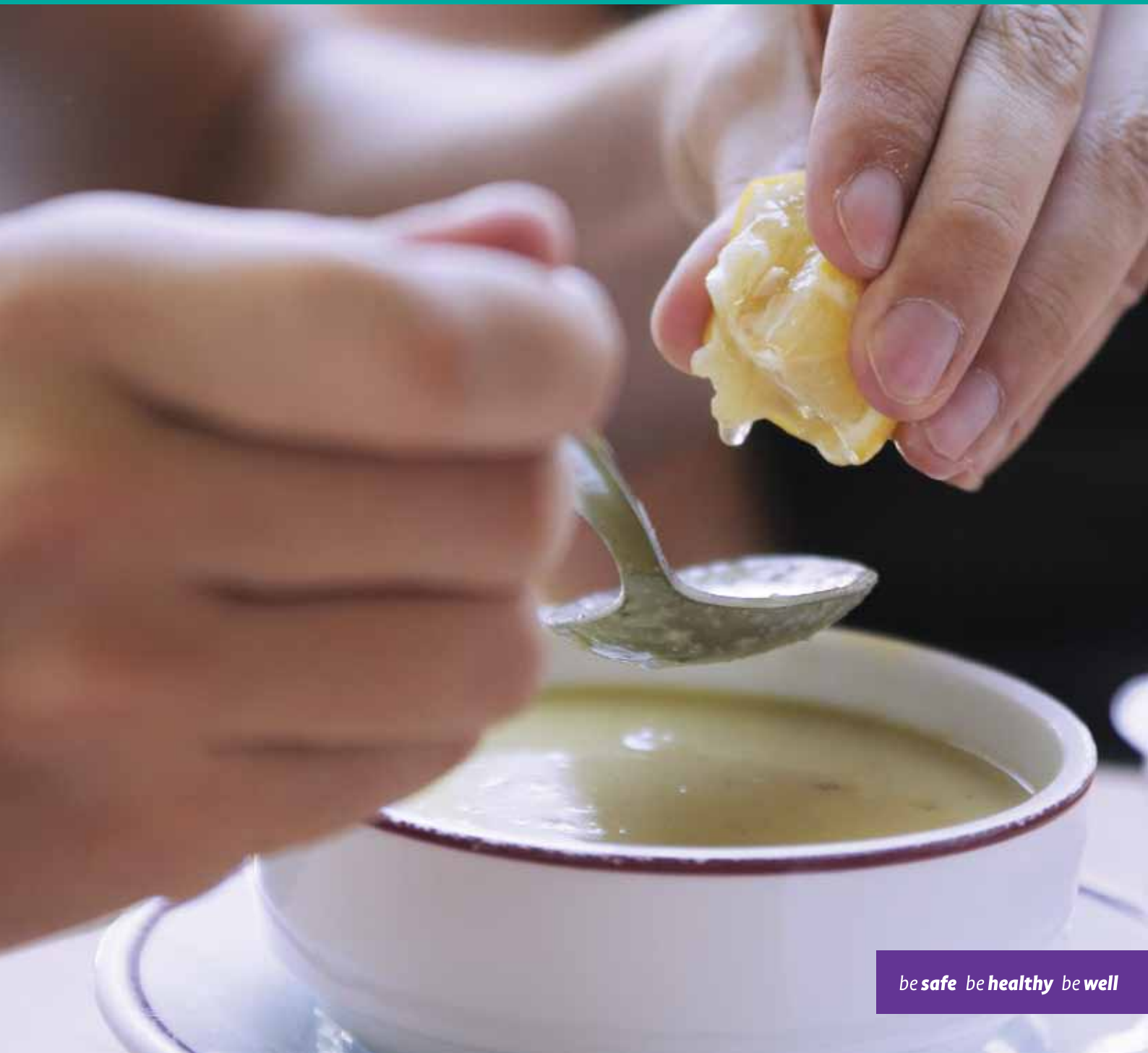


# Survey of salt levels in soup in catering establishments on the island of Ireland





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# Background

Dietary salt intakes are much higher than nutritional requirements in most countries worldwide. In the Republic of Ireland (ROI) and Northern Ireland (NI), mean salt intakes are more than double the recommended daily allowance (RDA) of four grams per day (g/d). Overwhelming scientific data has shown that salt intake in excess of these nutritional requirements plays a critical role in the development of high blood pressure, a dominant risk factor for heart disease and stroke.

