

**Report on the contribution of dairy foods to the nutritional quality of the Irish adult diet commissioned by the National Dairy Council through funds awarded from the Dairy Research Trust Co-operative Society Ltd, 2012.**

**Analysis based on the National Adult Nutrition Survey (NANS)**

**IRISH UNIVERSITIES NUTRITION ALLIANCE**

The Irish Universities Nutrition Alliance (IUNA) is a formal association of the academic nutrition units at University College Dublin, Trinity College Dublin, University College Cork and the University of Ulster. The IUNA is committed to joint initiatives in research and teaching.

The National Adult Nutrition Survey was financially supported by the Department of Agriculture Fisheries and Food, Dublin and the Health Research Board under the Food for Health Research Initiative (2007 – 2012).

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## Key Points

- Overall, 99.8% of Irish adults aged 18-64 years were consumers of dairy. 97.3% of the population were consumers of milk, 78.3% of the population were consumers of cheese and 45.2% of the population were consumers of yogurt. The dairy group whole milk had the highest consumer rates of all dairy foods in both males (83%) and females (78%) and across all age groups (78%, 84%, 81%).
- There were more female than male consumers of semi-skimmed milk (53% females, 138g/d; 36% males, 194g/d) and skimmed milks (20% females, 94g/d; 11% males, 129g/d) and total yogurt (51% females, 70g/d; 39% males 74g/d).
- Mean daily intakes of energy (kcal) and most macronutrients (% energy) and micronutrients were significantly greater in high consumers of dairy when compared to low or medium consumers. However, salt intakes were higher in low consumers of dairy.
- Mean daily intake of energy, most macronutrients (% energy) and micronutrients were all significantly increased across tertiles of milk consumption.
- Consumers of cheese had significantly higher mean daily intakes of energy (kcal), and higher percentage energy from fat, monounsaturated fat and saturated fat when compared to non-consumers. Mean daily intakes of calcium (per 10MJ) were higher in consumers of total cheese when compared to non-consumers and no significant differences in salt intakes in low versus high consumers of cheese were apparent.
- Consumers of total yogurt had a significantly higher mean daily intake and percentage energy from protein, carbohydrate, sugar, riboflavin, folate, pantothenic acid, potassium and calcium when compared to non-consumers. They also had significant lower intakes (percentage energy) of total fat, saturated and monounsaturated fat.
- Dairy provides 9% of energy (kcal) in the total population and dairy was a major contributor to protein, retinol, vitamin B12, riboflavin and calcium intakes. Of the dairy subtypes, whole milk contributed most to protein, riboflavin, vitamin B12 and calcium, while hard cheese contributed most to fat, saturated fat and retinol intakes.

- Fortified milk was the highest contributing dairy group to vitamin D intake providing 4.6 % of the mean daily intake.
- The mean daily number of dairy servings for the total population is 2.0. Total milk servings were 1.2 servings per day, total cheese servings were 0.6 per day and total yogurt servings were 0.2. The greatest number of servings for any individual dairy type was for whole milk servings at 0.6 servings per day.
- Within the total population, 12% of the population were consumers of the recommended 3 servings of dairy per day classed as an intake of 3.0 – 3.99 servings, 81% were under consumers and 7% consumed more than the recommendations.
- A higher percentage of males were consumers of 3 servings of dairy per day when compared to females and those aged 36-50 years had the lowest percentage of consumers of the recommended 3 servings of dairy per day (9.6 %) when compared to other age groups.
- For the NANS population, intakes of micronutrients were typically adequate except for vitamin D where only 8% of males and 7% of females satisfied the EAR and for salt, 72% of males and 32% females exceeded the target of 6g/d.
- Percentage consumers of milk and cheese have remained similar since the previous national nutrition survey published in 2001; however there have been some fluctuations in intakes. In 2001, 98% of the population consumed milk (267g/d) and 74% consumed cheese (20g/d), however in 2011, 97% of the population consumed milk (243g/d) and 78% consumed cheese (24g/day), There was a far greater percentage of consumers of yogurt in 2011 (45%) than in 2001 (32%) with intakes of 71 and 49g/day respectively.
- The contribution of total milk and total yogurt to vitamin D, vitamin B12 and folate intakes have all increased, perhaps due to increased fortification of these foods.



## **Methodology**

### **Background**

The National Adult Nutrition Survey investigated habitual food and beverage consumption in a representative sample of 1500 Irish adults (740 male, 760 female) aged 18-90 years between 2008 and 2010. It represents the most up-to-date information with respect to food and drink intake in Ireland and was carried out by the Irish Universities Nutrition Alliance ([www.iuna.net](http://www.iuna.net)). The current analysis will evaluate the contribution of dairy products to the nutritional quality of the Irish diet. Dairy in this study is defined as all milks, cheeses and yogurts, including mixed dishes containing these dairy foods.

### **Survey methodology**

Food and beverage intake was determined using a 4-day semi-weighed food diary. The respondents were asked to record detailed information regarding the amount and types of all foods and beverages (including brands) consumed over the 4-day period. To ensure that the level of detail and accuracy of recording was maintained at a consistently high level, a researcher made three visits to each participant during the 4-day period. Eating times, and location where meals were prepared, were also recorded. A quantification protocol that had been established by IUNA for the North/South Ireland Food Consumption Survey (NSIFCS) was adapted for the NANS (1, 2). Food quantification methods included: weighing, a photographic food atlas, manufacturer's information and household measures. Food packaging was also collected. All food and beverage intakes were assessed using WISP© V3.0 (Weighed Intake Software Programme) (Tinuviel Software, Anglesey, UK). WISP© is based on McCance and Widdowson's "The Composition of Foods" and published supplements (3-13). Updates were made to the database for recipes of composite dishes, supplements and custom Irish foods that were not previously on the software. The food intake database from the NANS comprises 133,050 rows of data that describe each food and drink item consumed by the 1500 respondents at every eating occasion throughout the four recording days. Each of the 2552 food codes (including 233 supplements) consumed during the survey were initially assigned to one of 68 food groups. This allows for a detailed analysis of food group intakes such as dairy. More detailed information on the methods of NANS and the NIFCS can be found at [www.iuna.net](http://www.iuna.net). As comparisons to NSIFCS were required only data from 18-64 year olds were considered within this analysis, which resulted in a total population sample of 1274 participants.

## **Food group analysis methods**

### ***Milk***

Milk intakes were calculated using two approaches. The first approach included milk taken as a beverage, milk added to tea/coffee, milk on breakfast cereal and milk in a milk based drink. The second approach included milk used in mixed composite dishes. All milk-containing dishes/recipes which had been eaten by respondents were identified and the milk content of each dish was calculated. Milk intakes from dishes containing 5% milk or more were added to milk intakes from above and mean daily milk intakes from all sources were calculated (g/day) for the total population and for consumers only. Examples of milk containing dishes identified were milk puddings, milk based sauces, soups, other puddings, egg dishes and desserts and other miscellaneous sources. All milks were identified as being one of the following; whole milk, semi-skimmed milk, skimmed milk, fortified milk and non-dairy milk alternatives (calcium fortified) and was solely assigned to one of these dairy food groups. For this report the contribution of milk intakes from all sources (i.e. milk as a beverage, milk added to tea/coffee, milk on breakfast cereal, milk based drinks and milk used in mixed dishes/recipes) to nutrient intakes was calculated. In this analysis all sources of nutrients from foods are included, however supplements are excluded.

### ***Cheese***

Cheese intakes were also calculated using two approaches. The first approach identified cheese eaten outside of mixed dishes or retail products e.g. cheese in sandwiches or cheese in salads. All cheese eaten was identified as being one of the following; hard cheese, soft cheese, cottage cheese or processed cheese. The second approach included cheese in mixed dishes. All cheese containing dishes/recipes recorded by respondents were identified. A wide variety of dishes/recipes contained cheese including pasta recipes, quiches, omelettes, meat dishes, poultry dishes, fish dishes, puddings, vegetable dishes and potato dishes. Retail products containing cheese were also identified based on the researchers' knowledge of the products recorded, ingredients labels and the Irish National Food Ingredient Database (15). The cheese content of other retail products (e.g. pizza, lasagne) was estimated from recipes in McCance and Widdowson's 'The Composition of Foods'. Cheese intakes from mixed dishes and retail products containing 5% or more cheese were calculated and combined with cheese intakes from above to calculate mean daily cheese intakes (g/day) from all sources of cheese. These results are presented for the total population and for consumers only. The contribution of total cheese (i.e. cheese intakes from all sources) to nutrient intakes was calculated. In this analysis, all sources of nutrients from foods are included, however supplements are excluded.

### ***Yogurt***

Yogurt intakes from potted yogurts and yogurt drinks were calculated for the total population. Mean daily intakes are presented for the total population and for consumers only and also according to gender and age groups. All yogurt eaten was identified as being one of the following; yogurt, drinking yogurt and non-dairy yogurt alternatives (calcium fortified). Fromage frais has been included in this definition of yogurts. The brand names of products were recorded by the respondent which allowed yogurts to be distinguished from potted desserts. The yogurt content of mixed dishes was identified. A small number of mixed dishes/recipes included yogurt e.g. curries and raita. Yogurt intakes from mixed dishes containing 5% yogurt or more were calculated and combined with yogurt intakes from above to calculate mean daily yogurt intakes (g/day) from all sources of yogurt. These results are presented for the total population and for consumers only. The contribution of total yogurt (i.e. yogurt intakes from all sources) to nutrient intakes was calculated. In this analysis, all sources of nutrients from foods are included, however supplements are excluded.

### ***Dairy Analysis***

The contribution of milk, cheese and yogurt from all food sources to total nutrient intakes is presented for the total population and for consumers only. Also the number of dairy servings, milk servings, cheese servings and yogurt servings were calculated using the 2012 Department of Health - food pyramid (16).

### ***Statistical Analysis***

Statistical analysis was carried out using PASW statistics 18.0 for Windows™ (SPSS Inc. Chicago, IL, USA). Descriptive statistics including mean and standard deviation were calculated for the daily intake of total dairy and for each dairy group according to gender and age group (18-64 years) for the total population and for consumers only. One way analysis of variance (ANOVA) was used to test for significant differences ( $P < 0.05$ ) in means of total energy and macronutrients (g/day), percentage energy from macronutrients and also micronutrients and fibre per 10MJ per day, all between tertiles of total dairy consumption. The Bonferroni post hoc test (for groups of equal variance) was used to determine significant differences between the means for each tertile of total dairy consumption as appropriate.

## **Results**

### **Section 1: Dairy Consumption**

#### **1.1 Food Groups**

Foods and beverages consumed by participants in the NANS were allocated to one of 68 food groups in the database. For the purpose of this present analysis, these food groups were reduced to 11 groups. The food items included in each of the 11 food groups are listed in Table 1(a). In addition, the 'Dairy' food group was further broken down into 12 different types of dairy foods, which are listed in Table 1(b).

#### **1.2 Dairy consumption in the adult population**

Table 2(a) presents the mean and median daily intakes of dairy (g/day), standard deviations and intakes at the 97.5<sup>th</sup> percentile, for both the total adult population and for consumers only.

For the total population, the mean daily intake of total dairy was 288.0g/d, with intakes at the 97.5<sup>th</sup> percentile of intakes at 818.6g/d. Contributing foods included whole milk (124.7g/d), semi skimmed milk (70.7g/d) and hard cheese (11.6g/d).

Over 99.8% of adults were consumers of dairy with a mean daily intake of 288.5g/d. 97.3% of the population were consumers of milk with a mean daily intake of (243.3g/d), 78.3% were consumers of cheese (24.2g/d) and 45.2% were consumers of yogurt (71.4g/d). Intakes at the 97.5<sup>th</sup> percentile for consumers only were 758.8g/d for milk, 75.4g/d for cheese and 205.0g/d for yogurt.

#### **1.3 Dairy consumption by gender**

Tables 2(b) and (c) present the mean daily intakes of dairy by gender and age for the total population and for consumers only.

For the total population, the mean daily intake of total dairy for males was 327.8g/day and for females it was 248.7g/day. For males and females, whole milk was the main contributor to dairy (males 163.7g/day, females 86.1g/day) followed by semi skimmed milk (69.0g/day males, 72.5g/day females).

For consumers only, 99.8% of males and females consumed dairy with a mean daily intake of 328.3 and 249.0 g/day respectively. For males, 83.1% consumed whole milk with a mean daily intake of 197g/day, 35.6% consumed semi-skimmed milk (mean daily intake 193.6g/day) and 13.2% consumed

fortified milk (mean daily intake 197.2g/day). 79.8% of males consumed cheese with a mean daily intake of 27.8g/day while 39% consumed yogurt with a mean daily intake of 73.7g/day).

Slightly more women consumed lower fat milks. 78.3% of women consumed whole milk with a mean daily intake of 110g/day, 52.5% consumed semi-skimmed milk with a mean daily intake of 138g/day and 13.3% consumed fortified milk with a mean daily intake of 124g/day. 76.9% of females consumed cheese with a mean daily intake of 20.4g/day and 51.4% consumed yogurt with a mean daily intake of 69.7g/day. For both males and females, 'hard cheese' was the main contributor to total cheese intakes consumed by 63.9% males (21.9g/day) and 57.7% females (16.1g/day).

#### **1.4 Dairy consumption by age group**

Table 2(c) presents the analysis of dairy intakes by age group for mean and median daily intakes (g/day), standard deviations and intakes at the 97.5<sup>th</sup> percentile for adults. Overall, in the total population, 36-50 year olds consumed the greatest amount of dairy (293.5 g/d), with 18-35 and 60-64 year olds consuming 284.9g/d and 285.6g/d respectively. This trend was also observed in total milk with 36-50 year olds consuming 247.7g/d. Mean daily consumption of total cheese decreased with age (from 23.2g/d to 17.0g/d to 14.3g/d), likewise with hard cheese. 51-64 year olds consumed the greatest amount of total yogurt (43.2g/d). In general, similar trends were observed for intakes (g/d) in consumers only although the percentage consumers varied.

For the total population and for consumers only, whole milk was an important contributor to dairy intake across all age groups, followed by semi-skimmed milk.

## **Section 2: Consumers versus non-consumers of dairy**

Tables 3(a), (b), (c) and (d), show a comparison of nutrient intakes between non-consumers and consumers of dairy intake, total milk, total cheese and total yogurt, and across tertiles of dairy intake for adults. Data are compared as a % total energy (macronutrients) or per 10MJ to avoid the confounding effect of energy intakes.

### **2.1 Total Dairy**

As 99.8% of the population were consumers of dairy, this table does not include non-consumers. Mean daily intakes of energy (kcal) and percentage energy from carbohydrate, total sugars, saturated fat and all micronutrients (per 10MJ) were significantly higher in high consumers of dairy when compared to low or medium consumers. However, percentage energy from monounsaturated fat, polyunsaturated fat and salt (per 10MJ) were lower in high consumers of dairy. There was no difference in total fat intakes between low and high consumers.

