

# Pizza – What's in that box?

Nutrition takeout series



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## **Nutrition takeout series**

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# Acknowledgements

This survey is part of a number of nutritional surveys **safefood** has commissioned and is currently funding. These surveys include:

- Chicken and potato - Nutritional content of chicken & potato products in deli counters and takeaway outlets - completed in 2009
- Survey of salt levels in soup in catering establishments on the island of Ireland - completed in 2011
- Nutrition takeout series - Burgers - to be completed in 2012
- Nutrition takeout series - Chinese take away - to be completed in 2012

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# Table of Contents

<b>1</b>	Background.....	1
<b>2</b>	Purpose and aims.....	2
<b>3</b>	Methodology .....	3
	Sampling and laboratory analysis of takeaway pizzas.....	3
	Sampling and analysis of shop bought pizzas.....	4
	Statistical analysis .....	4
<b>4</b>	Key findings.....	6
	Differences in pizza weight (Portion size).....	6
	The ‘average’ pizza .....	6
	Differences between pizzas.....	7
	Healthier pizza options.....	11
	Pizza outlets .....	11
	Differences in takeaway versus shop bought pizza .....	11
<b>5</b>	Conclusions .....	13
<b>6</b>	Reccomendations.....	15
	Key messages for consumers.....	15
	Key messages for catering industry .....	15
<b>7</b>	Appendices .....	16
	Appendix 1.....	17
<b>8</b>	References.....	25

# 1 Background

Excess body weight is the most important nutritional issue of our times, with two out of every three adults on the island of Ireland (IOI) currently classified as overweight or obese (1-3). As well as this, our salt and fat intakes are high and our consumption of fruit, vegetables and fibre is low. This dietary pattern increases the risk of common chronic diseases such as cardiovascular disease, diabetes and certain cancers.

Lifestyles of people on the IOI have transformed a lot over recent decades and this includes changes in our eating habits. These changes have had an effect on the rise in overweight and obese individuals on the island. There has been a rapid increase in the availability of 'convenience' and 'fast', cheap food, with eating food prepared outside the home becoming more and more common for many people on the IOI (3-7). Evidence suggests that in the current economic climate people are moving away from eating in restaurants to eating take aways at home. The National Adult and Nutrition Survey (NANS) highlighted that 24 per cent of eating/drinking occasions involved food cooked 'outside the home' (i.e. in a restaurant/pub/coffee shop/take away)(2). As a result, the nutrients we consume are influenced by how much we eat out.

The impact that food prepared outside of the home has on the nutrient intakes of adults has been studied previously on the IOI (8, 9). It was found that food prepared outside the home contains considerably more dietary fat than food prepared within the home and is also lower in fibre and micronutrients (9). **safe food** has commissioned previous nutritional surveys in the take away sector. This research revealed similar findings with foods i.e. potato, chicken and soup prepared outside the home generally being higher in fat and salt than the same food prepared at home (10, 11). These studies also reported that there are major differences in portion sizes across fast food outlets on the IOI (11).

Cooked pizzas are fast becoming a common take away. With such easy access to take away foods and with limited nutritional information made available to consumers in the take away sector, many people may not be aware of the nutritional content of what they are consuming or of the healthier options that are available to them.

## 2 Purpose and aims

The main aim of this survey is to provide a snapshot of the nutritional composition of a sample of cooked pizzas purchased across the island from a selection of fast food outlets and restaurants.

A secondary aim is to compare the nutritional composition of cooked take away pizzas to selected shop bought frozen pizzas.

# 3 Methodology

## Sampling and laboratory analysis of takeaway pizzas

A method for collecting samples was developed and included the following four criteria:

- Three types of 12 inch pizzas (both thin and deep base) - Cheese and Tomato, Hawaiian and Pepperoni.
- A range of outlets including international take aways and restaurants with a take away service.
- A two-third/one-third split between Republic of Ireland (ROI) and Northern Ireland (NI) respectively.
- Urban/rural locations of sampling.

In total, two identical sets of 240 pizza samples were purchased (ROI, n=160; NI, n=80) from a total of 60 separate catering outlets across the IOI. (Table 1) These were then analysed to establish their energy, total fat, saturated fat, protein and salt content.