During the past decade, governments and statutory agencies throughout the world have set targets for reductions in salt intake. A population target of six grams per day was set by the Food Standards Agency (FSA) in 2003 and the Food Safety Authority Ireland (FSAI) in 2005 in the UK and ROI respectively, as a potentially achievable population goal. In achieving this goal there has been recognition that a number of approaches are required, including efforts by the food industry to reduce the salt content of foods as well as consumer awareness initiatives highlighting the health effects of too much dietary salt. The FSA and FSAI are leading initiatives with the food industry to reduce the salt content of food. A number of consumer education initiatives have taken place on the island of Ireland by **safefood**, the Irish Heart Foundation and the FSA. Recent data from the UK (1) and the ROI (2)

has highlighted that mean population intakes of dietary salt remain well in excess of six grams per day. This confirms the need to continue initiatives with both food manufacturers and producers, and the general public.

Demonstrating the salt content of specific food products is a useful way of encouraging the general public to reduce their dietary salt intake and to promote the need to add less salt to foods in manufacturing and catering. In the current survey soup was the food category chosen to survey. It was chosen because it is a commonly consumed product outside of the home on the island of Ireland and because soup is one of the targets for salt reduction in initiatives with the food industry (3-4).

## Aim

The aim of this survey was to provide a snapshot of the salt content of soup from a range of catering outlets on the island. The survey set out to investigate any differences in the salt content of soups that claim to be 'homemade/freshly prepared' versus other types of soups sold in catering outlets. The results will be used to communicate salt reduction messages to consumers and the food industry.

## Methodology

Soup samples were collected from two hundred and one locations (n=201) and analysed to establish their sodium (Na) content. Sample collection and project management was conducted by Eolas International Research. Exova, an Irish National Accreditation Board accredited laboratory, undertook the Na analysis on behalf of EOLAS International.

## Sampling criteria

A sampling protocol was agreed with **safefood** prior to the commencement of the study. The sampling protocol included the following four criteria:

1. Include a range of outlets. Three categories were identified:
  - Fast food/convenience/garage/supermarket
  - Coffee shop
  - Pub/hotel/restaurants.
2. Two-thirds of the samples to originate from the Republic of Ireland (ROI) and one-third from Northern Ireland (NI);
3. Both urban/rural locations.

Include a 50:50 ratio of homemade versus 'other' types of soup. Homemade was classed as those sold as 'homemade' or identified as made on the premises by the server. All other soups were classed as 'other soups'. This was later modified to 60:40 to reflect the higher percentage of soups sold as 'homemade' than anticipated.

## Sampling locations

To identify specific outlets in Leinster, Munster and Ulster the following approach was taken

- Locator listings including Golden Pages (ROI) / Yellow Pages (NI) listings, restaurant websites, tourist websites and store locators, were used to identify potential premises.
- Outlets to visit were then chosen to meet the specific criteria outlined above and to take into consideration the following practicalities:
  - the possibility that soup would be available in such outlets
  - practical routes of travel from Eolas International to the main urban locations.

*The mean salt intake (in the ROI and NI) are more than double the recommended daily allowance of four grams.*

## Sample collection

All samples were collected from 4 May to 13 June 2010. Sampling was conducted as follows:

- Product was purchased as sold in the outlet in original container and portion size
- Only ready-to-eat (prepared and heated) soups were purchased
- The name and a description of the soup (as described on the menu) were recorded.
- Samples were stored on ice until they could be weighed, homogenised and 20 millilitre (mL) samples were frozen for later analysis.

## Product analysis

All samples were analysed in duplicate for Na content using accredited Na analysis methodology (Atomic Absorption Method). The average of the duplicate results was taken. Results were reported as Na per 100g, salt per 100g, Na per serving (g) and salt per serving (g). Mean and standard deviations (SD) are reported where appropriate. Statistical differences between parameters were tested for using Analysis of Variance.

Salt content was compared to the recommended daily allowance (RDA) for adults of four grams per day and the recommended maximum intake of six grams per day. The RDA is the amount that is needed to meet the nutritional needs of most adults. The recommended maximum amount is the amount currently advised to provide some protection from the negative health effects of too much salt such as high blood pressure.