### **2.2 Total milk**

Only 2.7% of the population were non-consumers of total milk, therefore comparisons between consumers and non-consumers must be interpreted with caution. The mean daily intakes of energy (kcal), and percentage energy from carbohydrate, total sugars and saturated fat increased across the tertiles of total milk consumption (Low-High). However, percentage energy from monounsaturated fat, polyunsaturated fat and salt (per 10MJ) were higher in low consumers of dairy. Mean daily intake of all micronutrients significantly increased across the tertiles of milk consumption (Low-High).

### **2.3 Total cheese**

21.7% of the population were non-consumers of total cheese. Consumers in the highest tertile of cheese consumption had significantly higher mean daily intakes of energy (kcal) and higher percentage energy from fat and saturated fat when compared to non-consumers. However, they had significant lower percentage energy from protein, carbohydrate and total sugar. Mean daily intakes of vitamin D, vitamin B12, folate, pantothenic acid and potassium were all significantly lower in the highest tertile of total cheese consumption than for non-consumers. Mean daily calcium intake and salt (per 10MJ) were higher in the highest tertile of consumption versus the medium tertile of consumption.

## **2.4 Total Yogurt**

44.8% of the population were non-consumers of yogurt. Consumers in the highest tertile of total yogurt intake had a significantly higher intakes (percentage energy) from protein, carbohydrate and total sugar when compared to non-consumers of yogurt and significantly lower intakes of total starch, fat, saturated fat and monounsaturated fat. There were no significant differences in energy between consumers and non-consumers. Consumers in the highest tertile of total yogurt consumption also had a significantly higher mean daily intake of riboflavin, folate, pantothenic acid, potassium and calcium when compared to non-consumers; there were no differences in retinol, vitamin D, vitamin B12 or salt intakes.

### **Section 3: Contribution of food groups to energy, macronutrient and micronutrient intakes.**

#### **3.1 Energy**

Figure 1(a) presents the percentage energy intake from the 11 different food groups (Table 1a) for the total population. Rice grains, breads and cereals made the greatest contribution to overall energy (kcal) intakes at 20.1%. The contribution of dairy to energy (kcal) was 9.2%, within this whole milk was the highest contributing dairy group at 3.0%.

#### **3.2 Protein**

Figure 1(b) presents the percentage of protein intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to protein intakes at 44.8%. The contribution of dairy foods to protein intake was 13.2%, within this whole milk was the highest contributing dairy group with 3.8%.

#### **3.3 Carbohydrate**

Figure 1(c) presents the percentage of carbohydrate intake from the 11 food groups. Rice, grains, breads and cereals made the greatest contribution to carbohydrate intakes at 34.5%. The contribution of dairy foods to carbohydrate intake was 6%, within this whole milk was the highest contributing dairy group with 1.9%.

#### **3.4 Total sugars**

Figure 1(d) presents the percentage of total sugars intake from the 11 food groups. Fruits and vegetables made the greatest contribution to total sugars intakes at 22%. The contribution of dairy foods to total sugars intake was 15.4%, within this whole milk was the highest contributing dairy group with 5.4%.

#### **3.5 Starch**

Figure 1(e) presents the percentage of starch intake from the 11 food groups. Rice, grains, breads and cereals made the greatest contribution to starch intakes at 51.3%. The contribution of dairy foods to starch intake was 0.2%, within this yogurt was the only contributing dairy group by 0.2%.



### **3.6 Fat**

Figure 1(f) presents the percentage of fat intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to fat intakes at 25.2%. The contribution of dairy foods to fat intake was 12.4%, within this whole hard cheese was the highest contributing dairy group with 4.3%.

### **3.7 Saturated fat**

Figure 1(g) presents the percentage of saturated fat intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to saturated fat intakes at 22.7%. The contribution of dairy foods to saturated fat intake was 19.3%, within this hard cheese was the highest contributing dairy group with 6.5%.

### **3.8 Monounsaturated fat**

Figure 1(h) presents the percentage of monounsaturated fat intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to monounsaturated fat intakes at 29.4%. The contribution of dairy foods to monounsaturated fat intake was 9.7%, within this hard cheese was the highest contributing dairy group with 3.4%.

### **3.9 Polyunsaturated fat**

Figure 1(i) presents the percentage of polyunsaturated fat intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to polyunsaturated fat intakes at 24.5%. The contribution of dairy foods to polyunsaturated fat intake was 2.7%, within this hard cheese was the highest contributing dairy group with 1.3%.

### **3.10 Retinol**

Figure 1(j) presents the percentage of retinol intake from the 11 food groups. Dairy made the greatest contribution to retinol intakes at 37.8%. Hard cheese was the highest contributing dairy group with 10.7%.

### **3.11 Vitamin D**

Figure 1(k) presents the percentage of vitamin D intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to vitamin D intakes at 43.8%. The contribution of dairy foods to vitamin D intake was 9.2%, within this fortified milk was the highest contributing dairy group with 4.6%.

### **3.12 Vitamin B12**

Figure 1(l) presents the percentage of vitamin B12 intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to vitamin B12 intakes at 39.5%. The contribution of dairy foods to vitamin B12 intake was 35%, within this whole milk was the highest contributing dairy group with 15.4%.

### **3.13 Riboflavin**

Figure 1(m) presents the percentage of riboflavin intake from the 11 food groups. Dairy made the greatest contribution to riboflavin intakes at 28.6%. Whole milk was the highest contributing dairy group with 10.7%.

### **3.14 Folate**

Figure 1(n) presents the percentage of folate intake from the 11 food groups. Rice, grains, breads and cereals made the greatest contribution to folate intakes at 27.1%. The contribution of dairy foods to folate intake was 11%, within this fortified milk was the highest contributing dairy group with 3.1%.

### **3.15 Pantothenic acid**

Figure 1(o) presents the percentage of pantothenic acid intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to pantothenic acid intakes at 28.1%. The contribution of dairy foods to pantothenic acid intake was 20.7%, within this whole milk was the highest contributing dairy group with 9.0%.

### **3.16 Calcium**

Figure 1(p) presents the percentage of calcium intake from the 11 food groups. Dairy made the greatest contribution to calcium intakes with 38.7%. Whole milk was the highest contributing dairy group with 11.7%.

### **3.17 Potassium**

Figure 1(q) presents the percentage of potassium intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to potassium intakes at 20.3%. The contribution of dairy foods to potassium intake was 12.0%, within this whole milk was the highest contributing dairy group with 4.9%.

### **3.18 Salt**

Figure 1(r) presents the percentage of salt intake from the 11 food groups. Meat, fish and their dishes made the greatest contribution to salt intakes at 29.8%. The contribution of dairy foods to salt intake was 8.7%, within this hard cheese was the highest contributing dairy group with 2.9%.

## **Section 4: Dairy Servings**

### **4.1 Dairy servings for the total population**

Table 4(a) presents the mean daily number of dairy servings for the total population. The mean daily number of dairy servings for the total population is 2.0( $\pm$ 1.3). Total milk servings were 1.2 per day, total cheese servings were 0.6 per day and total yogurt servings were 0.2. Servings of individual dairy foods were highest for whole milk and hard cheese at 0.6 and 0.5 servings per day respectively.

### **4.2 Dairy servings by gender**

Table 4(b) gives the mean daily number of dairy servings analysed for both males and females. The mean daily number of dairy servings consumed was 2.3 for males and 1.8 for females. Total milk servings were 1.4 for males and 1.0 for females. Total cheese servings were 0.7 for males and 0.5 for females. Total yogurt servings were 0.2 for both males and 0.3 for females. Whole milk servings were the highest for both males (0.8) and females (0.4).

Overall men tend to consume a higher number of servings to women apart from within yogurt, where women consumed a slightly higher serving; 0.3 compared to 0.2.

### **4.3 Dairy servings by age group**

Table 4(c) illustrates the mean daily number of dairy servings analysed by age group. The mean daily number of dairy servings showed a step wise decrease across age groups (2.1, 2.0 and 1.9 servings/d). Total cheese servings were higher in those aged 18-35 years compared to both other age groups (0.7 servings/d versus 0.6 for 36-50 year olds and 0.5 for 51-64 year olds). In those aged 36-50 years, whole milk servings were the highest (0.7servings/d). And in those aged 51-64 years, yogurt servings were observed as the highest when compared across both other age groups (0.3 servings/d).

### **Section 5: Percentage of the population, adults aged 18-64 years, achieving the recommended 3 portions of total dairy per day.**

Table 5 (a) presents the percentage of the population achieving the recommended 3 servings of total dairy per day and by gender and age group. The data were grouped as following 0-2.99 servings/d represents 'under consumers', 3-3.99 servings/d represents 'consumers' and >3.99 servings/day represents 'over consumers' However, to account for rounding, the analyses was repeated whereby those individuals with an intake of dairy of 2.6-3.4 servings/ day would also be classified as 'consumers'.

For the total population, 12.1% of the population were classified as consumers of 3 servings of dairy per day, 80.6% as under consumers , and 7.3% over consumers When the servings range was altered to 2.6 – 3.4, 12.9% of the population were consumers of 3 servings of dairy a day.

A higher percentage of males were consumers of 3 servings of dairy a day when compared to females (15.5% and 8.8% respectively). When the servings range is altered to 2.6 – 3.4 servings, a similar trend exists, (16.4% males, 9.4% females).

Those aged between 36-50 years had the lowest percentage of consumers of the recommended 3 servings of dairy per day (9.6%) when compared to other age groups (13.4% for both 18-35 years and 51-64 years age groups).

### **Section 6: Adequacy of intake for nutrients contributed by dairy products.**

Table 6(a) presents the current Estimated Average Requirements (EAR) for micronutrients as published by the Department of Health UK (17) , and the mean daily intakes of these micronutrients for the NANS total population spilt by gender. Mean daily intakes of vitamin B12, riboflavin, folate and calcium were adequate with the majority of the population meeting the EAR. Salt requirements were derived from the Scientific Advisory Committee on Nutrition report on 'Salt and Health' (18), 72% of males and 32% of females in the population are over consuming the recommended 6g/day of salt. Slightly lower proportions of the population satisfied the recommendations for total vitamin A (79% males; 85% females) and potassium (44% males; 15% females), however only 8% of males and 7% females met the EAR for vitamin D. There was no EAR derived for pantothenic acid at the time of the analysis.

## **Section 7: Comparison of dairy data from the current National Adult Nutrition Survey (NANS) 2011 and the North South Ireland Food Consumption Survey (NSIFCS) 2001 (19).**

### **7.1 Comparison of the current dairy intakes between NANS and the NSIFCS for the total population and consumers only.**

Table 7(a) presents the mean daily intakes of total milk, total cheese and total yogurt for both the NANS and the NSIFCS (19) for the total population and for consumers only and also split by gender.

For total milk, the mean daily intakes (g/day) have decreased for the total population (237g/d in NANS, 261g/d in NSIFCS) and for males (277g/d in NANS, 293g/d in NSIFCS) and females (197g/d in NANS, 229g/d in NSIFCS). These trends are also apparent for consumers only with the percentage of consumers remaining similar between the two surveys (97-98%).

For total cheese, mean daily intakes (g/day) for the total population are greater for NANS (19g/day) when compared to the NSIFCS (15g/day). There is a slightly higher percentage of consumers in NANS (78%) versus the NSIFCS (74%) and for these consumers, intakes were also higher in NANS (24g/d NANS, 20g/d NSIFCS). These trends are apparent for both males and females.

For total yogurt, the percentage consumers for the total population are much greater within NANS (45%) compared to the NSIFCS (32%). This is accompanied by an increase in mean daily intakes (g/day) for the total population (32g/d in NANS, 16g/d in NSIFCS) and for consumers only (71 g/d in NANS, 49g/d in NSIFCS) and for males and females.

### **7.2 Comparison of the percentage contribution of total milk, cheese and yogurt to mean daily nutrient intakes between NANS and the NSIFCS for the total population.**

Table 7(b) presents the percentage contribution of total milk, cheese and yogurt to nutrient intakes for the total population in both NANS and NSIFCS.

The percentage contribution of total milk to energy (kcal) has decreased to 5% in the NANS from 7% in the NSIFCS. The percentage contribution of total milk to protein, fat and carbohydrate has also decreased; however, the contribution of total milk to vitamin D, vitamin B12 and folate have all increased. The contribution of total milk to riboflavin did not change.

For total cheese, its percentage contribution to energy, protein, fat, carbohydrate, vitamin D, riboflavin, vitamin B12 and folate has not changed between the two surveys although mean daily intakes have increased.

The contributions of total yogurt to energy, protein, fat, carbohydrate, vitamin D, riboflavin, vitamin B12 and folate have all increased over this ten year period.

## Summary

Overall, 99.8% of Irish adults aged 18-64 years were consumers of dairy; 97.3% were consumers of milk, 78.3% consumers of cheese and 45.2% were consumers of yogurt. The dairy group 'whole milk' had the highest consumer rates of all dairy foods for both males (83%) and females (78%) and across age groups (78%, 84%, 81%). There were more female than male consumers of semi-skimmed milk (53% females, 138g/d; 36% males, 194g/d) and skimmed milks (20% females, 94g/d; 11% males, 129g/d) and total yogurt (51% females, 70g/d; 39% males 74g/d).

Mean daily intakes of energy (kcal) and the percentage energy from carbohydrate, total sugar and saturated fat and most micronutrients per 10MJ were significantly higher in high consumers of dairy when compared to low or medium consumers. However, salt intakes were higher in low consumers of dairy. Mean daily intake of energy, most macronutrients (% energy) and vitamin D, vitamin B12, riboflavin, pantothenic acid, folate and calcium all significantly increased across tertiles of milk consumption. There was no difference with respect to total dietary fat intake. Consumers of cheese had significantly higher mean daily intakes of energy (kcal), and higher percentage energy from fat, monounsaturated fat and saturated fat when compared to non-consumers. Mean daily intakes of calcium and salt (per 10MJ) were also higher in consumers of total cheese when compared to non-consumers. Consumers of total yogurt had a significantly higher mean daily intake of protein, carbohydrate, sugar, riboflavin, folate, pantothenic acid, potassium and calcium when compared to non-consumers. They also had significantly lower intakes (% energy) of total fat, saturated and monounsaturated fat.

Dairy provides 9.2% of energy (kcal) in the total population and was a major contributor to protein, fat, saturated fat, retinol, vitamin B12, riboflavin and calcium intakes. Of the dairy subtypes, whole milk contributed most to protein, carbohydrate, riboflavin, vitamin B12 and calcium, hard cheese contributed most to total fat, saturated fat and retinol while fortified milk contributed most to vitamin D and folate intakes.

The mean daily number of dairy servings for the total population was 2.0. Total milk contributed 1.2 servings per day, total cheese 0.6 servings per day and total yogurt 0.2 servings per day. The greatest number of servings for any individual dairy type was for whole milk and hard cheese servings at 0.6 and 0.5 servings per day respectively. Within the total population, 12% of the population were consumers of the recommended 3 servings of dairy per day, 81% were under consumers and 7% consumed more than the recommendations. A higher percentage of males (16%) were consumers of 3 servings of dairy per day when compared to females (9%) and those aged 36-50 years had the lowest percentage of consumers of the recommended 3 servings of dairy per day (10%) when compared to other age groups (13% for both).

