids	<u>g</u>
FAC22:1n11	n-11 Docosenoic acid per 100g fatty acids	g
FAC22:1n9	n-9 Docosenoic acid per 100g fatty acids	<u>g</u>
FAC22:2	Docosadienoic acid per 100g fatty acids	<u>g</u>
FAC22:2cn6	cis n-6 Docosadienoic acid per 100g fatty acids	g 
FAC22:3cn6	cis n-6	g
FAC22:4	Docosatetraenoic acid per 100g fatty acids	g
FAC22:4cn6	cis n-6 Docosatetraenoic acid per 100g fatty acids	g
FAC22:5	Docosapentaenoic acid per 100g fatty acids	g

FAC22:5cn3	cis n-3 Docosapentaenoic acid per 100g fatty acids	g
FAC22:6	Docosahexaenoic acid (DHA) per 100g fatty acids	g
FAC22:6cn3	cis n-3 Docosahexaenoic acid (DHA) per 100g FA	g
FAC24:0	Tetracosanoic acid per 100g fatty acids	
FAC24:0xb	ex Br Tetracosanoic acid per 100g fatty acids	9
FAC24:1	Tetracosenoic acid per 100g fatty acids	g
FAC24:1c	cisTetracosenoic acid per 100g fatty acids	g
FAC25:0xb	ex Br Pentacosanoic acid per 100g fatty acids	g
FAC4:0	Butanoic acid per 100g fatty acids	g
FAC6:0	Hexanoic acid per 100g fatty acids	g
FAC8:0	Octanoic acid per 100g fatty acids	g
FACTRANS	Total Trans fatty acids per 100g fatty acids	g
FAT	Fat	g
FE	Iron	mg
FOD10:0	Decanoic acid per 100g food	g
FOD10:1	Decenoic acid per 100g food	g
FOD10:1c	cis Decenoic acid per 100g food	g
FOD11:0xb		g
FOD12:0	Dodecanoic acid per 100g food	g
FOD12:0xb	ex Br Dodecanoic acid per 100g food	g
FOD12:1	Dodecenoic acid per 100g food	g
FOD12:1c	cis Dodecenoic acid per 100g food	g
FOD13:0	Tridecanoic acid per 100g food	g
FOD13:0xb	ex Br Tridecanoic acid per 100g food	g
FOD14:0	Tetradecanoic acid per 100g food	g
FOD14:0xb	ex Br Tetradecanoic acid per 100g food	g
FOD14:1	Tetradecenoic acid per 100g food	g
FOD14:1c	cis Tetradecenoic acid per 100g food	g
FOD15:0	Pentadecanoic acid per 100g food	g
FOD15:0xb	ex Br Pentadecanoic acid per 100g food	g
FOD15:1	Pentadecenoic acid per 100g food	g
FOD15:1c	cis Pentadecenoic acid per 100g food	g
FOD16 poly	unknown C16 polyunsaturated fatty acids per 100g food	g
FOD16:0	Hexadecanoic acid per 100g food	g
FOD16:0xb	ex Br Hexadecanoic acid per 100g food	g
FOD16:1	Hexadecenoic acid per 100g food	g
FOD16:1c	cis Hexadecenoic acid per 100g food	g
FOD16:2	Hexadecadienoic acid per 100g food	g
FOD16:2c	cis Hexadecadienoic acid per 100g food	g
FOD16:3	Hexadecatrienoic acid per 100g food	g
FOD16:4	Hexadecatetraenoic acid per 100g food	g
FOD16:4c	cis Hexadecatetraenoic acid per 100g food	g
FOD17:0	Heptadecanoic acid per 100g food	g
FOD17:0xb	ex Br Heptadecanoic acid per 100g food	g
FOD17:1	Heptadecenoic acid per 100g food	g
FOD17:1c	cis Heptadecenoic acid per 100g food	g
FOD18 poly	unknown C18 polyunsaturated fatty acid per 100g food	g