During collection, each pizza was wrapped individually and a questionnaire recording information on the location, name and description of the pizza (as described on the menu) was completed. Once in the laboratory, all pizzas were weighed to measure total portion size and were frozen until they were ready to be analysed. Duplicate sample one was used for energy analysis and duplicate sample two was used for total fat, saturated fat, protein and salt analysis. Protein, fat and salt concentrations were analysed using standardised techniques.

**Table 1: Summary of the pizza’s sampled\***

<b>Pizza type</b>	<b>Takeaway purchased total</b>	<b>Takeaway purchased (thin based)</b>	<b>Takeaway purchased (deep based)</b>
<b>Cheese and Tomato</b>	80	39	41
<b>Hawaiian</b>	79	39	40
<b>Pepperoni</b>	81	40	41
<b>Total</b>	240	118	122

\*The task of analysing the samples was divided between two accredited laboratories - Food Analytical Laboratories (FAL) and Agri-Food and Biosciences Institute (AFBI), NI.

### **Sampling and analysis of shop bought pizzas**

As part of the research, the nutritional information on a range of frozen and chilled shop bought pizzas (n=56) was also examined. The nutritional content was taken from package labelling. A very limited number of deep base pizzas were available for purchase in shops, so comparisons were made between thin base shop bought and take away pizzas only.

### **Statistical analysis**

Data was analysed using the statistical package SPSS® for Windows (Version 15.0). (P values  $\leq 0.05$  were considered to be statistically significant). Please note that the analysis in this report is for take away pizzas except where indicated.

Guideline Daily Amount (GDA) values help people to understand approximately how many calories, and how much protein, carbohydrate, fat, saturated fat, fibre, sodium and sugars on average men and women can consume daily as part of a healthy diet. These values were used in this report to provide an estimate of how much of each pizza type can contribute to a person’s GDA. They also allow us to easily compare the different pizza varieties.

**Table 2: Current GDAs for men and women (13)**

<b>Energy or nutrient</b>	<b>Male GDA</b>	<b>Female GDA</b>
<b>Energy</b>	2500kcal	2000kcal
<b>Total fat</b>	95g	70g
<b>Saturated fat</b>	30g	20g
<b>Salt</b>	6g	6g

## 4 Key findings

- The 'average' pizza was found to contain more than the GDA for most of the nutrients examined.
- Deep base Pepperoni pizzas were shown to be the least healthy, whereas thin base Cheese and Tomato pizzas were found to be the healthiest option when choosing a pizza.
- Overall, there was limited availability of 'healthy eating options' across pizza outlets, with only 10 per cent of those included in this research providing such options.
- Thin and deep base pizzas differ significantly from each other. Deep base pizzas were found to be generally less healthy, with higher levels of energy and salt levels per pizza.
- In general, pizzas from take away outlets were higher in energy and nutrient values compared to the equivalent shop bought frozen pizzas.

### Differences in pizza weight (Portion size)

The size of pizza available from take away outlets ranged from seven inches to 26 inches. For the purpose of this report, a 'portion' was defined as a 12 inch pizza (weight as grams). Across the 240 pizzas surveyed, 12 inch portion weights ranged from 230g to 1074g with the average pizza weighing 512g. The heaviest pizza variety was a deep base Hawaiian (1074g) and the lightest pizza was a thin base Cheese and Tomato (230g).

### The 'average' pizza

To help identify the 'average' pizza and for the purpose of summarising the results, all pizzas were initially assessed together. These results showed that the 'average' pizza contained levels higher than the GDA for saturated fat (130 per cent), protein (143 per cent) and salt (110 per cent). Energy and total fat levels, while below the equivalent GDA, were still at the top end of the scale at 78 per cent and 72 per cent respectively. This shows that at one sitting, if a person ate a full 12 inch 'average' pizza, it

could, in many instances, provide the adult GDA for energy, total and saturated fat and salt.

## **Differences between pizzas**

### **Energy**

Cheese and Tomato pizzas had significantly less energy per pizza compared to either the Hawaiian ( $p < 0.005$ ) or Pepperoni ( $p < 0.005$ ) pizzas. There was no significant difference between energy values per pizza between the Hawaiian and Pepperoni varieties.