For the NANS population, intakes of micronutrients were typically adequate except for vitamin D where only 8% of males and 7% of females satisfied the EAR and for salt, 72% of males and 32% females exceeded the target of 6g/d.

When comparing the current national adult nutrition survey (NANS) analysis to a similar analysis conducted in 2001 (the North South Ireland Food Consumption Survey (NSIFCS)), the percentage consumers of milk and cheese remained similar, however there was a far greater percentage of consumers of yogurt in NANS (45%) than in the NSIFCS (32%). Mean daily intakes of total milk decreased for the NANS population, whereas mean daily intakes of both cheese and yogurt increased. With respect to energy intake, total milk made a lower contribution to energy intakes in NANS, however the contribution of total yogurt to energy intakes increased, whereas the contribution by cheese remained the same. The contribution of total milk and total yogurt to vitamin D, vitamin B12 and folate intakes have all increased, perhaps due to increased fortification of these foods.

Data for the above analysis is derived from a large nationally representative study of Irish adults. The extensive information collected in this survey is one of the most comprehensive of its kind in Europe, making it a valuable resource for agencies involved in public health promotion, regulation, consumer protection and the food industry. However, the following must be considered: these surveys are 'one off' or cross sectional in nature and therefore a 'snapshot' at any one time.

In conclusion, this report describes the contribution of dairy produce (milk, cheese and yogurt) to the Irish diet and contrasts with comparable information collected in 2001.



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**Table 1(a): Description of the foods included in each of the 11 food groups\***

<b>Food group</b>	<b>Foods included</b>
1. Rice, grains, breads & cereals	Rice, pasta, flours, grains and starches, white and wholemeal breads and rolls, scones, bagels and pittas, ready-to-eat breakfast cereals, other breakfast cereals
2. Biscuits, cakes & pastries	Biscuits, cakes, pastries and buns
3. Savoury snacks & confectionary	Savoury snacks (including crisps, pretzels, prawn crackers, bread sticks, nuts), chocolate and non-chocolate confectionary, sugars, syrups, preserves and sweeteners
4. Beverages	Carbonated beverages, diet carbonated beverages, fruit juice, bottled water, squash/still drinks with sugar, squash/still drinks without sugar, dilutables with sugar, dilutables without sugar, sports drinks, energy drinks, functional shots, teas, coffees, tap water, alcoholic beverages
5. Potato & potato products	Potatoes boiled, processed and homemade potato products, chipped, fried and roasted potatoes
6. Fruit & vegetables	Vegetable and pulse dishes, peas, beans and lentils, green vegetables, carrots, salad vegetables, other vegetables, tinned or jarred vegetables, bananas, other fruits, citrus fruits, tinned fruits
7. Meat fish & their dishes	Fish, fish products, bacon, ham, beef, veal, lamb, pork, chicken, turkey, game, offal, and their dishes, burgers (beef and pork), sausages, meat pies
8. Other foods	Soups, sauces and miscellaneous foods, savouries, eggs and egg dishes, butter, low fat spreads, other spreading fats, oils, hard cooking fats, nuts, seeds, herbs and spices
9. Dairy	Whole, semi-skimmed, skimmed and fortified milks, non-dairy milk alternatives, hard, soft, cottage and processed cheeses, yogurts, yogurt drinks and non-dairy yogurt alternatives
10. Dairy containing recipes	Dairy containing recipes e.g. lasagne
11. Other dairy	Creams, ice creams, puddings & chilled desserts

\*Supplements excluded

**Table 1(b): Description of the dairy foods included in each of the 12 dairy groups**

	<b>Dairy Group</b>	<b>Example of foods included</b>
Total Milk	Conclusive of the following:	
	1. Whole milk	Full fat milk (3.5%)
	2. Semi-skimmed milk	Low fat milk (1.5%)
	3. Skimmed milk	Fat free milk (0.5%)
	4. Fortified milk	All milk types fortified with vitamins and minerals*
	5. Non-dairy milk alternatives	Oat drinks, soya drinks, rice drinks
Total cheese	Conclusive of the following:	
	6. Hard cheese	Cheddar, cheshire, double Gloucester, Edam, Emmental, Gouda, Gruyere, Hard cheese, Leicester, Parmesan, Stilton Blue, Stilton White, Wensleydale
	7. Soft cheese	Brie, Camembert, Cream cheese, Danish Blue, Feta, Full fat soft cheese, Goat's milk soft cheese, Mozzarella, Ricotta
	8. Cottage cheese	Soft unripened cottage cheese
	9. Processed cheese	Cheese spread, flavoured cheese spreads, processed cheese products, smoked processed cheese, spreadable cheese
Total Yogurt	Conclusive of the following:	
	10. Yogurt	Full fat yogurt, low fat yogurt, fat free yogurt, flavoured yogurt, fruit yogurt
	11. Yogurt drinks	Fortified yogurt drinks
	12. Non-dairy yogurt alternatives	Soya yogurt alternative

\*Vitamins and minerals added to milk as a fortification rather than for restoration purposes.

**Table 2(a) Mean and median daily intakes of dairy (g/day), standard deviations and intakes of the 97.5th percentile for Irish adults aged 18-64 years**

	Total Population (n = 1274)				Consumers only					
	Mean	SD	Median	97.5	<i>n</i>	% cons	Mean	SD	Median	97.5
Total Dairy	288.0	203.7	246.1	818.6	1272	99.8	288.5	203.6	246.7	818.6
Total milk	236.8	192.4	192.4	755.0	1240	97.3	243.3	191.0	201.5	758.8
Whole milk	124.7	179.6	49.0	622.4	1028	80.6	160.4	155.0	112.5	578.0
Semi-skimmed milk	70.7	130.1	0.0	451.4	562	44.1	189.1	160.1	150.0	575.0
Skimmed milk	16.6	64.0	0.0	229.0	199	15.6	106.4	129.2	51.3	485.0
Fortified milk	21.3	74.8	0.0	262.8	169	13.3	160.4	141.3	129.8	566.8
Non-dairy milk alternative	3.4	29.3	0.0	0.0	28	2.2	155.4	126.5	142.4	.
Total cheese	18.9	20.5	14.0	69.5	998	78.3	24.2	20.2	18.4	75.4
Hard Cheese	11.6	16.4	6.3	52.6	774	60.8	19.1	17.3	14.5	63.9
Soft cheese	4.7	9.3	0.0	32.5	425	33.4	14.2	11.1	11.1	42.6
Cottage cheese	0.3	4.0	0.0	0.0	12	0.9	33.7	24.8	27.5	.
Processed cheese	2.3	6.2	0.0	18.8	292	22.9	9.9	9.5	7.1	39.1
Total Yogurt	32.3	51.4	0.0	162.5	576	45.2	71.4	55.3	62.5	205.0
Yogurt	26.2	47.4	0.0	155.2	491	38.5	68.0	54.7	62.5	200.8
Drinking yogurt	5.4	18.3	0.0	75.0	130	10.2	52.6	28.3	50.0	125.0
Non-dairy yogurt alternative	0.7	8.4	0.0	0.0	12	0.9	77.0	41.4	62.5	.

*n* - number; % cons - percentage consumers; SD - standard deviation; 97.5 - 97.5th percentile

**Table 2(b) Mean and median daily intakes of dairy (g/day), standard deviations and intakes at the 97.5th percentile for Irish adults aged 18-64 years analysed by gender**

		Total Population (n = 1274)				Consumers only					
		Mean	SD	Median	97.5	n	% cons	Mean	SD	Median	97.5
<b>Males</b> n = 634	Total dairy	327.8	228.4	279.0	869.4	633	99.8	328.3	228.2	279.4	870.2
	Total milk	276.8	216.1	230.7	817.5	619	97.6	283.6	214.3	236.3	827.4
	Whole milk	163.7	211.4	85.2	758.2	527	83.1	197.0	217.4	124.0	789.5
	Semi-skimmed milk	69.0	141.8	0.0	516.9	226	35.6	193.6	179.8	142.5	709.7
	Skimmed milk	14.6	70.0	0.0	258.8	72	11.4	128.9	169.5	41.3	734.7
	Fortified milk	26.1	86.4	0.0	304.6	84	13.2	197.2	150.9	181.3	594.3
	Non-dairy milk alternatives	3.3	33.7	0.0	0.0	9	1.4	235.4	168.4	162.5	.
	Total cheese	22.2	23.7	16.6	79.2	506	79.8	27.8	22.5	23.4	83.7
	Hard cheese	14.0	19.0	9.0	60.3	405	63.9	21.9	19.8	16.5	75.0
	Soft cheese	5.5	10.6	0.0	37.8	205	32.3	17.0	12.4	14.2	46.3
	Cottage cheese	0.3	4.6	0.0	0.0	3	0.5	60.0	36.1	50.0	.
	Processed cheese	2.4	6.5	0.0	19.6	148	23.3	10.6	10.1	7.6	43.9
	Total Yogurt	28.7	53.4	0.0	162.5	247	39.0	73.7	63.3	62.5	228.7
	Yogurt	22.9	49.6	0.0	155.9	201	31.8	72.1	65.1	62.5	223.4
	Drinking yogurt	5.1	17.9	0.0	64.1	60	9.5	53.4	28.6	50.0	136.4
Non-dairy yogurt alternative	0.8	8.1	0.0	0.0	7	0.5	72.8	27.4	64.0	.	
<b>Females</b> n=640	Total dairy	248.7	167.0	216.7	651.3	639	99.8	249.0	166.9	217.0	651.5
	Total milk	197.1	156.1	162.0	546.0	621	97.0	203.1	154.5	168.5	557.5
	Whole milk	86.1	130.2	34.7	423.1	501	78.3	110.0	138.0	60.3	464.5
	Semi-skimmed milk	72.5	117.5	6.3	418.0	336	52.5	138.0	131.4	99.8	471.9
	Skimmed milk	18.6	57.3	0.0	227.1	127	19.8	93.6	98.0	57.8	352.2
	Fortified milk	16.5	61.0	0.0	226.3	85	13.3	124.0	121.3	79.0	436.1
	Non-dairy milk alternatives	3.5	24.2	0.0	36.3	19	3.0	117.6	81.7	110.0	.

<b>Table 2(b) continued:</b>		Total Population (n=1274)				Consumers only					
		Mean	SD	Median	97.5	<i>n</i>	% cons	Mean	SD	Median	97.5
<b>Females</b> n=640	Total cheese	15.7	16.1	12.0	62.2	492	76.9	20.4	15.5	16.3	64.2
	Hard cheese	9.3	12.9	4.5	45.0	369	57.7	16.1	13.4	12.2	56.1
	Soft cheese	4.0	7.6	0.0	24.1	220	34.4	11.6	9.0	8.6	35.9
	Cottage cheese	0.4	3.3	0.0	0.0	9	1.4	24.9	13.1	24.8	.
	Processed cheese	2.1	5.7	0.0	18.5	144	22.5	9.4	8.9	6.3	37.0
	Total Yogurt	35.8	49.2	7.9	168.6	329	51.4	69.7	28.5	62.5	190.8
	Yogurt	29.5	44.8	0.0	155.9	290	45.3	65.1	46.0	62.3	189.3
	Drinking yogurt	5.7	18.7	0.0	75.0	70	10.9	51.9	28.2	50.0	111.3
	Non-dairy yogurt alternative	0.6	8.7	0.0	0.0	5	0.8	83.0	59.2	62.5	.

*n* - number; % cons - percentage consumers; SD - standard deviation; 97.5 - 97.5th percentile

**Table 2(c) Mean and median daily intakes of dairy (g/day), standard deviations and intakes at the 97.5th percentile for Irish adults aged 18-64 years analysed by age group**

		Total Population (n = 1274)				Consumers only					
		Mean	SD	Median	P 97.5	n	% cons	Mean	SD	Median	P 97.5
<i>Total Population</i>	Total dairy	284.9	213.3	236.4	835.3	531	100	284.9	213.3	236.4	835.3
18-35 years	Total milk	232.8	201.7	182.9	782.6	517	97.4	239.1	200.7	196.0	786.1
n = 531	Whole milk	123.3	194.3	39.8	723.8	414	78.0	158.1	207.1	84.2	828.3
	Semi-skimmed milk	62.4	114.1	0.0	390.9	235	44.3	141.0	135.4	105.3	505.5
	Skimmed milk	14.6	57.6	0.0	254.6	75	14.1	103.2	120.6	42.5	434.3
	Fortified milk	27.1	88.0	0.0	304.3	81	15.3	177.5	155.7	136.7	596.6
	Non-dairy milk alternatives	5.5	40.1	0.0	49.0	16	3.0	181.0	151.0	156.3	.
	Total cheese	23.2	22.1	17.8	77.4	452	85.1	27.3	21.6	22.4	78.8
	Hard cheese	13.2	16.6	9.0	53.9	357	67.2	19.6	16.8	15.0	65.5
	Soft cheese	7.2	11.9	0.0	39.7	231	43.5	16.5	13.0	12.9	52.9
	Cottage cheese	0.4	5.1	0.0	0.0	5	0.9	42.3	35.6	32.0	.
	Processed cheese	2.5	5.7	0.0	16.9	153	28.8	8.5	7.9	5.8	31.7
	Total Yogurt	28.8	50.1	0.0	137.5	235	44.3	65.8	57.6	51.0	187.9
	Yogurt	24.2	47.6	0.0	125.0	206	38.8	62.4	58.8	46.3	190.4
	Drinking yogurt	4.2	16.2	0.0	54.4	44	8.3	50.4	29.0	50.0	146.0
	Non-dairy yogurt alternative	0.5	6.6	0.0	0.0	3	0.6	83.3	36.1	62.5	.
<i>Total Population</i>	Total dairy	293.5	205.3	251.6	842.4	436	99.8	294.2	205.0	251.9	843.1
36-50years	Total milk	247.7	194.6	206.3	790.6	427	97.7	253.5	193.1	208.9	793.6
n= 437	Whole milk	133.2	171.6	73.0	601.2	367	84.0	158.6	176.2	106.0	633.6
	Semi-skimmed milk	80.4	150.0	0.0	531.8	190	43.5	185.0	180.1	129.9	728.3
	Skimmed milk	18.4	72.1	0.0	227.3	70	16.0	114.8	147.1	65.5	735.4
	Fortified milk	14.8	59.5	0.0	253.3	42	9.6	153.7	125.8	153.8	435.8
	Non-dairy milk alternatives	0.9	11.4	0.0	0.0	4	0.9	95.9	82.9	95.6	.