FOD18:0	Octadecanoic acid per 100g food	g
FOD18:0xb	ex Br Octadecanoic acid per 100g food	g
FOD18:1	Octadecenoic acid per 100g food	g
FOD18:1c	cis Octadecenoic acid per 100g food	g
FOD18:1n7	n-7 Octadecenoic acid per 100g food	g
FOD18:1n9	n-9 Octadecenoic acid per 100g food	g
FOD18:2	Octadecadienoic acid per 100g food	g
FOD18:2cn6	cis n-6 Octadecadienoic acid per 100g food	g
FOD18:3	Octadecatrienoic acid per 100g food	g
FOD18:3cn3	cis n-3 Octadecatrienoic acid per 100g food	g
FOD18:3cn6	cis n-6 Octadecatrienoic acid per 100g food	g
FOD18:4	Octadecatetraenoic acid per 100g food	g
FOD18:4cn3	cis n-3 Octadecatetraenoic acid per 100g	g
	food	
FOD19:0	Nonadecanoic acid per 100g food	g
FOD20 poly	unknown C20 polyunsaturated fatty acid per 100g food	g
FOD20:0	Eicosanoic acid per 100g food	g
FOD20:0xb	ex Br Eicosanoic acid per 100g food	g
FOD20:1	Eicosenoic acid per 100g food	g
FOD20:1c	cis Eicosenoic acid per 100g food	g
FOD20:2	Eicosadienoic acid per 100g food	g
FOD20:2cn6	cis n-6 Eicosadienoic acid per 100g food	g
FOD20:3	Eicosatrienoic acid per 100g food	g
FOD20:3cn6	cis n-6 Eicosatrienoic acid per 100g food	g
FOD20:4	Eicosatetraenoic acid per 100g food	
FOD20:4cn6	cis n-6 Eicosatetraenoic acid per 100g food	g
FOD20:5	Eicosapentaenoic acid per 100g food	g
FOD20:5cn3	cis n-3 Eicosapentaenoic acid per 100g food	g
FOD21:5	Heneicosapentaenoic acid per 100g food	g
FOD21:5cn3	cis n-3 Heneicosapentaenoic acid per 100g food	g
FOD22 poly	unknown polyunsaturated fatty acid per 100g food	g
FOD22:0	Docosanoic acid per 100g food	g
FOD22:0xb	ex Br Docosanoic acid per 100g food	g
FOD22:1	Docosenoic acid per 100g food	g
FOD22:1c	cis Docosenoic acid per 100g food	g
FOD22:1n11	n-11 Docosenoic acid per 100g food	g
FOD22:1n9	n-9 Docosenoic acid per 100g food	g
FOD22:2	Docosadienoic acid per 100g food	g
FOD22:2cn6	cis n-6 Docosadienoic acid per 100g food	g
FOD22:3cn6	cis n-6	g
FOD22:4	Docosatetraenoic acid per 100g food	g
FOD22:4cn6	cis n-6 Docosatetraenoic acid per 100g food	g
FOD22:5	Docosapentaenoic acid per 100g food	g
FOD22:5cn3	cis n-3 Docosapentaenoic acid per 100g food	g
FOD22:6	Docosahexaenoic acid (DHA) per 100g food	g
FOD22:6cn3	cis n-3 Docosahexaenoic acid (DHA) per 100g food	g
FOD24:0	Tetracosanoic acid per 100g food	g
FOD24:0xb	ex Br Tetracosanoic acid per 100g food	g
	· · · ·	