### **Total and saturated fat**

At 58.6 grams per pizza, Pepperoni pizzas were found to have significantly more total fat when compared to both the Cheese and Tomato ( $p < 0.000$ ) and Hawaiian ( $p < 0.000$ ) pizzas. Pepperoni pizzas also had significantly higher levels ( $p < 0.005$ ) of saturated fat per pizza in comparison to the other two pizza varieties.

### **Protein**

It was reported that Cheese and Tomato pizzas had significantly lower amounts of protein per pizza when compared to the other pizza varieties.

### **Salt**

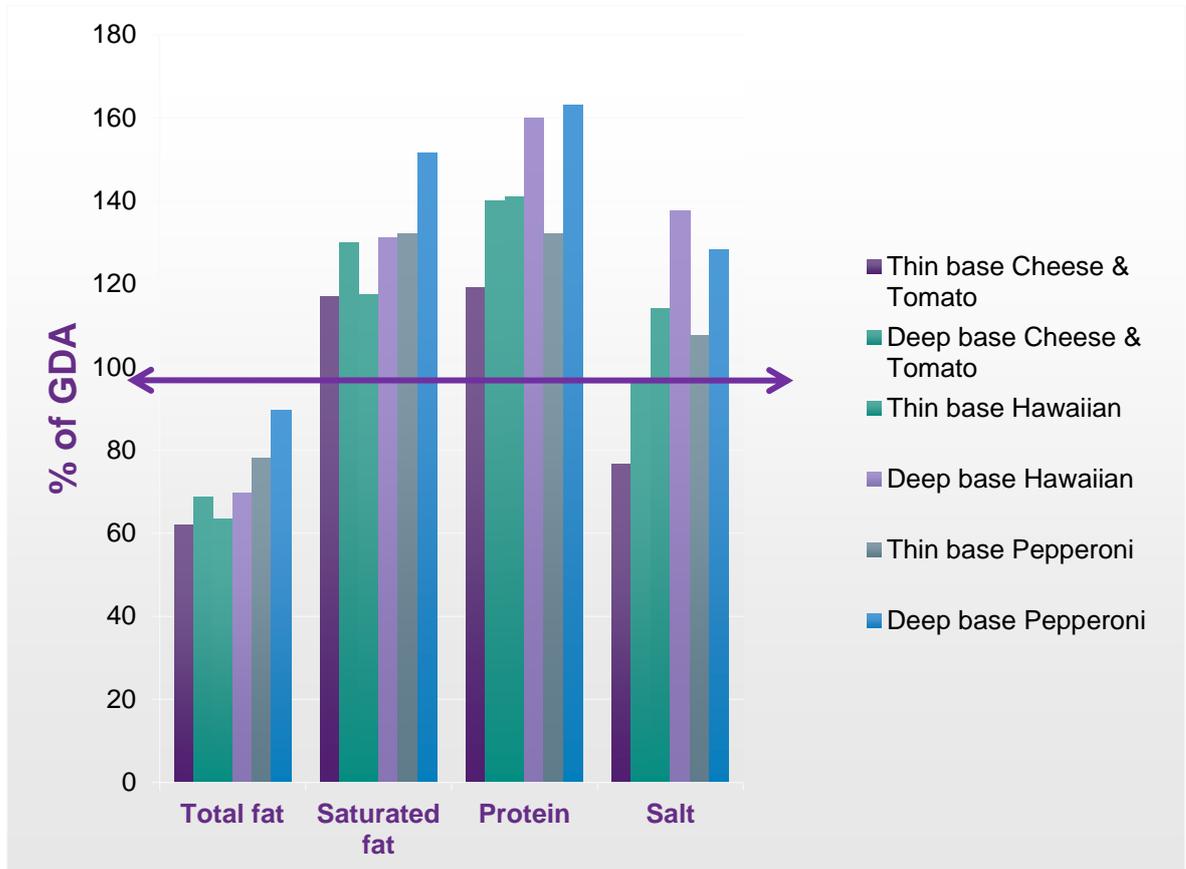
Cheese and Tomato pizzas were also found to have significantly less salt per pizza compared to the Hawaiian ( $p = 0.000$ ) and Pepperoni ( $p = 0.000$ ) varieties. (Table 3) Refer to Appendix 1A & B for a full table of results.