<b>Table 2(c) continued:</b>		Total Population (n=1274)				Consumers only					
		Mean	SD	Median	P 97.5	n	% cons	Mean	SD	Median	P 97.5
<i>Total Population</i>	Total cheese	17.0	19.6	11.8	70.0	336	76.9	22.1	19.7	16.6	75.2
36-50years	Hard cheese	11.6	17.8	5.0	60.1	263	60.2	19.3	19.7	13.9	75.2
n= 437	Soft cheese	3.2	6.3	0.0	20.6	125	28.6	11.1	7.1	9.5	32.4
	Cottage cheese	0.3	3.0	0.0	0.0	4	0.9	28.3	15.5	24.9	.
	Processed cheese	1.9	5.8	0.0	18.6	83	19.0	10.2	9.7	8.5	39.7
	Total Yogurt	28.8	45.3	3.8	156.4	184	42.1	68.5	46.5	62.5	190.7
	Yogurt	23.4	41.9	0.0	144.4	153	35.0	67.0	46.1	62.5	190.3
	Drinking yogurt	5.2	17.0	0.0	62.8	46	10.5	49.7	23.4	50.0	100.0
	Non-dairy yogurt alternative	0.3	3.8	0.0	0.0	2	0.5	56.0	9.2	56.0	.
<i>Total Population</i>	Total dairy	285.6	184.1	250.0	747.3	305	99.7	286.1	183.6	250.1	748.9
51 - 64 years	Total milk	228.2	171.6	188.2	657.2	296	96.7	235.9	169.2	193.1	660.3
n = 306	Whole milk	115.2	163.6	43.2	594.6	247	80.7	142.7	171.0	72.3	621.2
	Semi-skimmed milk	71.4	125.1	0.0	448.9	137	44.8	159.4	144.8	111.5	536.6
	Skimmed milk	17.6	62.0	0.0	246.5	54	17.6	99.9	117.4	44.0	440.9
	Fortified milk	20.5	68.7	0.0	226.8	46	15.0	136.4	125.8	108.9	583.2
	Non-dairy milk alternatives	3.5	24.4	0.0	50.9	8	2.6	134.2	76.4	111.3	.
	Total cheese	14.3	17.0	9.0	53.0	210	68.6	20.8	16.8	15.8	58.3
	Hard cheese	8.9	13.1	0.6	47.5	154	50.3	17.7	13.7	12.9	50.2
	Soft cheese	2.7	6.3	0.0	23.6	69	22.5	12.0	8.0	10.0	32.8
	Cottage cheese	0.3	2.8	0.0	0.0	3	1.0	26.6	12.7	30.0	.
	Processed cheese	2.4	7.2	0.0	22.5	56	18.3	13.0	12.2	9.0	57.5
	Total Yogurt	43.2	59.9	12.5	225.6	155	50.7	84.2	59.5	68.0	250.1
	Yogurt	33.7	53.5	0.0	197.2	132	43.1	78.2	56.2	62.5	243.5
	Drinking yogurt	7.6	22.8	0.0	87.3	40	13.1	58.3	32.3	54.4	149.4
	Non-dairy yogurt alternative	1.8	13.9	0.0	13.0	7	2.3	80.3	50.1	64.0	.

*n* - number; % cons - percentage consumers; SD - standard deviation; 97.5 - 97.5th percentile

**Table 3(a) Comparison of daily nutrient intakes between tertiles of dairy intake for Irish adults (18-64years)**

	Tertiles of mean daily intake of dairy						p value
	Low (n=424)		Medium (n=424)		High (n=424)		
	41/59		47/53		61/39		
	Mean	SD	Mean	SD	Mean	SD	
Males/Females (%)							
Mean age (yrs)	38.7	13.2	39.9	13.1	40.0	13.1	ns
Mean daily intakes (g/day)	106.1 <sup>a</sup>	46.4	246.1 <sup>b</sup>	42.0	513.3 <sup>c</sup>	186.6	<0.001
Energy (kcal)	1819.6 <sup>a</sup>	600.1	2025.5 <sup>b</sup>	629.5	2323.1 <sup>c</sup>	652.2	<0.001
Protein (g)	72.9	23.4	83.1	24.8	97.6	28.2	
Carbohydrate (g)	199.7	72.9	228.9	72.0	269.4	78.7	
Total sugar (g)	73.5	40.3	88.3	38.4	112.9	43.1	
Total starch (g)	121.8	43.1	136.0	45.3	152.4	50.1	
Fat (g)	68.4	24.8	76.4	29.5	87.3	29.8	
Saturated fat (g)	25.3	10.2	29.6	12.2	35.7	13.3	
Monounsaturated fat (g)	26.0	10.0	28.1	11.7	31.3	11.7	
Polyunsaturated fat (g)	12.7	5.9	13.7	6.8	14.7	6.8	
% energy from protein	16.5	3.7	16.9	3.8	17.1	3.1	ns
% energy from carbohydrate	41.5 <sup>a</sup>	7.4	42.9 <sup>b</sup>	6.7	43.8 <sup>b</sup>	6.3	<0.001
% energy from total sugar	16.1 <sup>a</sup>	6.5	17.6 <sup>b</sup>	5.6	19.6 <sup>c</sup>	5.6	<0.001
% energy from starch	27.2	6.0	27.2	5.4	24.4	5.3	ns
% energy from fat	33.9	6.4	33.7	6.4	33.8	6.3	ns
% energy from saturated fat	12.6 <sup>a</sup>	3.4	13.0 <sup>a</sup>	3.3	13.9 <sup>b</sup>	3.7	<0.001
% energy from monounsaturated fat	12.8 <sup>a</sup>	2.6	12.3 <sup>b</sup>	2.7	12.0 <sup>b</sup>	2.5	<0.001
% energy from polyunsaturated fat	6.3 <sup>a</sup>	2.2	6.0 <sup>ab</sup>	2.1	5.7 <sup>b</sup>	2.3	<0.001

**Table 3(a) continued:**

	Tertiles of mean daily intake of dairy						p value
	Low (n=424)		Medium (n=424)		High (n=424)		
	Mean	SD	Mean	SD	Mean	SD	
Retinol (ug/10MJ)	376.9 <sup>a</sup>	753.0	580.4 <sup>b</sup>	1707.1	474.4 <sup>ab</sup>	253.0	0.025
Vitamin D (ug/10MJ)	3.4 <sup>a</sup>	2.5	3.6 <sup>a</sup>	3.0	4.2 <sup>b</sup>	3.4	0.001
Vitamin B12 (ug/10MJ)	5.2 <sup>a</sup>	4.0	6.8 <sup>b</sup>	8.0	7.5 <sup>b</sup>	2.8	<0.001
Riboflavin (mg/10MJ)	1.7 <sup>a</sup>	0.6	2.3 <sup>b</sup>	0.8	2.7 <sup>c</sup>	0.7	<0.001
Folate (ug/10MJ)	341.1 <sup>a</sup>	134.8	376.9 <sup>b</sup>	136.2	400.1 <sup>c</sup>	149.0	<0.001
Pantothenic acid (mg/10MJ)	6.2 <sup>a</sup>	2.2	6.9 <sup>b</sup>	2.3	7.8 <sup>c</sup>	2.0	<0.001
Calcium (mg/10MJ)	848.1 <sup>a</sup>	209.7	1050.4 <sup>b</sup>	253.8	1304.6 <sup>c</sup>	299.0	<0.001
Potassium (mg/10MJ)	3478.5 <sup>a</sup>	743.2	3637.2 <sup>b</sup>	725.7	3788.2 <sup>c</sup>	726.4	<0.001
Salt (g/MJ)	7.9 <sup>a</sup>	1.9	7.4 <sup>b</sup>	1.6	7.2 <sup>b</sup>	1.5	<0.001

*n* - number; SD - standard deviation, 10MJ - micronutrients per 10 megajoule, ns - not significant at  $P > 0.05$ .

Statistical test used: one-way ANOVA with Bonferroni post-hoc test.

<sup>abc</sup> Different superscript letters indicate significant differences in mean values ( $P < 0.05$ )

**Table 3(b) Comparison of daily nutrient intakes between consumers and non-consumers of total milk and across tertiles of total milk intake for Irish adults (18-64 years)**

	Tertiles of mean daily intake of total milk								
	Non-consumers (n=34)		Low (n=412)		Medium (n=415)		High (n=413)		p value
	44/56		41/59		47/53		62/38		
Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Male/Female (%)									
Mean age (yrs)	40.7	14.1	39.2	13.2	39.8	13.1	39.5	13.1	ns
Mean daily intakes (g/day)	0.0 <sup>a</sup>	0.0	77.7 <sup>b</sup>	37.5	200.7 <sup>c</sup>	40.8	451.3 <sup>d</sup>	184.3	<0.001
Energy (kcal)	1778.5 <sup>ab</sup>	740.7	1857.9 <sup>a</sup>	606.0	2014.8 <sup>b</sup>	628.7	2313.4 <sup>c</sup>	656.4	<0.001
Protein (g)	66.9	20.5	76.3	25.8	81.6	24.4	97.2	27.7	
Carbohydrate (g)	200.3	98.2	204.1	71.4	228.6	73.3	267.3	80.0	
Total sugar (g)	72.9	50.3	76.3	39.0	88.7	40.4	111.0	43.9	
Total starch (g)	124.7	59.8	123.2	42.3	135.3	45.2	152.4	50.4	
Fat (g)	65.1	33.0	69.4	24.9	76.3	29.1	87.2	30.0	
Saturated fat (g)	25.7	11.1	26.0	10.4	29.5	12.1	35.6	13.4	
Monounsaturated fat (g)	25.9	13.7	26.1	9.9	28.1	11.6	31.2	11.8	
Polyunsaturated fat (g)	13.6	8.2	12.8	5.7	13.6	6.7	14.6	6.9	
% energy from protein	16.4	6.1	16.8	4.0	16.6	3.2	17.1	3.4	ns
% energy from carbohydrate	42.0 <sup>ab</sup>	8.3	41.6 <sup>a</sup>	7.3	43.0 <sup>a</sup>	6.7	43.6 <sup>b</sup>	6.3	<0.001
% energy from total sugar	16.1 <sup>ac</sup>	7.3	16.5 <sup>a</sup>	6.3	17.7 <sup>ac</sup>	6.0	19.3 <sup>bc</sup>	5.6	<0.001
% energy from starch	28.1	7.1	26.9	5.8	27.2	5.5	26.6	5.3	ns
% energy from fat	32.1	6.4	33.8	6.5	33.8	6.3	33.9	6.3	ns
% energy from saturated fat	10.8 <sup>a</sup>	2.8	12.7 <sup>b</sup>	3.3	13.1 <sup>b</sup>	3.3	13.9 <sup>bc</sup>	3.7	<0.001
% energy from monounsaturated fat	12.7 <sup>ab</sup>	2.8	12.6 <sup>a</sup>	2.7	12.4 <sup>ab</sup>	2.7	12.1 <sup>b</sup>	2.4	0.019
% energy from polyunsaturated fat	6.6 <sup>ab</sup>	2.1	6.3 <sup>a</sup>	2.2	6.0 <sup>ab</sup>	2.1	5.7 <sup>b</sup>	2.3	0.001

**Table 3(b) continued:**

	Tertiles of mean daily intake of total milk								
	Non-consumers (n=34)		Low (n=412)		Medium (n=415)		High (n=413)		p value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Retinol (ug/10MJ)	321.2 <sup>ab</sup>	703.4	345.4 <sup>a</sup>	272.6	551.9 <sup>b</sup>	1332.0	545.4 <sup>b</sup>	1317.2	0.016
Vitamin D (ug/10MJ)	3.5 <sup>ab</sup>	6.3	3.4 <sup>a</sup>	2.6	3.8 <sup>ab</sup>	3.3	4.0 <sup>b</sup>	3.1	0.047
Vitamin B12 (ug/10MJ)	4.2 <sup>ab</sup>	3.4	5.1 <sup>a</sup>	2.8	6.7 <sup>b</sup>	6.2	7.9 <sup>c</sup>	6.5	<0.001
Riboflavin (mg/10MJ)	1.4 <sup>a</sup>	0.5	1.8 <sup>b</sup>	0.6	2.3 <sup>c</sup>	0.7	2.8 <sup>d</sup>	0.8	<0.001
Folate (ug/10MJ)	325.0 <sup>ab</sup>	136.2	340.9 <sup>a</sup>	128.7	382.2 <sup>bc</sup>	141.8	399.2 <sup>c</sup>	148.8	<0.001
Pantothenic acid (mg/10MJ)	5.6 <sup>a</sup>	2.0	6.3 <sup>a</sup>	2.3	6.8 <sup>b</sup>	2.0	7.9 <sup>c</sup>	2.2	<0.001
Calcium (mg/10MJ)	708.0 <sup>a</sup>	221.2	891.5 <sup>b</sup>	225.3	1047.6 <sup>c</sup>	275.7	1289.8 <sup>d</sup>	301.2	<0.001
Potassium (mg/10MJ)	3549.7 <sup>ab</sup>	1105.4	3520.7 <sup>a</sup>	727.0	3626.2 <sup>a</sup>	731.1	3772.1 <sup>b</sup>	729.3	<0.001
Salt (g/10MJ)	7.6 <sup>ab</sup>	1.8	7.8 <sup>a</sup>	1.9	7.5 <sup>b</sup>	1.6	7.2 <sup>b</sup>	1.5	<0.001

*n* - number; SD - standard deviation, 10MJ - micronutrients per 10 megajoule, ns - not significant at P>0.05.

Statistical test used: one-way ANOVA with Bonferroni post-hoc test.

<sup>abcd</sup> Different superscript letters indicate significant differences in mean values (P<0.05)

**Table 3(c) Comparison of daily nutrient intakes between consumers and non-consumers of total cheese and across tertiles of total cheese intake for Irish adults (18-64 years)**

	Tertiles of mean daily intake of total cheese								
	Non-consumers (n=276)		Low (n=338)		Medium (n=328)		High (n=332)		p value
	46/54		44/56		47/53		61/39		
Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Males/Females (%)									
Mean age (yrs)	43.6 <sup>a</sup>	12.8	40.7 <sup>b</sup>	12.5	38.5 <sup>bc</sup>	13.2	36.0 <sup>c</sup>	13.0	<0.001
Mean daily intakes (g/day)	0.0 <sup>a</sup>	0.0	7.4 <sup>b</sup>	3.0	19.4 <sup>c</sup>	4.2	46.0 <sup>d</sup>	20.4	<0.001
Energy (kcal)	1840.6 <sup>a</sup>	604.0	1867.2 <sup>a</sup>	549.3	2108.1 <sup>b</sup>	663.7	2370.3 <sup>c</sup>	678.7	<0.001
Protein (g)	79.1	26.4	78.1	23.0	84.1	27.8	96.0	28.6	
Carbohydrate (g)	214.7	79.1	215.8	71.7	240.0	81.3	256.8	80.4	
Total sugar (g)	85.7	43.8	86.8	43.9	95.3	43.9	97.3	42.8	
Total starch (g)	125.3	47.3	125.2	39.7	140.4	48.4	154.2	50.1	
Fat (g)	66.9	28.0	68.9	23.2	80.1	29.9	91.7	28.5	
Saturated fat (g)	25.0	11.6	26.6	10.7	31.1	12.4	37.2	12.4	
Monounsaturated fat (g)	24.8	10.8	25.5	9.0	29.7	12.3	33.1	11.3	
Polyunsaturated fat (g)	12.5	7.2	12.3	5.3	14.4	6.7	15.4	6.6	
% energy from protein	17.7 <sup>a</sup>	4.6	17.1 <sup>ab</sup>	3.5	16.2 <sup>c</sup>	3.3	16.5 <sup>bc</sup>	3.2	<0.001
% energy from carbohydrate	43.8 <sup>a</sup>	7.4	43.4 <sup>a</sup>	6.6	42.9 <sup>a</sup>	6.7	40.8 <sup>b</sup>	6.5	<0.001
% energy from total sugar	18.6 <sup>a</sup>	6.9	18.3 <sup>a</sup>	6.3	18.0 <sup>a</sup>	5.7	16.3 <sup>b</sup>	5.3	<0.001
% energy from total starch	27.4	5.9	27.2	5.5	26.9	5.5	26.3	5.5	ns
% energy from fat	32.4 <sup>a</sup>	6.7	33.3 <sup>ab</sup>	6.3	34.1 <sup>bc</sup>	6.1	35.1 <sup>c</sup>	6.2	<0.001
% energy from saturated fat	12.1 <sup>a</sup>	3.3	12.8 <sup>ab</sup>	3.6	13.3 <sup>b</sup>	3.2	14.3 <sup>c</sup>	3.4	<0.001
% energy from monounsaturated fat	12.0 <sup>a</sup>	2.8	12.3 <sup>ab</sup>	2.4	12.6 <sup>b</sup>	2.7	12.6 <sup>b</sup>	2.6	0.009
% energy from polyunsaturated fat	6.1	2.4	6.0	2.4	6.1	2.0	5.9	2.0	ns