FOD24:1c cis Tetracosenoic acid per 100g food FOD25:0xb ex Br Pentacosanoic acid per 100g food FOD4:0 Butanoic acid per 100g food FOD6:0 Hexanoic acid per 100g food FOD8:0 Octanoic acid per 100g food FODTRANS Total Trans fatty acids per 100g food FOLT Folate	g g g
FOD25:0xbex Br Pentacosanoic acid per 100g foodFOD4:0Butanoic acid per 100g foodFOD6:0Hexanoic acid per 100g foodFOD8:0Octanoic acid per 100g foodFODTRANSTotal Trans fatty acids per 100g foodFOLTFolate	g
FOD4:0 Butanoic acid per 100g food  FOD6:0 Hexanoic acid per 100g food  FOD8:0 Octanoic acid per 100g food  FODTRANS Total Trans fatty acids per 100g food  FOLT Folate	
FOD6:0 Hexanoic acid per 100g food  FOD8:0 Octanoic acid per 100g food  FODTRANS Total Trans fatty acids per 100g food  FOLT Folate	
FOD8:0 Octanoic acid per 100g food FODTRANS Total Trans fatty acids per 100g food FOLT Folate	g
FODTRANS Total Trans fatty acids per 100g food FOLT Folate	g
FOLT Folate	g
	g
	μg
FRUCT Fructose	g
	g
GCF Glycerol conversion factor	
OLUC Chieses	
	g
	mg
	mg <del>.</del>
	µg 
	mg
	kcal
	kJ
	g 
	μg
	μg
	g
	g
	mg
	mg
acids	g 
	g
FA	g 
MONOFOD Monounsaturated fatty acids per 100g food	g
	g
MONOFODc cis-Monounsaturated fatty acids /100g Food	n
MONOFODc cis-Monounsaturated fatty acids /100g Food	g 
MONOFODc cis-Monounsaturated fatty acids /100g Food  MONOFODtr trans monounsaturated fatty acids per 100g food	mg
MONOFODc cis-Monounsaturated fatty acids /100g Food  MONOFODtr trans monounsaturated fatty acids per 100g food	
MONOFODc cis-Monounsaturated fatty acids /100g Food  MONOFODtr trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor	mg
MONOFODc cis-Monounsaturated fatty acids /100g Food  MONOFODtr trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor  NIAC Niacin	mg
MONOFODc cis-Monounsaturated fatty acids /100g Food  MONOFODtr trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor  NIAC Niacin  NIACEQU Niacin equivalent	mg mg mg
MONOFODc       cis-Monounsaturated fatty acids /100g Food         MONOFODtr       trans monounsaturated fatty acids per 100g food         NA       Sodium         NCF       Nitrogen conversion factor         NIAC       Niacin         NIACEQU       Niacin equivalent         OLIGO       Oligosaccharide	mg mg mg
MONOFODc cis-Monounsaturated fatty acids /100g Food  MONOFODtr trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor  NIAC Niacin  NIACEQU Niacin equivalent  OLIGO Oligosaccharide  Other CHOL and PHYTO  Other Cholesterol and Phytosterols  PHYTO	mg mg mg g mg
MONOFODc cis-Monounsaturated fatty acids /100g Food trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor  NIAC Niacin  NIACEQU Niacin equivalent  OLIGO Oligosaccharide  Other CHOL and PHYTO  Phosphorus	mg mg mg g mg
MONOFODc cis-Monounsaturated fatty acids /100g Food MONOFODtr trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor  NIAC Niacin NIACEQU Niacin equivalent OLIGO Oligosaccharide Other CHOL and PHYTO P Phosphorus PANTO Pantothenate	mg mg mg g mg
MONOFODc cis-Monounsaturated fatty acids /100g Food trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Niacin  NIAC Niacin  NIACEQU Niacin equivalent  OLIGO Oligosaccharide  Other CHOL and PHYTO  P Phosphorus  PANTO Pantothenate  PHYTO Phytosterol	mg mg g mg mg mg
MONOFODc cis-Monounsaturated fatty acids /100g Food food  NA Sodium  NCF Niacin  NIAC Niacin  NIACEQU Niacin equivalent  OLIGO Oligosaccharide  Other CHOL and PHYTO  P Phosphorus  PANTO Pantothenate  PHYTO Phytosterol  POLYFAC cis-Monounsaturated fatty acids per 100g fatty acids  Polyunsaturated fatty acids per 100g fatty acids	mg mg mg g mg
MONOFODc cis-Monounsaturated fatty acids /100g Food trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor  NIAC Niacin  NIACEQU Niacin equivalent  OLIGO Oligosaccharide  Other CHOL and PHYTO  P Phosphorus  PANTO Pantothenate  PHYTO Phytosterol  POLYFAC Polyunsaturated fatty acids per 100g fatty acids	mg mg g mg mg mg
MONOFODt cis-Monounsaturated fatty acids /100g Food trans monounsaturated fatty acids per 100g food  NA Sodium  NCF Nitrogen conversion factor  NIAC Niacin NIACEQU Niacin equivalent OLIGO Oligosaccharide Other CHOL and PHYTO P Phosphorus PANTO Pantothenate PHYTO Phytosterol PHYTO Phytosterol POLYFAC cis-Polyunsaturated fatty acids /100g FA	mg mg g mg mg mg g