**Table 3: Ranges for nutrition parameters analysed per 12 inch pizza varieties sampled for fast food outlets on the island of Ireland**

	Cheese and Tomato		Hawaiian		Pepperoni	
	(thin and deep)		(thin and deep)		(thin and deep)	
	Min	Max	Min	Max	Min	Max
<b>Portion weight (g)</b>	230	769	351	1074	231	937
<b>Energy (kcal)</b>	638	2821	913	3591	745	3712
<b>Total fat (g)</b>	13.0	105.1	25.8	110.7	22.9	121.9
<b>Saturated fat (g)</b>	5.9	63.9	11.6	57.7	9.2	71.2
<b>Salt (g)</b>	1.37	14.26	2.58	17.05	2.85	15.6

Table 3 shows the range of values found in the parameters measured for each variety of pizza sampled. The ranges were large. An eleven-fold difference was seen in saturated fat across Cheese and Tomato pizzas, salt levels ranged from 2.58 to 17.05 per Hawaiian pizza and there was a five-fold difference found in energy values across Pepperoni pizzas.

**Figure 1: Nutritional content of three pizza varieties**



In terms of GDAs, per pizza, average values of all pizza varieties provided more than the recommended GDA for saturated fat and protein. In addition, both the Hawaiian and Pepperoni thin and deep base pizzas provided more than the GDA for salt. Although all other average values are below the GDAs, they should be considered to be at the top end of the scale as they constitute more than half the daily amount. (Figure 1, Table 4).

Figure 1 and Table 4 show that thin and deep base pizzas differ significantly from each other in terms of energy and salt levels per pizza, with the deep base variety having higher levels.

Across pizza bases, the thin base Pepperoni pizzas were found to have higher levels of total and saturated fat when compared to other thin base pizza varieties. The thin base Hawaiian pizza had higher levels of energy (kcal) and salt than other thin base pizzas types. The thin base Cheese and Tomato pizza had the lowest levels of all parameters assessed. Similar results were seen for deep base pizzas. See Appendix 1C for further detail.

**Table 4: Mean value (SD) and per cent GDA for energy and nutrient content of thin and deep base 12 inch pizzas**

	Cheese and Tomato				Hawaiian				Pepperoni			
	Thin base	GDA (%)	Deep base	GDA (%)	Thin base	GDA (%)	Deep base	GDA (%)	Thin base	GDA (%)	Deep base	GDA (%)
<b>Energy (kcal)</b>	1272 (278.8)	63.6	1590 (392.4)	79.5	1483 (347.0)	74.1	1800 (503.0)	90	1473 (373.0)	73.7	1792 (547.0)	89.6
<b>Total Fat (g)</b>	43.3 (15.1)	61.9	48.1 (18.6)	68.7	44.4 (17.4)	63.4	48.8 (17.7)	69.7	54.7 (20.8)	78.1	62.7 (22.4)	89.6
<b>Saturated Fat (g)</b>	23.4 (8.5)	117	26.0 (11.1)	130	23.5 (9.0)	117.5	26.2 (9.9)	131	26.4 (10.8)	132	30.3 (11.8)	151.5
<b>Salt (g)</b>	4.6 (2.3)	76.7	5.8 (2.4)	96.7	6.84 (3.0)	114	8.25 (3.2)	137.5	6.45 (2.33)	107.5	7.7 (2.78)	128.3

(Values circled in green demonstrate the lowest parameter values and those circled in red highlight the highest)

## Healthier pizza options

Based on the above information, the thin base Cheese and Tomato pizza was found to be the healthier option and the deep base Pepperoni pizza the least healthy option.

Overall, there was limited availability of 'healthier pizza options' in take aways and restaurants. These healthier options included the customer being able to choose the type of cheese (low fat mozzarella or regular mozzarella), pizza base (thin or deep base) or the availability of vegetarian options. Only six out of the 60 outlets sampled (10 per cent) provided information on these options on menu boards. Most 'healthier options' were provided by the larger international, national or regional outlets with little or no options provided by smaller independent and restaurant outlets. There was also limited availability of 'children's options' (e.g. smaller seven inch pizza, mini margherita pizza, and novelty shaped pizzas) with only four out of the 60 outlets providing such choice (seven per cent).