**Table 3(c) continued:**

	Tertiles of mean daily intake of total cheese								
	Non-consumers (n=276)		Low (n=338)		Medium (n=328)		High (n=332)		p value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Retinol (ug/10MJ)	492.2	1743.8	494.1	1133.5	461.3	735.5	462.0	432.7	ns
Vitamin D (ug/10MJ)	4.3 <sup>a</sup>	4.0	4.1 <sup>ab</sup>	3.6	3.6 <sup>bc</sup>	2.4	3.1 <sup>c</sup>	2.2	<0.001
Vitamin B12 (ug/10MJ)	7.2 <sup>a</sup>	8.3	6.9 <sup>a</sup>	5.8	6.1 <sup>ab</sup>	3.9	5.8 <sup>b</sup>	2.9	0.004
Riboflavin (mg/10MJ)	2.3	1.0	2.3	0.9	2.2	0.7	2.2	0.6	0.017
Folate (ug/10MJ)	396.1 <sup>a</sup>	148.0	384.4 <sup>ab</sup>	153.6	363.1 <sup>bc</sup>	135.5	351.3 <sup>c</sup>	126.8	<0.001
Pantothenic acid (mg/10MJ)	7.5 <sup>a</sup>	2.5	7.2 <sup>a</sup>	2.2	6.7 <sup>b</sup>	2.1	6.6 <sup>b</sup>	2.3	<0.001
Calcium (mg/10MJ)	973.2 <sup>a</sup>	317.4	1012.0 <sup>ab</sup>	324.3	1069.5 <sup>b</sup>	275.3	1196.8 <sup>c</sup>	311.3	<0.001
Potassium (mg/10MJ)	3902.5 <sup>a</sup>	773.8	3787.4 <sup>a</sup>	770.8	3551.7 <sup>b</sup>	661.3	3348.8 <sup>c</sup>	665.3	<0.001
Salt (g/10MJ)	7.3 <sup>a</sup>	2.0	7.6 <sup>ab</sup>	1.8	7.3 <sup>a</sup>	1.5	7.7 <sup>b</sup>	1.5	0.010

*n* - number; SD - standard deviation, 10MJ - micronutrients per 10 megajoule, ns - not significant at  $P>0.05$ .

Statistical test used: one-way ANOVA with Bonferroni post-hoc test.

<sup>abcd</sup> Different superscript letters indicate significant differences in mean values ( $P<0.05$ )

**Table 3(d) Comparison of daily nutrient intakes between consumers and non-consumers of total yogurt and across tertiles of total yogurt intake for Irish adults (18-64 years)**

	Tertiles of mean daily intake of total yogurt								p value
	Non- consumers (n=698)		Low (n=190)		Medium (n=194)		High (n=192)		
	55/44		43/57		42/57		44/56		
Males/Females (%)	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Mean age (yrs)	38.8 <sup>a</sup>	13.1	38.3 <sup>a</sup>	12.4	39.9 <sup>ab</sup>	13.3	43.2 <sup>b</sup>	13.2	<0.001
Mean daily intakes (g/day)	0.0 <sup>a</sup>	0.0	25.2 <sup>b</sup>	9.1	58.5 <sup>c</sup>	12.2	130.2 <sup>d</sup>	56.6	<0.001
Energy (kcal)	2050.7	666.6	2078.0	717.4	2023.3	622.0	2077.1	626.9	ns
Protein (g)	83.2	27.2	84.2	27.9	84.1	27.1	90.1	27.6	
Carbohydrate (g)	227.0	81.7	240.1	83.7	229.9	69.1	247.5	78.4	
Total sugar (g)	84.8	44.7	96.1	45.5	93.7	35.3	108.8	41.3	
Total starch (g)	138.1	49.3	138.2	49.1	132.0	41.8	134.6	47.6	
Fat (g)	78.5	29.3	77.4	32.5	75.4	26.4	74.8	28.0	
Saturated fat (g)	30.7	13.0	30.0	13.0	28.9	10.8	29.5	13.0	
Monounsaturated fat (g)	29.0	11.3	28.6	12.9	27.6	10.5	26.8	10.8	
Polyunsaturated fat (g)	13.7	6.5	13.9	8.0	13.8	6.0	13.4	5.7	
% energy from protein	16.6 <sup>a</sup>	3.8	16.6 <sup>a</sup>	3.7	16.9 <sup>ab</sup>	3.3	17.7 <sup>b</sup>	3.6	0.003
% energy from carbohydrate	41.7 <sup>a</sup>	7.2	43.8 <sup>bc</sup>	6.4	43.0 <sup>ab</sup>	6.0	44.9 <sup>c</sup>	6.4	<0.001
% energy from total sugar	16.4 <sup>a</sup>	6.4	18.4 <sup>b</sup>	5.6	18.6 <sup>b</sup>	4.6	21.1 <sup>c</sup>	5.5	<0.001
% energy from total starch	27.3 <sup>a</sup>	5.6	27.2 <sup>ab</sup>	6.3	26.4 <sup>ab</sup>	4.9	26.0 <sup>b</sup>	5.5	0.021
% energy from fat	34.5 <sup>a</sup>	6.6	33.2 <sup>ab</sup>	5.8	33.6 <sup>ab</sup>	6.2	32.1 <sup>b</sup>	6.0	<0.001
% energy from saturated fat	13.5 <sup>a</sup>	3.6	12.9 <sup>ab</sup>	3.0	12.9 <sup>ab</sup>	3.4	12.6 <sup>b</sup>	3.4	0.003
% energy from monounsaturated fat	12.7 <sup>a</sup>	2.6	12.2 <sup>a</sup>	2.6	12.2 <sup>a</sup>	2.6	11.5 <sup>b</sup>	2.5	<0.001
% energy from polyunsaturated fat	6.1	2.4	5.9	2.1	6.1	1.8	5.6	2.1	ns



**Table 3(d) continued:**

	Tertiles of mean daily intake of total yogurt								
	Non-consumers (n=698)		Low (n=190)		Medium (n=194)		High (n=192)		P value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Retinol (ug/10MJ)	497.0	1300.1	382.4	223.5	541.8	1254.9	431.7	268.4	ns
Vitamin D (ug/10MJ)	3.6	3.1	3.5	2.7	4.1	3.3	4.1	3.4	ns
Vitamin B12 (ug/10MJ)	6.6	6.3	5.9	3.5	6.9	6.0	6.3	2.7	ns
Riboflavin (mg/10MJ)	2.2 <sup>a</sup>	0.9	2.2 <sup>ab</sup>	0.7	2.4 <sup>bc</sup>	0.8	2.5 <sup>c</sup>	0.7	<0.001
Folate (ug/10MJ)	359.7 <sup>a</sup>	138.0	362.7 <sup>ab</sup>	132.2	392.3 <sup>bc</sup>	153.5	411.2 <sup>c</sup>	146.1	<0.001
Pantothenic acid (mg/10MJ)	6.9 <sup>a</sup>	2.4	6.8 <sup>ab</sup>	2.0	7.2 <sup>ab</sup>	2.3	7.4 <sup>b</sup>	2.1	0.009
Calcium (mg/10MJ)	1016.6 <sup>a</sup>	316.3	1070.8 <sup>ab</sup>	308.6	1095.0 <sup>b</sup>	298.4	1215.2 <sup>c</sup>	306.9	<0.001
Potassium (mg/10MJ)	3500.7 <sup>a</sup>	717.4	3618.6 <sup>ab</sup>	7.5	3770.8 <sup>b</sup>	719.5	4017.8 <sup>c</sup>	735.6	<0.001
Salt (g/10MJ)	76	1.8	7.5	1.7	7.3	1.5	7.4	1.6	ns

*n* - number; SD - standard deviation, 10MJ - micronutrients per 10 megajoule, ns - not significant at P>0.05.

Statistical test used: one-way ANOVA with Bonferroni post-hoc test.

<sup>abcd</sup> Different superscript letters indicate significant differences in mean values (P<0.05)

**Table 4(a) Mean daily servings of dairy for Irish adults aged 18-64 years**

Total Population (n = 1274)		
	Mean	SD
Total Dairy	2.04	1.30
Total milk	1.18	0.96
Whole milk	0.62	0.90
Semi-skimmed milk	0.35	0.65
Skimmed milk	0.08	0.32
Fortified milk	0.11	0.37
Non-dairy milk alternative	0.02	0.15
Total cheese	0.61	0.70
Hard Cheese	0.47	0.66
Soft cheese	0.09	0.19
Cottage cheese	0.00	0.05
Processed cheese	0.05	0.12
Total Yogurt	0.24	0.39
Yogurt	0.21	0.38
Drinking yogurt	0.03	0.09
Non-dairy yogurt alternative	0.01	0.07

*n* - number; SD - standard deviation

**Table 4(b) Mean daily servings of dairy for Irish adults aged 18-64 years analysed by gender**

	Total Males (n = 634)		Total Females (n = 640)	
	Mean	SD	Mean	SD
Total Dairy	2.32	1.46	1.75	1.04
Total milk	1.38	1.08	0.99	0.78
Whole milk	0.82	1.06	0.43	0.65
Semi-skimmed milk	0.35	0.71	0.36	0.59
Skimmed milk	0.07	0.35	0.09	0.29
Fortified milk	0.13	0.43	0.08	0.30
Non-dairy milk alternative	0.02	0.17	0.02	0.12
Total cheese	0.72	0.81	0.50	0.54
Hard Cheese	0.56	0.76	0.37	0.52
Soft cheese	0.11	0.21	0.08	0.15
Cottage cheese	0.00	0.06	0.00	0.04
Processed cheese	0.05	0.13	0.04	0.11
Total Yogurt	0.21	0.41	0.27	0.38
Yogurt	0.18	0.40	0.24	0.36
Drinking yogurt	0.03	0.09	0.03	0.09
Non-dairy yogurt alternative	0.01	0.06	0.01	0.07

*n* - number; SD - standard deviation

**Table 4 (c) Mean daily servings of dairy for Irish adults aged 18-64 years analysed by age group**

	18 - 35 years (n = 531)		36-50 years (n= 437)		51 - 64 years (n = 306)	
	Mean	SD	Mean	SD	Mean	SD
Total Dairy	2.11	1.36	2.02	1.32	1.93	1.16
Total milk	1.16	1.01	1.24	0.97	1.14	0.86
Whole milk	0.62	0.97	0.67	0.86	0.58	0.82
Semi-skimmed milk	0.31	0.57	0.40	0.75	0.34	0.63
Skimmed milk	0.07	0.29	0.09	0.36	0.09	0.31
Fortified milk	0.14	0.44	0.07	0.30	0.10	0.34
Non-dairy milk alternative	0.03	0.20	0.00	0.06	0.02	0.12
Total cheese	0.73	0.72	0.57	0.73	0.46	0.57
Hard Cheese	0.53	0.66	0.46	0.72	0.36	0.53
Soft cheese	0.14	0.24	0.06	0.13	0.05	0.13
Cottage cheese	0.01	0.07	0.00	0.04	0.00	0.04
Processed cheese	0.05	0.11	0.39	0.12	0.05	0.14
Total Yogurt	0.22	0.39	0.22	0.35	0.32	0.46
Yogurt	0.19	0.38	0.19	0.34	0.27	0.43
Drinking yogurt	0.02	0.08	0.03	0.09	0.04	0.11
Non-dairy yogurt alternative	0.00	0.05	0.00	0.03	0.01	0.11

*n* - number; SD - standard deviation

**Table 5 (a) Percentage of the population, adults aged 18-64 years, achieving the recommended 3 portions of total dairy per day.**

Population Types	Number of participants	Under consumers	Consumers	Over consumers	Consumers*
		0 - 2.99 servings	3 - 3.99 servings	> 3.99 servings	2.6 - 3.4 servings
Total Population	1274	80.6	12.1	7.3	12.9
Males	634	73.2	15.5	11.4	16.4
Females	640	88.0	8.8	3.3	9.4
Age 18-35 years	531	78.2	13.4	8.5	13.7
Age 36 - 50 years	437	82.8	9.6	7.6	11.7
Age 51 - 64 years	306	81.7	13.4	4.9	13.1

\*Consumers of the recommended 3 dairy servings using a range of 2.6-3.4 servings

**Table 6 (a) The adequacy of nutrient intakes within the total population from food sources and supplements (18-64 years)**

Micronutrient	Males (n = 634)				Females (n = 640)			
	EAR <sup>17</sup>	Mean	SD	% meeting EAR	EAR <sup>17</sup>	Mean	SD	% meeting EAR
Total Vitamin A (ug RE/day)	500	1141	995	79.2	400	1028	896	85.3
Vitamin D (ug/day)	10	4.6	7.1	8.0	10	3.9	5.2	6.6
Vitamin B12 (ug/day)	1.25	7.3	6.9	99.2	1.25	8.0	45.3	96.9
Riboflavin (mg/day)	1.0	3.2	6.0	94.2	0.9	3.3	9.2	90.5
Folate (ug/day)	150	401	209	96.4	150	336	387	88.6
Calcium (mg/day)	525	1060	407	93.8	525	824	356	84.2
Potassium (mg/day)*	3500	3491	1004	44.2	3500	2690	925	15.2
Salt (g/day)**	6	8.6	11.9	71.6	6	5.4	1.7	32.0
Pantothenic acid (mg/day)***	-	6.8	2.5	-	-	7.5	12.7	-

n = number; SD = standard deviation; RE = Retinol Equivalents

EAR = Estimated average requirement<sup>17</sup>

\*No established EAR for potassium therefore the Recommended Nutrient Intake (RNI) used instead

\*\*Salt recommendations according to SACN<sup>18</sup>; percentage values are based on those exceeding the recommendation for salt

\*\*\*There is no established EAR or RNI for pantothenic acid

**Table 7(a) Comparison of the current dairy intakes within NANS to the previous national adults survey (NSIFCS) for the total population and for consumers only (18-64 years)**

	NANS							NSIFCS						
	Total Population			Consumers only				Total Population			Consumers only			
	n	Mean	SD	n	% consumers	Mean	SD	n	Mean	SD	n	% consumers	Mean	SD
<i>Total milk</i>														
Total population	1274	237	192	1240	97	243	191	958	261	188	936	98	267	210
Males	634	277	216	619	98	284	214	475	293	212	467	98	298	210
Females	640	197	156	621	97	203	155	483	229	156	469	97	236	154
<i>Total cheese</i>														
Total population	1274	19	21	998	78	24	20	958	15	16	713	74	20	17
Males	634	22	24	506	80	28	23	475	17	19	345	73	23	19
Females	640	16	16	492	77	20	16	483	13	13	368	76	17	13
<i>Total yogurt</i>														
Total population	1274	32	51	576	45	71	55	958	16	32	305	32	49	41
Males	634	29	53	247	39	74	63	475	13	34	111	23	56	51
Females	640	36	49	329	51	70	29	483	18	30	194	40	44	33

n = number; SD = standard deviation.