POLYFODc	cis-Polyunsaturated fatty acids /100g Food	g
POLYFODtr	trans polyunsaturated fatty acid per 100g food	g
PROT	Protein	
RET	Retinol	μg
RETALD	Retinaldehyde	μg
RETEQU	Total retinol equivalent	μg
RIBO	Riboflavin	mg
SATFAC	Saturated fatty acids per 100g fatty acids	g
SATFACx6	Saturated fatty acids excluding branch per 100 g fatty acid	g
SATFOD	Saturated fatty acids per 100g food	g
SATFODx6	Saturated fatty acids excluding branch per 100 g food	g
SE	Selenium	μg
SOLD	Total solids	g
SPECGRAV	Specific gravity	
STAR	Starch	g
STIGPHYTO	Stigmasterol	mg
SUCR	Sucrose	g
THIA	Thiamin	mg
Total PHYTO	Total Phytosterols	mg
TOTBRFAC	Total branched chain per 100g fatty acid	g
TOTBRFOD	Total branched chain per 100g food	g
TOTn3PFAC	Total n-3 polyunsaturated fatty acids per 100g fatty acid	g
TOTn3PFOD	Total n-3 polyunsaturated fatty acids per 100g food	g
TOTn6PFAC	Total n-6 polyunsaturated fatty acids per 100g fatty acid	g
TOTn6PFOD	Total n-6 polyunsaturated fatty acids per 100g food	g
TOTNIT	Total nitrogen	g
TOTSUG	Total sugars	g
TRYP60	Tryptophan divided by 60	mg
VITB12	Vitamin B12	μg
VITB6	Vitamin B6	mg
VITC	Vitamin C	mg
VITD	Total Vitamin D	μg
VITD3	Cholecalciferol	μg
VITE	Total Vitamin E	mg
VITK1	Phylloquinone	μg
WATER	Water	g
ZN	Zinc	mg

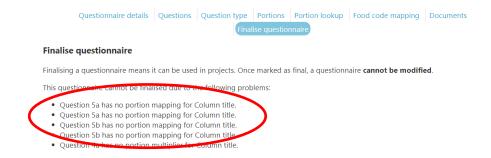
# 10.2.2. Using the National Diet and Nutrition Survey database for Food code mapping

If the NDNS was selected in Food code mapping, the below names and units will apply:

Short name:	Long name:	Units
ACAR	Alpha-carotene	ug
ALCO	Alcohol	g
BCAR	Beta-carotene	ug
BCRYPT	Beta cryptoxanthin	ug
BIOT	Biotin	ug
CA	Calcium	mg
СНО	Carbohydrate	g
CHOL	Cholesterol	mg
CL	Chloride	mg
CMON	Cis-Monounsaturated fatty acids	g
CN3	Cis-n3 fatty acids	g
CN6	Cis-n6 fatty acids	g
CU	Copper	mg
ENGFIB	Englyst	g
FAT	Fat	g
FE	Iron	mg
FOLT	Folate	ug
FRUCT	Fructose	g
GLUC	Glucose	g
HFE	Haem iron	mg
1	lodine	ug
K	Potassium	mg
KCALS	Energy	kcal
KJ	Energy	kJ
LACT	Lactose	g
MALT	Maltose	g
MG	Magnesium	mg
MILK	Intrinsic and milk sugars	g
MN	Manganese	mg
NA	Sodium	mg
NCF	Nitrogen conversion factor	-
NHFE	Non-haem iron	mg
NIACEQU	Niacin equivalent	mg
NMILK	Non-milk extrinsic sugars	g
OSUG	Other Sugars	g
P	Phosphorus	mg
PANTO	Pantothenic acid	mg
PROT	Protein	g
RET	Retinol	ug
RIBO	Riboflavin	mg
SATFA	Saturated fatty acids	g
SE	Selenium	ug
STAR	Starch	g

SUCR	Sucrose	g
THIA	Thiamin	mg
TOTCAR	Total carotene	ug
TOTNIT	Total nitrogen	g
TOTSUG	Total sugars	g
TRANS	Trans fatty acids	g
VITA	Vitamin A (retinol equivalents)	ug
VITB12	Vitamin B12	ug
VITB6	Vitamin B6	mg
VITC	Vitamin C	mg
VITD	Vitamin D	ug
VITE	Vitamin E	mg
WATER	Water	g
ZN	Zinc	mg

# 10.3. List of potential errors and how to fix them



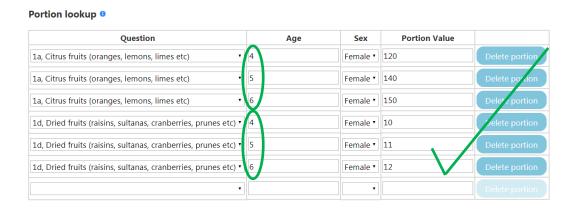
'Question 5a has no portion mapping for Column title.' means that the Food Question with ID 5a does not have a portion defined in the 'Portions' tab.

'Question 4a has no portion multiplier for Column title.' means that the Food Question with ID 4a does not have a multiplier (this is used to multiply the portion size with) defined in the 'Portions' tab.