## Findings

### Key findings

- There was a large range in the salt content per serving (0.5-5.5g salt/serving) and per 100g (0.76-1.76 g salt/100g).
- Serving sizes of soups sampled in this survey varied, ranging from 155-690g.
- The average portion of soup (303g) contained 60 per cent of the RDA salt intake.
- One in ten samples contained more than the RDA for salt in a single serving.
- 95 per cent of ready-to-eat soups from catering outlets contained more than 30 per cent of the four grams RDA for salt.
- 74 per cent of ready to eat soups from catering outlets contained more than 30 per cent of the maximum recommended intake of six grams salt per day.
- There was no difference in salt levels between soup marketed as 'homemade' and 'other'.

### Overview of samples collected

Three out of five products sampled were classified as homemade and the remainder 'other'. Products were sampled from fast food outlets (30 per cent), coffee shops (34 per cent) and hotels/pubs (36 per cent). Three of out five products were sampled from urban locations with the remainder rural. An overview of soup samples collected is provided in Table 1.

*Salt intake in excess of four grams per day play a critical role in the development of high blood pressure.*



**Table 1** An overview of number of soup samples collected for the survey by location, type and outlet

	Total	Location		Soup type		Outlet type		
		Urban	Rural	Homemade	Other	Garage/ Fast food	Coffee shop	Pub/ Restaurant
Munster	66	40	26	36	30	21	25	20
Leinster	68	40	28	40	28	21	22	25
Ulster	67	40	27	45	22	18	26	23
Total	201	120	81	121	80	60	73	68

A range of soups were sampled. Vegetable soup was the most common, representing 39 per cent of all samples surveyed. Chicken, mushroom, potato and leek, and tomato each accounted for between 10 and 11 per cent of the soups sampled. Any remaining types of soup were grouped together, classified as 'other' and accounted for 18 per cent of the soups sampled.

#### Serving size of soups sampled

Soup serving weights ranged from 155g to 690g, with the average soup portion size found to be 303g.

#### Average Na and salt content of surveyed soups

The average Na content of soup samples was 0.32g/100g and 0.96 g/serving, while average salt content was 0.8g salt/100g and 2.39g salt/serving. There was large variation between samples, however. See Table 2 for further details.

*The average portion of soup (303g) contained 60 per cent of the RDA salt intake.*

Table 2 Sodium (Na) and salt content (g) per 100g and g per serving in soups surveyed

	Range		Mean	SD
	Min	Max		
Sodium				
g/100g	0.06	0.70	0.32	0.11
g/portion	0.21	2.21	0.96	0.37
Salt				
g/100g	0.16	1.76	0.80	0.27
g/portion	0.52	5.52	2.39	0.93

Sodium and salt content of soups by preparation method, outlet type, location and variety

There was *no statistically significant difference* in the salt content (either g/100g or g/serving) of soups when categorised under any of the parameters analysed, including products classified as 'homemade' or 'other' (see Table 3).



**Table 3** Salt content of soups (g per 100g and g per serving) described by preparation method, outlet type, location and type

	N	Salt (g/100g)			Salt (g/serving)		
		Mean	SD	Sig	Mean	SD	Sig
<b>Total</b>	201	0.8	0.27	N/A	2.4	0.93	N/A
<b>Preparation</b>				p=0.47			p=0.95
Homemade	80	0.82	0.28		2.4	0.93	
Other	121	0.79	0.27		2.4	0.93	
<b>Outlet type</b>				p=0.33			p=0.54
Garage/fast food	60	0.77	0.26		2.2	0.83	
Coffee shops	73	0.78	0.28		2.4	0.88	
Pub/hotel/restaurant	68	0.83	0.28		2.6	1.02	
<b>Location</b>				p=0.59			p=0.46
Urban	120	0.81	0.27		2.4	0.94	
Rural	81	0.83	0.28		2.3	0.90	
<b>Type of soup</b>				p=0.07			p=0.97
Vegetable	78	0.81	0.27		2.4	0.94	
Chicken	23	0.85	0.27		2.5	0.86	
Mushroom	23	0.79	0.24		2.2	0.82	
Potato/leek	21	0.90	0.26		2.7	1.04	
Tomato	19	0.77	0.32		2.3	1.10	
Other	37	0.70	0.25		2.2	0.84	

\*NS = Difference is not statistically significant at a 95 per cent level

#### Classification of salt levels into low, medium and high in soups sampled

Only one percent of samples were classified as 'low in salt' according to EU criteria (Table 4).