**Table 7(b) Comparison of the percentage contribution of total milk, cheese and yoghurt to mean daily nutrient intakes between NANS and the previous national adults survey (NSIFCS) for the total population (18-64 years)**

	<b>NANS n = 1274</b>	<b>NSIFCS n = 958</b>
	% contribution	% contribution
<i>Total Milk</i>		
Energy (kcal)	5	7
Protein (g/day)	8	10
Fat (g/day)	6	10
Carbohydrate (g/day)	4	5
Vitamin D (ug/day)	6	5
Riboflavin (mg/day)	22	23
Vitamin B12 (ug/day)	30	25
Folate (ug/day)	8	6
<i>Total Cheese</i>		
Energy (kcal)	3	3
Protein (g/day)	4	4
Fat (g/day)	5	5
Carbohydrate (g/day)	0	<1
Vitamin D (ug/day)	2	2
Riboflavin (mg/day)	3	3
Vitamin B12 (ug/day)	4	4
Folate (ug/day)	1	1
<i>Total Yoghurt</i>		
Energy (kcal)	1.4	0.7
Protein (g/day)	1.5	1.0
Fat (g/day)	0.9	0.4
Carbohydrate (g/day)	1.8	0.8
Vitamin D (ug/day)	0.8	0.2
Riboflavin (mg/day)	3.5	2.2
Vitamin B12 (ug/day)	1.9	1.0
Folate (ug/day)	1.5	0.7

n = number

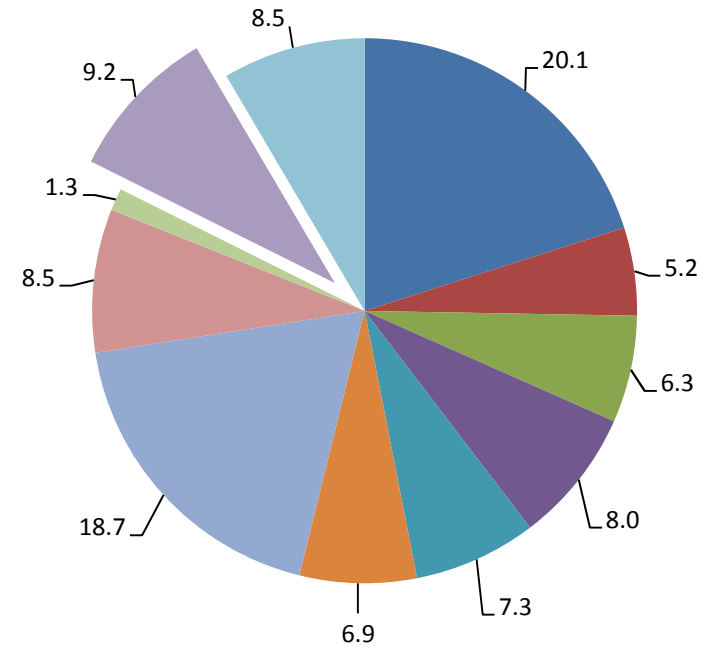
NANS = National Adult Nutrition Survey<sup>2</sup>

NSIFCS = North South Food Consumption Survey<sup>19</sup>



**Figure 1(a) Percentage contribution of food groups to energy (kcal) intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	20.1
2	Biscuits, cakes & pastries	5.2
3	Savoury snacks & confectionary	6.3
4	Beverages	8.0
5	Potato & potato products	7.3
6	Fruit & vegetables	6.9
7	Meat, fish & their dishes	18.7
8	Other foods	8.5
9	Dairy	9.2
10	Dairy recipes	8.5
11	Other dairy	1.3

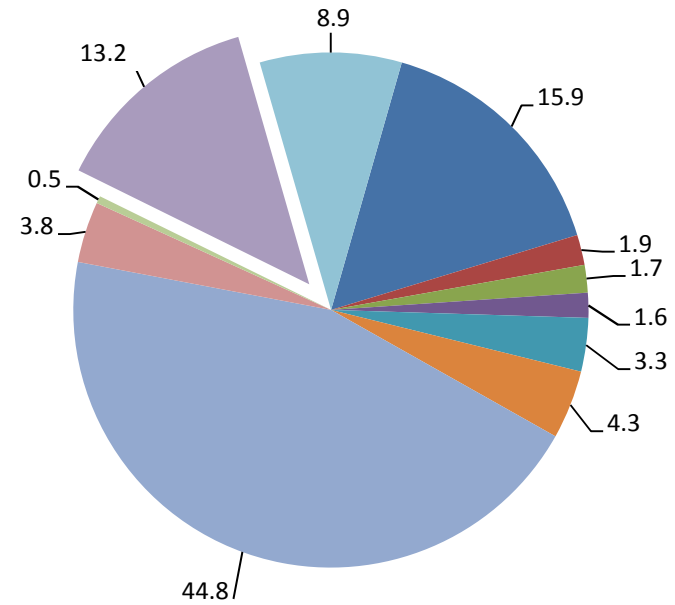


Dairy (9.2%) comprised of:		%
Whole milk		3.0
Semi skimmed milk		1.4
Skimmed milk		0.3
Fortified milk		0.5
Non-dairy milk alternatives		0.1
Hard cheese		2.0
Soft cheese		0.2
Cottage cheese		0.0
Processed cheese		0.3
Yogurt		1.2
Yogurt drinks		0.2
Non-dairy yogurt alternative		0.0

**Figure 1(b) Percentage contribution of food groups to protein intake in the Irish adult population (18-64years)**

**Food Groups:**

		%
1	Rice, grains, breads & cereals	15.9
2	Biscuits, cakes & pastries	1.9
3	Savoury snacks & confectionary	1.7
4	Beverages	1.6
5	Potato & potato products	3.3
6	Fruit & vegetables	4.3
7	Meat, fish & their dishes	44.8
8	Other foods	3.8
9	Dairy	13.2
10	Dairy recipes	8.9
11	Other dairy	0.5



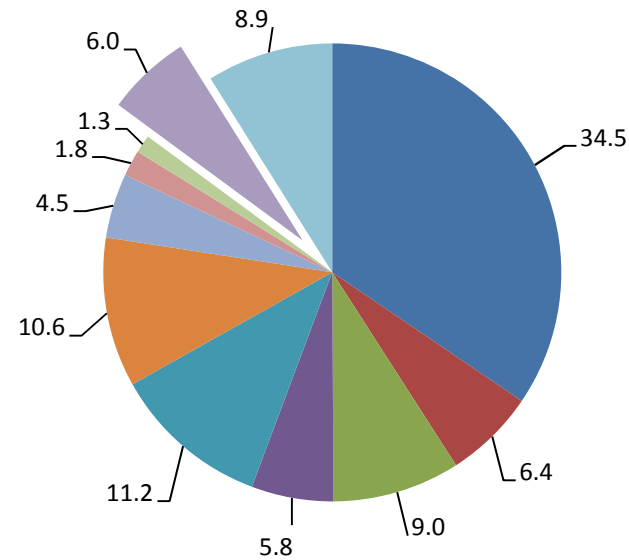
**Dairy (13.2%) comprised of:**

	%
Whole milk	3.8
Semi skimmed milk	2.6
Skimmed milk	0.6
Fortified milk	0.8
Non-dairy milk alternatives	0.1
Hard cheese	3.2
Soft cheese	0.3
Cottage cheese	0.0
Processed cheese	0.3
Yogurt	1.3
Yogurt drinks	0.2
Non-dairy yogurt alternative	0.0

**Figure 1(c) Percentage contribution of food groups to carbohydrate intake in the Irish adult population (18-64 years)**

<b>Food Groups:</b>		
		%
1	Rice, grains, breads & cereals	34.5
2	Biscuits, cakes & pastries	6.4
3	Savoury snacks & confectionary	9.0
4	Beverages	5.8
5	Potato & potato products	11.2
6	Fruit & vegetables	10.6
7	Meat, fish & their dishes	4.5
8	Other foods	1.8
9	Dairy	6.0
10	Dairy recipes	8.9
11	Other dairy	1.3

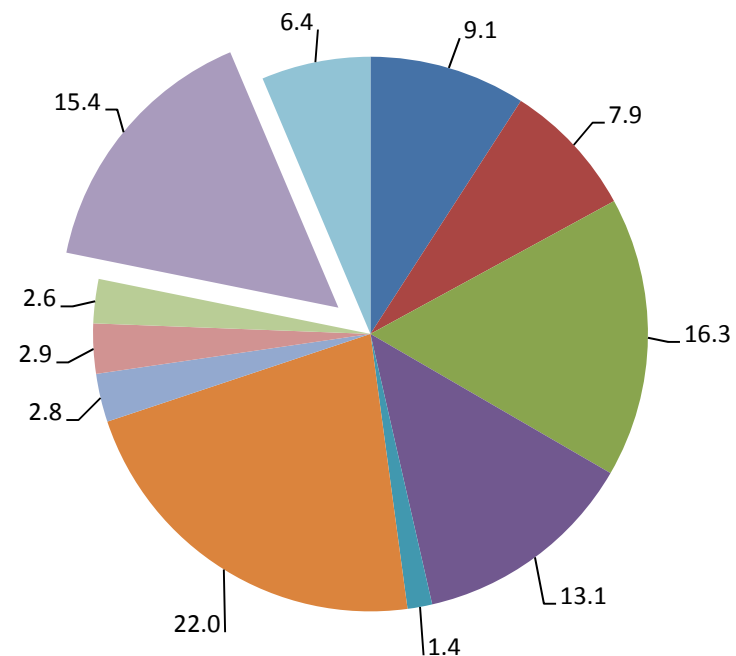
<b>Dairy (6.0%) comprised of:</b>		%
Whole milk		1.9
Semi skimmed milk		1.3
Skimmed milk		0.3
Fortified milk		0.5
Non-dairy milk alternatives		0.1
Hard cheese		0.0
Soft cheese		0.0
Cottage cheese		0.0
Processed cheese		0.0
Yogurt		1.5
Yogurt drinks		0.3
Non-dairy yogurt alternative		0.0



**Figure 1(d) Percentage contribution of food groups to total sugars intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	9.1
2	Biscuits, cakes & pastries	7.9
3	Savoury snacks & confectionary	16.3
4	Beverages	13.1
5	Potato & potato products	1.4
6	Fruit & vegetables	22.0
7	Meat, fish & their dishes	2.8
8	Other foods	2.9
9	Dairy	15.4
10	Dairy recipes	6.4
11	Other dairy	2.6

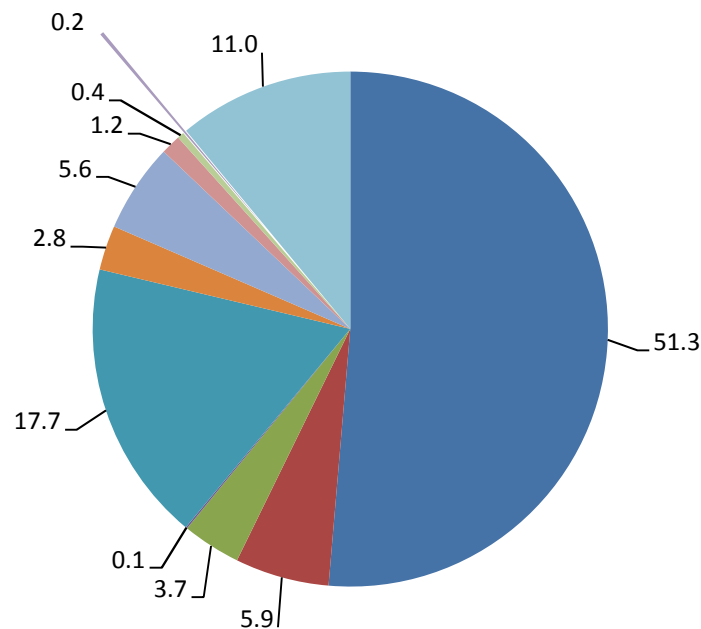
Dairy (15.4%) comprised of:		%
Whole milk		5.4
Semi skimmed milk		3.4
Skimmed milk		0.9
Fortified milk		1.3
Non-dairy milk alternatives		0.1
Hard cheese		0.0
Soft cheese		0.0
Cottage cheese		0.0
Processed cheese		0.1
Yogurt		3.4
Yogurt drinks		0.7
Non-dairy yogurt alternative		0.1



**Figure 1(e) Percentage contribution of food groups to starch intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	51.3
2	Biscuits, cakes & pastries	5.9
3	Savoury snacks & confectionary	3.7
4	Beverages	0.1
5	Potato & potato products	17.7
6	Fruit & vegetables	2.8
7	Meat, fish & their dishes	5.6
8	Other foods	1.2
9	Dairy	0.2
10	Dairy recipes	11.0
11	Other dairy	0.4

Dairy (0.2%) comprised of:		%
Whole milk		0.0
Semi skimmed milk		0.0
Skimmed milk		0.0
Fortified milk		0.0
Non-dairy milk alternatives		0.0
Hard cheese		0.0
Soft cheese		0.0
Cottage cheese		0.0
Processed cheese		0.0
Yogurt		0.2
Yogurt drinks		0.0
Non-dairy yogurt alternative		0.0



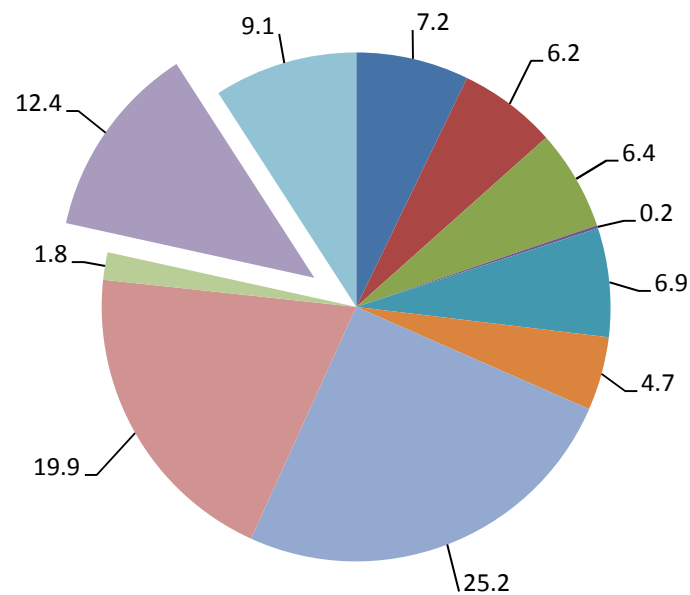
**Figure 1(f) Percentage contribution of food groups to fat intake in the Irish adult population (18-64 years)**