'Question 4a has no portion mapping for Female, age 4.' means that the Food Question with ID 4a does not have the portion value defined for females ages 4 (the

	Question	Age	Sex	Portion Value		
	1a, Citrus fruits (oranges, lemons, limes etc)	4	Female •	120	Delete partion	
	1a, Citrus fruits (oranges, lemons, limes etc)	5	Female ▼	140	Dr ete portion	
	1a, Citrus fruits (oranges, lemons, limes etc)	6	Female ▼	150	Pelete portion	
ersic	1d, Dried fruits (raisins, sultanas, cranberries, prunes etc) •	10	Female ▼	37	Delete partion	/04/19
	1d, Dried fruits (raisins, sultanas, cranberries, prunes etc) •	4	Female ▼	10	Delete portion	
	•				Delete portion	•

FQC assumes that each food question will require the same ages and sexes for each:



# 10.4. Differences between food databases

## 10.4.1. Using the National Diet and Nutrition Survey database

- The NDNS aims to collect annual information on food consumption, nutrient intake and nutritional status of the UK population
- Data was collected cross-sectionally from a representative sample of approximately 1000 people in the UK.
- 57 different nutrients will be available for nutrient analysis if this database is used for Food code mapping (Step 5)

## 10.4.2. Using the McCance and Widdowson 7 database

- Nutrient data is available for ~3200 commonly consumed foods in the UK
- 280 different nutrients will be available for nutrient analysis if this database is used for Food code mapping (Step 5)

# 10.4. Potential Approaches to Consider when selecting foods for inclusion in a Food Frequency Questionnaire (FFQ) using Information Collected in UK National Diet and Nutrition Survey Rolling Programme (NDNS RP)

Darren Cole<sup>1</sup>, Birdem Amoutzopoulos<sup>1</sup>

<sup>1</sup>MRC Elsie Widdowson Laboratory, Cambridge, UK

#### 10.4.1. Detailed Foods

The NDNS food composition tables are rich in detail, with records for sometimes quite specific foods. For example milk:

MILK SEMI-SKIMMED PASTEURISED WINTER
MILK SEMI-SKIMMED PASTEURISED SUMMER
MILK WHOLE PASTEURISED WINTER
MILK WHOLE SUMMER PASTEURISED
MILK SEMI SKIMMED AFTER BOILING
MILK SKIMMED PASTEURISED WINTER
MILK SKIMMED PASTEURISED SUMMER
MILK SKIMMED AFTER BOILING
MILK SEMI-SKIMMED UHT
MILK SKIMMED UHT
MILK WHOLE UHT
MILK GOATS SUMMER
MILK WHOLE STERILISED
MILK WHOLE CHANNEL ISLAND PASTEURISED SUMMER
MILK WHOLE CHANNEL ISLAND PASTERIZED WINTER

MILK GOATS WINTER	
MILK PUDDING MADE WITH SEMI-SKIMMED MILK	
MILK SKIMMED STERILIZED	

This means that when selecting foods for inclusion in a food frequency questionnaire (FFQ) some care needs to be taken to ensure some general foods are not ignored due to the fragmentation of coding to specific foods. It is recommended to select foods, based on the list of foods contributing to diet, by food in conjunction with food group.

There might be times when it is important to capture more detail in the FFQ, by including some quite specific foods e.g. full fat, semi-skimmed and skimmed milks.

#### **10.4.2. Recipes**

Homemade recipes are coded as individual ingredients. This means that foods (e.g. minced beef) will be listed. It's probably not often that minced beef is eaten alone; it's normally part of a recipe (e.g. spaghetti bolognaise, lasagne). In years 1 to 8 of NDNS there is no data in the archive to indicate the name of the recipe (it is included from year 9). When designing an FFQ researchers need to ensure the questionnaire provides sufficient prompts to capture consumption of 'recipe' foods.

#### 10.4.3. Ready Meals

Many ready meals and homemade dishes, where no detailed recipe provided, are coded as foods. This has the inverse effect to 'recipes' and is similar in issue to 'detailed foods' (above). It may be necessary to examine nutrient intake by food group to establish foods that should be included in an FFQ. Another useful tip would be to list foods using the disaggregation variables (e.g. Beef), to find mixed dish foods contributing to intake. For example: frequency of consumption of chickencontaining recipes and weighed mean proportion of chicken contained in each recipe from the Nutrient database in NDNS in combination with FSA standard recipes database (which has been developed in MRC Human Nutrition Research).

## 10.4.4.FFQ for Individual (Clinical) vs Population assessment

If designing an FFQ for an assessment of dietary intake for a population, the NDNS data is likely to provide valuable help. If the FFQ is to be used to assess – and

possibly report – the diet of an individual, the data will still provide a good basis, but consideration would have to be given to enable the capture of foods consumed by a small minority, but still high in the nutrient of interest.