**Table 4** Percentages of soups sampled classified into low, medium and high salt content

<b>Classification</b>	<b>Salt Content</b>	<b>% soup sampled</b>
Low	0.3g salt/100g or less	1
Medium	>0.3g but <1.5g salt/100g	97
High	1.5g salt/100g or more	2

Further breakdown and analysis of these results highlighted that there was no particular pattern in the profile of soup found in the low or high categories, i.e. soup marketed as homemade/ commercially made and soups from all types of outlets were found in both low and high salt categories.

**Contribution of salt levels in soup samples towards RDA (four grams salt per day)**

The average serving of soup surveyed contained 60 per cent of the four grams per day RDA for salt with a range from 13 per cent to 138 per cent. Nine percent of all soup samples surveyed contained more than 100 per cent of the RDA for salt per serving. A further 86 per cent contained 30-99 per cent, while only five per cent of all soup samples surveyed contained less than 30 per cent of the RDA per serving. See Table 5 for further details.

**Table 5** Percentage of soups sampled contributing to the Recommended Daily Allowance (RDA) of four grams per day per serving

	<b>All soups (%)</b>	<b>Other soups (%)</b>	<b>Homemade soups (%)</b>
<30% of RDA	9	9	9
30-99% of RDA	86	85	87
>100% of RDA	5	6	4

**Contribution of salt levels in soup samples towards daily population target of six grams**

The average serving size of soup contained 40 per cent of the recommended maximum intake of six grams of salt/per day, with a range from nine per cent to 92 per cent. No samples surveyed

contained more than 100 per cent of six grams per day in a single serving. Almost three quarters of samples analysed contained more than 30 per cent of six grams salt in a single serving. See Table 6 for further details.

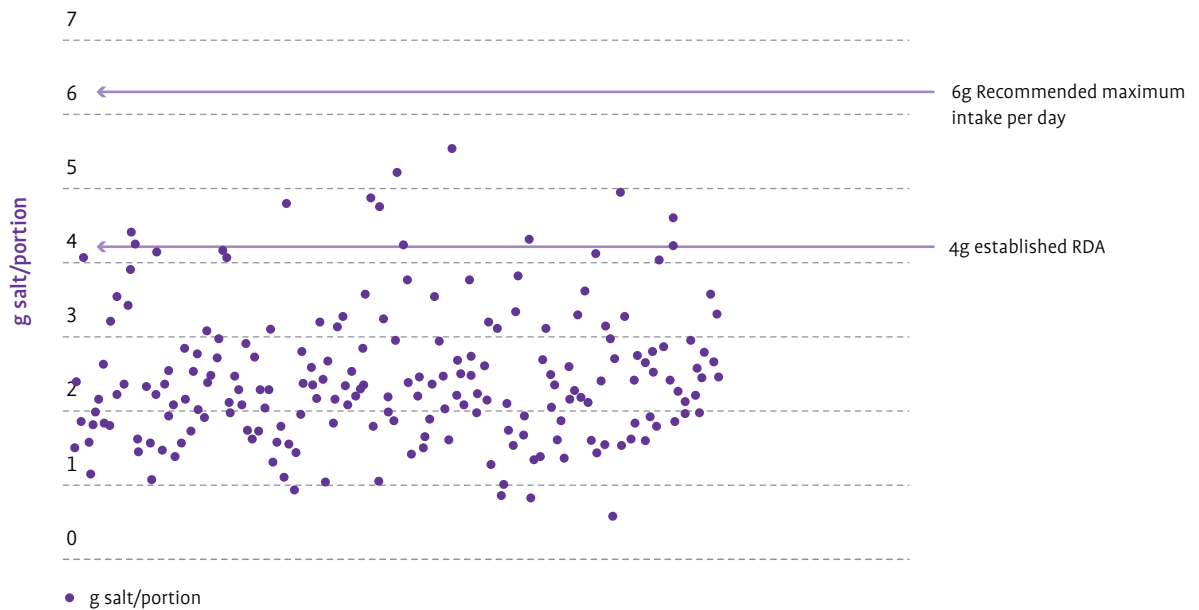
**Table 6** Percentage of soups sampled contributing to recommended maximum intake of six grams per day per serving