**Food Groups:**

		%
1	Rice, grains, breads & cereals	7.2
2	Biscuits, cakes & pastries	6.2
3	Savoury snacks & confectionary	6.4
4	Beverages	0.2
5	Potato & potato products	6.9
6	Fruit & vegetables	4.7
7	Meat, fish & their dishes	25.2
8	Other foods	19.9
9	Dairy	12.4
10	Dairy recipes	9.1
11	Other dairy	1.8

**Dairy (12.4%) comprised of:**

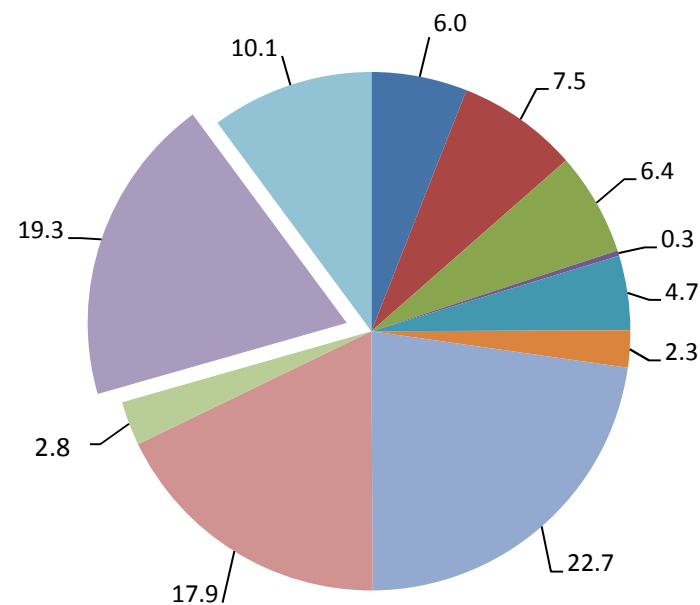
	%
Whole milk	4.2
Semi skimmed milk	1.4
Skimmed milk	0.1
Fortified milk	0.5
Non-dairy milk alternatives	0.1
Hard cheese	4.3
Soft cheese	0.4
Cottage cheese	0.0
Processed cheese	0.5
Yogurt	0.8
Yogurt drinks	0.1
Non-dairy yogurt alternative	0.0



**Figure 1(g) Percentage contribution of food groups to saturated fat intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	6.0
2	Biscuits, cakes & pastries	7.5
3	Savoury snacks & confectionary	6.4
4	Beverages	0.3
5	Potato & potato products	4.7
6	Fruit & vegetables	2.3
7	Meat, fish & their dishes	22.7
8	Other foods	17.9
9	Dairy	19.3
10	Dairy recipes	10.1
11	Other dairy	2.8

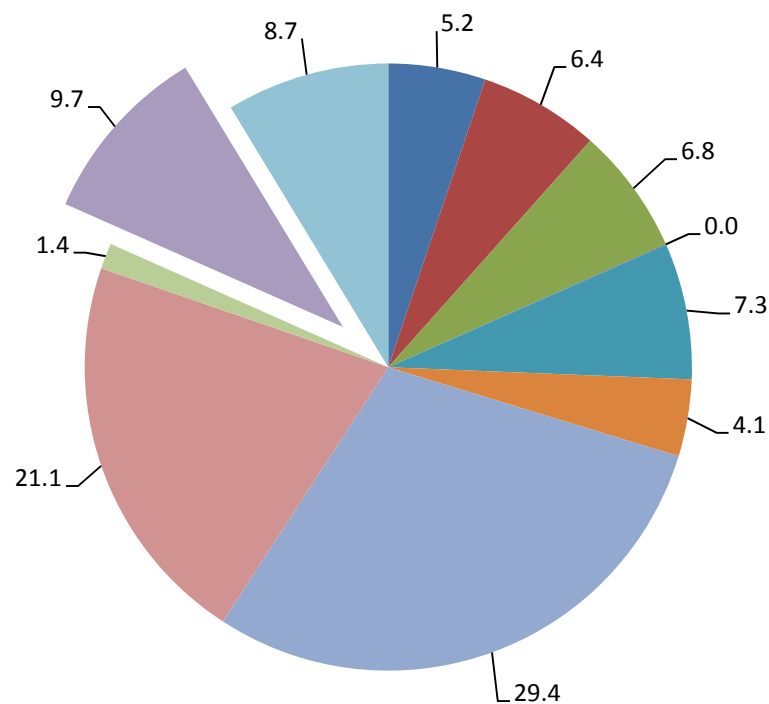
Dairy (19.3%) comprised of:		%
Whole milk		6.4
Semi skimmed milk		2.1
Skimmed milk		0.1
Fortified milk		1.8
Non-dairy milk alternatives		0.0
Hard cheese		6.5
Soft cheese		0.7
Cottage cheese		0.0
Processed cheese		0.9
Yogurt		1.3
Yogurt drinks		0.2
Non-dairy yogurt alternative		0.0



**Figure 1(h) Percentage contribution of food groups to monounsaturated fat intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	5.2
2	Biscuits, cakes & pastries	6.4
3	Savoury snacks & confectionary	6.8
4	Beverages	0.0
5	Potato & potato products	7.3
6	Fruit & vegetables	4.1
7	Meat, fish & their dishes	29.4
8	Other foods	21.1
9	Dairy	9.7
10	Dairy recipes	8.7
11	Other dairy	1.4

Dairy (9.7%) comprised of:		%
Whole milk		3.0
Semi skimmed milk		1.3
Skimmed milk		0.0
Fortified milk		0.5
Non-dairy milk alternatives		0.1
Hard cheese		3.4
Soft cheese		0.3
Cottage cheese		0.0
Processed cheese		0.4
Yogurt		0.7
Yogurt drinks		0.0
Non-dairy yogurt alternative		0.0

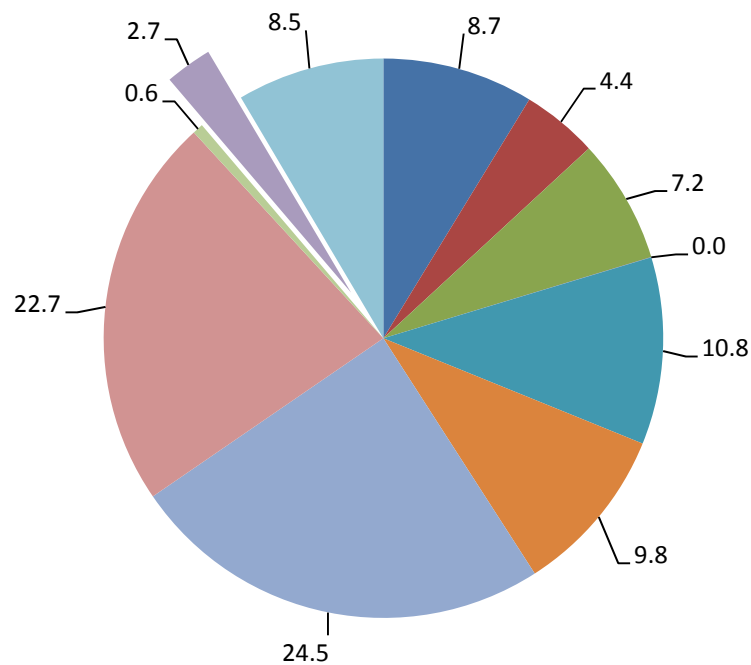




**Figure 1(i) Percentage contribution of food groups to polyunsaturated fat intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	8.7
2	Biscuits, cakes & pastries	4.4
3	Savoury snacks & confectionary	7.2
4	Beverages	0.0
5	Potato & potato products	10.8
6	Fruit & vegetables	9.8
7	Meat, fish & their dishes	24.5
8	Other foods	22.7
9	Dairy	2.7
10	Dairy recipes	8.5
11	Other dairy	0.6

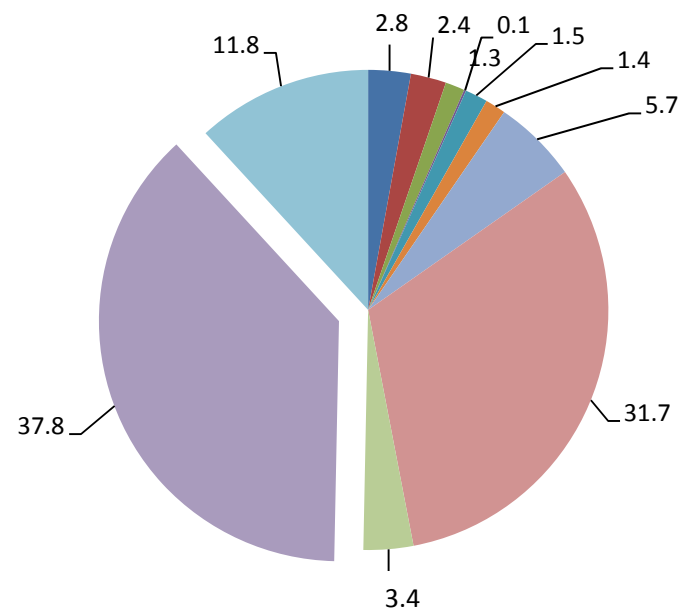
Dairy (2.7%) comprised of:		%
Whole milk		0.8
Semi skimmed milk		0.0
Skimmed milk		0.0
Fortified milk		0.0
Non-dairy milk alternatives		0.2
Hard cheese		1.3
Soft cheese		0.1
Cottage cheese		0.0
Processed cheese		0.1
Yogurt		0.1
Yogurt drinks		0.0
Non-dairy yogurt alternative		0.1



**Figure 1(j) Percentage contribution of food groups to retinol intake in the Irish adult population (18-64 years)**

<b>Food Groups:</b>		
		%
1	Rice, grains, breads & cereals	2.8
2	Biscuits, cakes & pastries	2.4
3	Savoury snacks & confectionary	1.3
4	Beverages	0.1
5	Potato & potato products	1.5
6	Fruit & vegetables	1.4
7	Meat, fish & their dishes	5.7
8	Other foods	31.7
9	Dairy	37.8
10	Dairy recipes	11.8
11	Other dairy	3.4

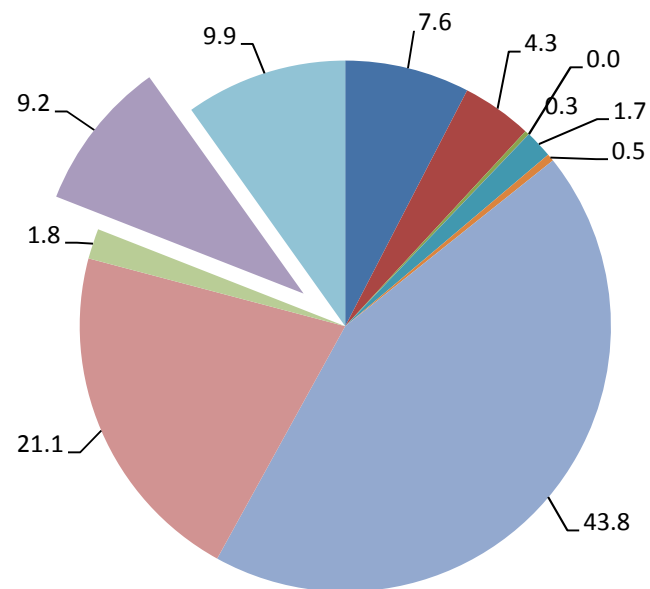
<b>Dairy (37.8%) comprised of:</b>		%
Whole milk		9.9
Semi skimmed milk		4.8
Skimmed milk		2.0
Fortified milk		5.2
Non-dairy milk alternatives		0.0
Hard cheese		10.7
Soft cheese		1.2
Cottage cheese		0.0
Processed cheese		1.7
Yogurt		2.0
Yogurt drinks		0.1
Non-dairy yogurt alternative		0.1



**Figure 1(k) Percentage contribution of food groups to vitamin D intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	7.6
2	Biscuits, cakes & pastries	4.3
3	Savoury snacks & confectionary	0.3
4	Beverages	0.0
5	Potato & potato products	1.7
6	Fruit & vegetables	0.5
7	Meat, fish & their dishes	43.8
8	Other foods	21.1
9	Dairy	9.2
10	Dairy recipes	9.9
11	Other dairy	1.9

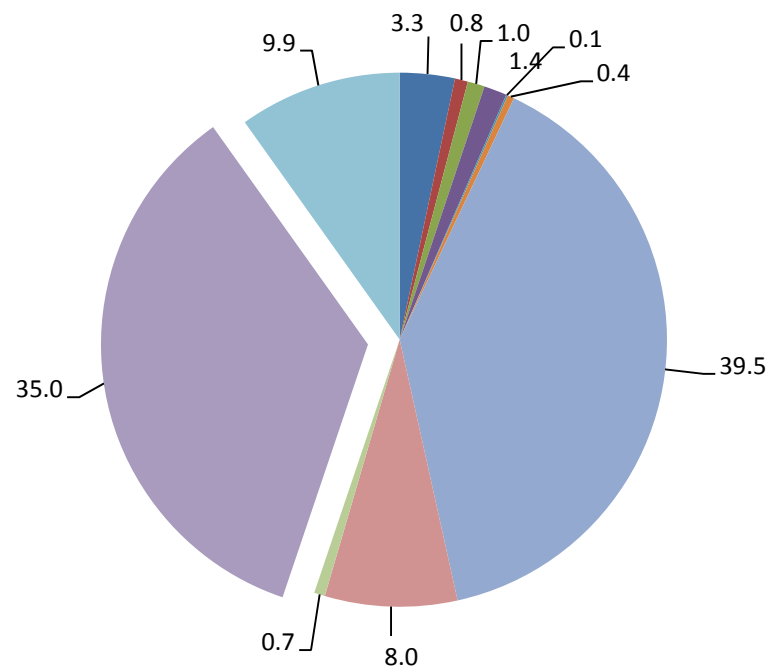
Dairy (9.2%) comprised of:		%
Whole milk		0.0
Semi skimmed milk		0.0
Skimmed milk		1.5
Fortified milk		4.6
Non-dairy milk alternatives		0.3
Hard cheese		1.6
Soft cheese		0.2
Cottage cheese		0.0
Processed cheese		0.2
Yogurt		0.8
Yogurt drinks		0.0
Non-dairy yogurt alternative		0.0



**Figure 1(l) Percentage contribution of food groups to vitamin B12 intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	3.3
2	Biscuits, cakes & pastries	0.8
3	Savoury snacks & confectionary	1.0
4	Beverages	1.4
5	Potato & potato products	0.1
6	Fruit & vegetables	0.4
7	Meat, fish & their dishes	39.5
8	Other foods	8.0
9	Dairy	35.0
10	Dairy recipes	9.9
11	Other dairy	0.7

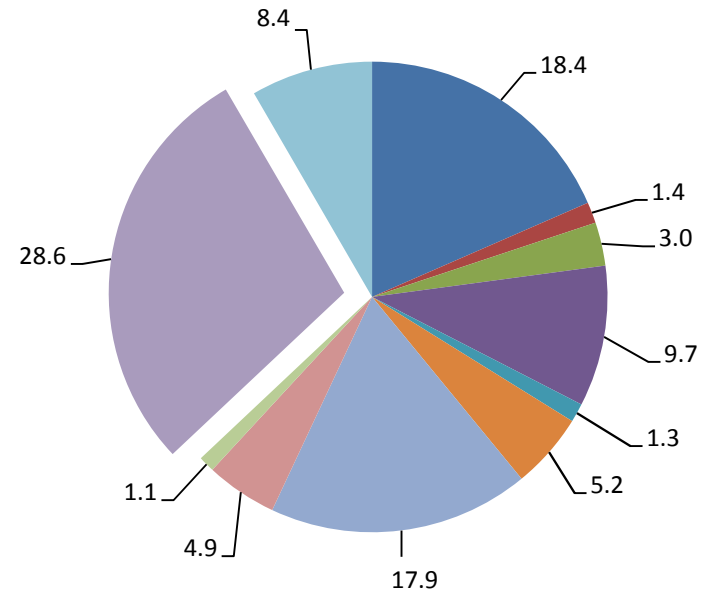
Dairy (35.0%) comprised of:		%
Whole milk		15.4
Semi skimmed milk		10.3
Skimmed milk		1.7
Fortified milk		2.0
Non-dairy milk alternatives		0.2
Hard cheese		2.8
Soft cheese		0.3
Cottage cheese		0.0
Processed cheese		0.4
Yogurt		1.5
Yogurt drinks		0.3
Non-dairy yogurt alternative		0.1



**Figure 1(m) Percentage contribution of food groups to riboflavin intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	18.4
2	Biscuits, cakes & pastries	1.4
3	Savoury snacks & confectionary	3.0
4	Beverages	9.7
5	Potato & potato products	1.3
6	Fruit & vegetables	5.2
7	Meat, fish & their dishes	17.9
8	Other foods	4.9
9	Dairy	28.6
10	Dairy recipes	8.4
11	Other dairy	1.1

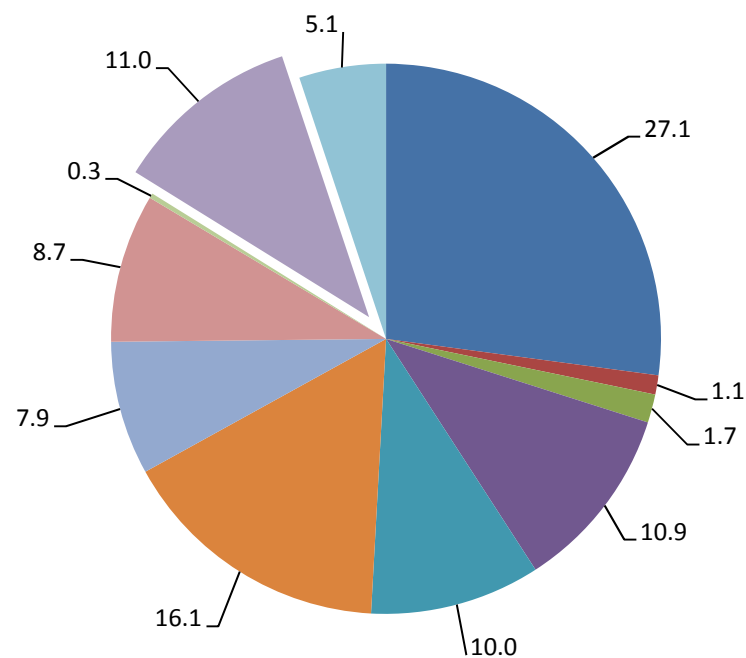
Dairy (28.6%) comprised of:		%
Whole milk		10.7
Semi skimmed milk		7.0
Skimmed milk		1.5
Fortified milk		2.3
Non-dairy milk alternatives		0.3
Hard cheese		2.6
Soft cheese		0.2
Cottage cheese		0.0
Processed cheese		0.4
Yogurt		2.9
Yogurt drinks		0.5
Non-dairy yogurt alternative		0.1



**Figure 1(n) Percentage contribution of food groups to folate intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	27.1
2	Biscuits, cakes & pastries	1.1
3	Savoury snacks & confectionary	1.7
4	Beverages	10.9
5	Potato & potato products	10.0
6	Fruit & vegetables	16.1
7	Meat, fish & their dishes	7.9
8	Other foods	8.7
9	Dairy	11.0
10	Dairy recipes	5.1
11	Other dairy	0.3

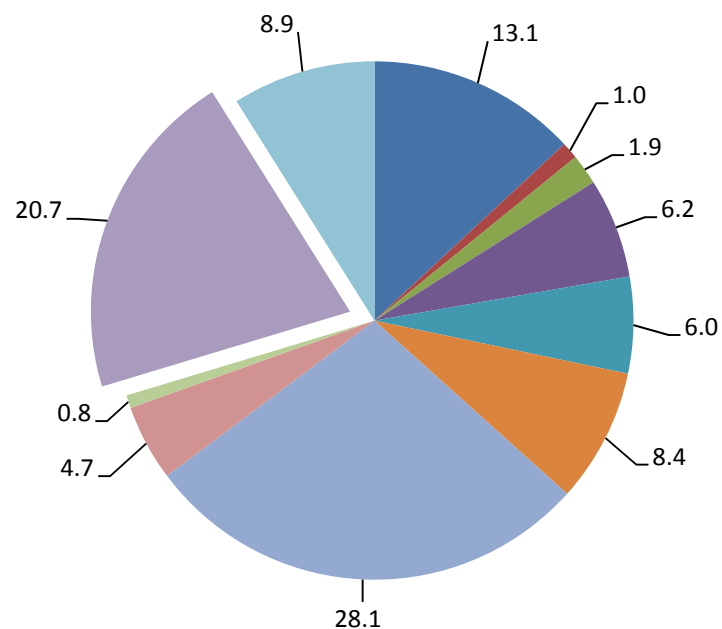
Dairy (11.0%) comprised of:		%
Whole milk		2.7
Semi skimmed milk		1.8
Skimmed milk		0.4
Fortified milk		3.1
Non-dairy milk alternatives		0.1
Hard cheese		0.9
Soft cheese		0.1
Cottage cheese		0.0
Processed cheese		0.1
Yogurt		1.1
Yogurt drinks		0.4
Non-dairy yogurt alternative		0.0



**Figure 1(o) Percentage contribution of food groups to pantothenic acid intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
1	Rice, grains, breads & cereals	13.1
2	Biscuits, cakes & pastries	1.0
3	Savoury snacks & confectionary	1.9
4	Beverages	6.2
5	Potato & potato products	6.0
6	Fruit & vegetables	8.4
7	Meat, fish & their dishes	28.1
8	Other foods	4.7
9	Dairy	20.7
10	Dairy recipes	8.9
11	Other dairy	0.8

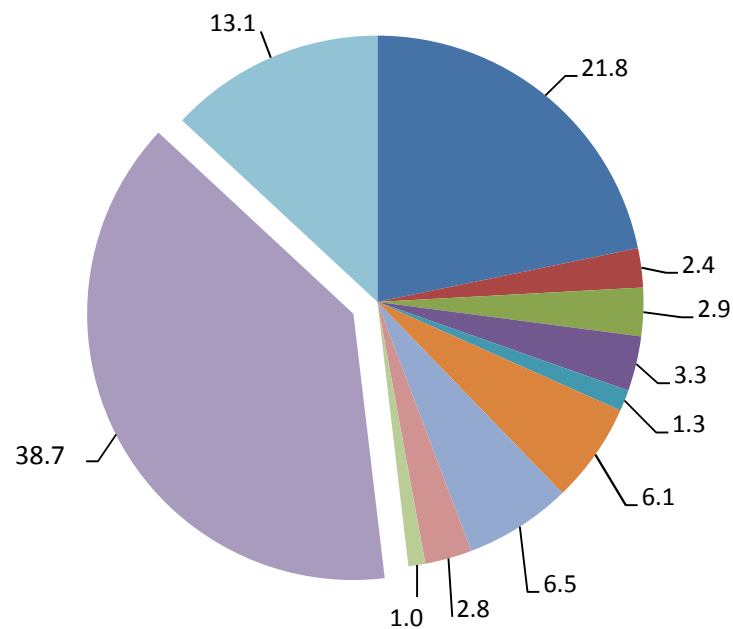
Dairy (20.7%) comprised of:		%
Whole milk		9.0
Semi skimmed milk		6.6
Skimmed milk		1.2
Fortified milk		1.3
Non-dairy milk alternatives		0.0
Hard cheese		0.6
Soft cheese		0.1
Cottage cheese		0.0
Processed cheese		0.2
Yogurt		1.5
Yogurt drinks		0.2
Non-dairy yogurt alternative		0.0



**Figure 1(p) Percentage contribution of food groups to calcium intake in the Irish adult population (18-64 years)**

Food Groups:		
		%
■ 1	Rice, grains, breads & cereals	21.8
■ 2	Biscuits, cakes & pastries	2.4
■ 3	Savoury snacks & confectionary	2.9
■ 4	Beverages	3.3
■ 5	Potato & potato products	1.3
■ 6	Fruit & vegetables	6.1
■ 7	Meat, fish & their dishes	6.5
■ 8	Other foods	2.8
■ 9	Dairy	38.7
■ 10	Dairy recipes	13.1
■ 11	Other dairy	1.1

Dairy (38.7%) comprised of:		%
Whole milk		11.7
Semi skimmed milk		7.8
Skimmed milk		1.9
Fortified milk		3.2
Non-dairy milk alternatives		0.5
Hard cheese		7.7
Soft cheese		0.4
Cottage cheese		0.0
Processed cheese		1.1
Yogurt		3.7
Yogurt drinks		0.6
Non-dairy yogurt alternative		0.1

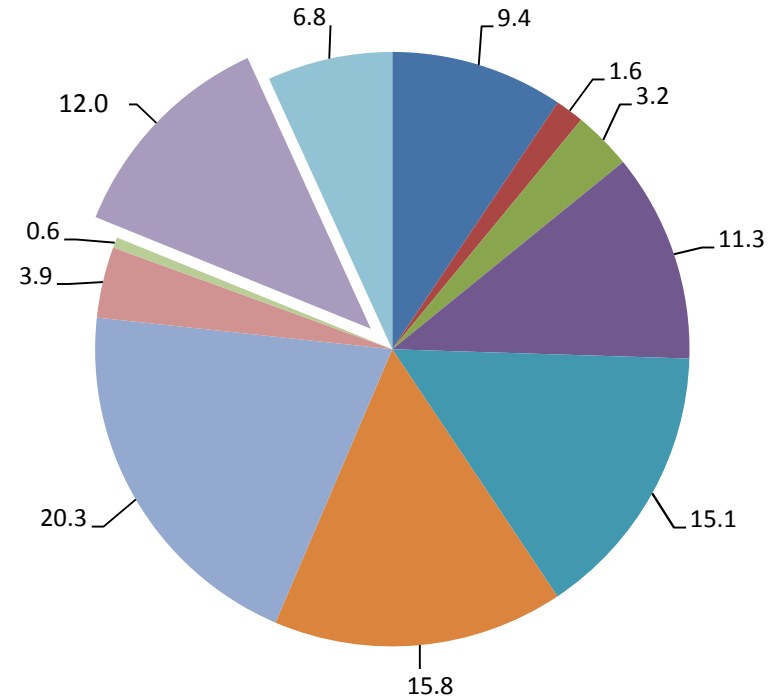




**Figure 1(q) Percentage contribution of food groups to potassium intake in the Irish adult population (18-64 years)**

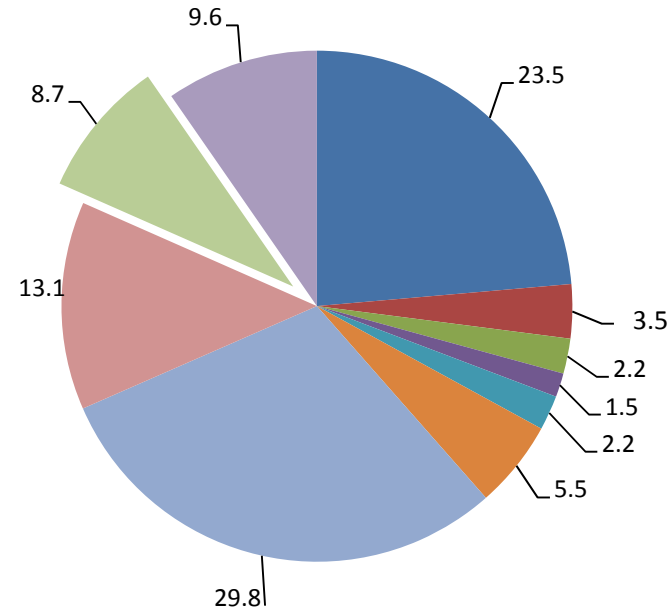
<b>Food Groups:</b>		
		%
1	Rice, grains, breads & cereals	9.4
2	Biscuits, cakes & pastries	1.6
3	Savoury snacks & confectionary	3.2
4	Beverages	11.3
5	Potato & potato products	15.1
6	Fruit & vegetables	15.8
7	Meat, fish & their dishes	20.3
8	Other foods	3.9
9	Dairy	12.0
10	Dairy recipes	6.8
11	Other dairy	0.6

<b>Dairy (12.0%) comprised of:</b>		%
Whole milk		4.9
Semi skimmed milk		3.1
Skimmed milk		0.7
Fortified milk		1.0
Non-dairy milk alternatives		0.1
Hard cheese		0.3
Soft cheese		0.0
Cottage cheese		0.0
Processed cheese		0.1
Yogurt		1.6
Yogurt drinks		0.2
Non-dairy yogurt alternative		0.0



**Figure 1(r) Percentage contribution of food groups to salt intake in the Irish adult population (18-64 years)**

<b>Food Groups:</b>		<b>%</b>
■ 1	Rice, grains, breads & cereals	23.5
■ 2	Biscuits, cakes & pastries	3.5
■ 3	Savoury snacks & confectionary	2.2
■ 4	Beverages	1.5
■ 5	Potato & potato products	2.2
■ 6	Fruit & vegetables	5.5
■ 7	Meat, fish & their dishes	29.8
■ 8	Other foods	13.1
■ 9	Dairy	8.7
■ 10	Dairy recipes	9.6
■ 11	Other dairy	0.4



<b>Dairy (8.7%) comprised of:</b>		<b>%</b>
Whole milk	1.7	
Semi skimmed milk	1.1	
Skimmed milk	0.4	
Fortified milk	0.4	
Non-dairy milk alternatives	0.2	
Hard cheese	2.9	
Soft cheese	0.3	
Cottage cheese	0.0	
Processed cheese	0.8	
Yogurt	0.7	
Yogurt drinks	0.1	
Non-dairy yogurt alternative	0.0	