	All soups (%)	Other soups (%)	Homemade soups (%)
<30%	26	25	27
30-99%	74	75	73
>100%	0	0	0

Figure 1 shows the distribution of the salt content of the soups per serving surveyed compared to RDA of four grams salt per day and recommended maximum intake of six grams salt per day.



**Figure 1** Overview of grams of salt per serving in relation to the Recommended Daily Allowance (RDA) and the maximum intake recommendations



## Conclusions and Recommendations

The current survey provides a snapshot of the salt content of ready to eat soups available on the island of Ireland. The results demonstrate high levels of salt in many soups. A wide range of salt content was found even when expressed as 100g to correct for serving size. The serving sizes also varied ranging from 155-690g with the average serving size of 303g. This compares to a 200g serving size recommended for healthy eating.

Almost two-thirds of all soup sampled contained more than one third of the recommended maximum amount of six grams salt per day. This may not be of concern if no other foods containing salt were consumed at the same time as the soup. However, it must also be acknowledged that most people will eat soup as a snack or as part of a meal, often with a sandwich or bread, which will add further to the salt content of the meal. Two slices of bread contains an average of 1.0g of salt, therefore consuming an out of home soup with two slices of bread will provide at least 3.4g salt, which is over 57 per cent of the maximum

recommended amount. The addition of two slices of ham to the bread could add a further 1.5g salt and result in a meal contributing 81 per cent of the recommended maximum amount of salt. Soup may often be perceived as a healthy product because a bowl of home-made vegetable soup contributes to one portion of a persons fruit and vegetable intake. However, salt content may not always be considered.

Interestingly, in this survey homemade and other soups didn't differ in their salt content. Homemade soups are often made up on the premises and caterers have control over the ingredients they add, including salt. Other soups are likely to have been made up from dried soup powder where salt is added at the manufacturing stage. However, it should be acknowledged that in this survey no verification of the type of soup was included and we relied on what the servers indicated the soup to be.

The food industry has made significant reductions in the salt content of soups and this survey confirms that they have met their agreed commitments.

This is encouraging. However, this survey highlights that many soups are still a major contributor to recommended maximum amounts when consumed in the catering sector.

**safefood**'s consumer research, *Safetrak 11*,<sup>(5)</sup> as found that consumers are aware of the negative health effects of too much dietary salt but appear to be focusing on salt they add themselves to food as the main way of reducing salt in their diets. Only 30 per cent of consumers believed eating less of foods high in salt is the most effective way to reduce salt intake. This highlights that there is a continual requirement to raise awareness and clearly inform consumers that a commonly eaten food such as soup can have a high salt content.

### Food industry

- As most salt is added at the manufacturing stage, continued engagement with the food industry is required to further reduce the level of salt in processed foods including soup
- Further work should be undertaken with caterers to raise awareness of the salt content of processed foods, such as soup, and also to encourage them to modify their recipes/nutritional profile of the products they offer for sale, be it made on-site by themselves or bought in from a third party
- Catering establishments should give their customers the choice when it comes to added salt in soups by reducing the amount of salt they add during the cooking stage and let the customer add more at the table if they want to
- Many caterers where possible should reduce portion sizes.

### Consumers

- Efforts should continue to promote salt reduction in the population by awareness raising and facilitating behaviour change. Consumers should be made aware that:
  - A lot of food in the catering sector has already been salted, e.g. just one serving of soup may give them as much as 60 per cent of their four grams per day allowance of salt (50 per cent of the six grams per day upper limit)
  - Having one or two slices of bread with their soup will further contribute to their daily salt intake and in some cases their daily requirement for salt may be achieved in one sitting
  - Asking for lower salt options will make caterers aware that there is a demand for lower salt options and may drive a change towards lower salt option on the menu
  - Soups marketed as 'homemade' are not necessarily low in salt
  - They should taste their food prior to adding salt
  - Where possible they should reduce the portion size.

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