## Pizza outlets

When the location results were examined, the main finding was that independent pizza take away outlets sold pizzas with higher levels of energy, total and saturated fat in comparison to pizzas from restaurants with a take away service and some larger national outlets. (For further information see Appendix 1D)

## Differences in takeaway versus shop bought pizza

This research found that shop bought frozen pizzas had lower levels of energy (kcal), total and saturated fat and salt than equivalent take away pizzas. The Hawaiian shop bought pizzas had significantly lower levels of all parameters assessed in comparison to the take away equivalent. Both the take away Cheese and Tomato and Pepperoni varieties were found to have significantly more energy (kcal) and saturated fat per pizza compared to their equivalent shop bought pizzas. There was no significant difference in total fat and salt in take away versus shop bought Cheese and Tomato and Pepperoni pizzas. (Table 5 and see Appendix 1E for more information)

When comparing the three varieties of shop bought pizzas, the Hawaiian pizzas had lower levels of all parameters assessed and the Pepperoni pizza had the highest levels of all parameters assessed. However, none of the shop bought pizzas provided more than 100 per cent of GDA for any parameter assessed. (Table 6)

**Table 5: Differences in nutritional values of pizza variety between takeaway and shop bought pizzas, Mean (SD) and *p* value**

	Cheese and Tomato thin base			Hawaiian thin base			Pepperoni thin base		
	Take away	Shop	P value	Take away	Shop	P value	Take away	Shop	Pvalue
<b>Energy</b>	1272	1047	0.007*	1483	754	0.000*	1473	1097	0.001*
<b>Kcal/ pizza</b>	(278.9)	(634.3)		(347.0)	(318.9)		(373.0)	(352.6)	
<b>Total fat</b>	43.3	40.4	0.480	44.4	23.1	0.000*	54.7	43.8	0.059
<b>g/pizza</b>	(15.1)	(17.7)		(17.4)	(12.9)		(20.9)	(17.8)	
<b>Saturated fat</b>	23.4	17.9	0.004*	23.5	9.7	0.000*	26.4	18.2	0.006*
<b>g/pizza</b>	(8.4)	(6.0)		(9.0)	(6.2)		(10.8)	(8.0)	
<b>Salt</b>	4.6	3.80	0.662	6.84	3.51	0.000*	6.45	5.3	0.054
<b>g/pizza</b>	(2.3)	(1.9)		(3.0)	(1.9)		(2.3)	(1.9)	

\*Denotes Statistical Significance

## 5 Conclusions

With a quarter of food consumed by adults on the island of Ireland today prepared outside of the home, it is important that informed choices are made. The nutritional and health benefits of eating a balanced diet can be challenged by the high content of calories, total and saturated fat, salt and portion size evident in many readily available take away foods (14).

This survey found that take away pizzas are generally high in fat and salt. The findings are consistent with previous relevant research (9-11). In general, pizzas can be a nutritious food if the right types of base and toppings are chosen. Thin crust pizzas topped with plenty of vegetables were found to be the healthiest option.

In an attempt to identify the 'average' pizza, all three varieties of pizza, both types of bases and all locations were initially compared together. The results showed that if in one sitting an individual consumed a 12 inch pizza by themselves they would, in many instances, be getting more than their GDA for energy, saturated fat, salt and protein. This is of course, in addition to any other foods they consume that day.

The nutritional value of specific pizza types were summarised and in general, the deep base Pepperoni pizza was found to be the pizza with the highest percentage of energy, fat and salt above the GDA, while the thin base Cheese and Tomato pizzas were found to be the healthier option. This is not surprising as processed meat based ingredients are higher in calories, saturated fat and salt compared to fruits and vegetables. Meats used in pizza are, in the main, processed meats with a higher fat and salt content than leaner cuts of meat such as chicken.

There were differences found between deep base and thin base pizzas, with the deep base variety contributing significantly more energy per pizza compared with the thin base.

Shop bought thin base pizzas were assessed for their energy and nutrient content using information available on packaging and it was found that across thin base pizza types, no one pizza variety provided values in excess of the GDA. In comparison, it was found that pizzas from take away outlets had higher levels of energy, saturated fat, protein and salt. Therefore, shop bought pizzas could be considered a healthier option compared to take away pizzas, but levels of salt and fat are still high and should only be eaten in moderation.

More often than not, when ordering take away pizzas, people also order a side of garlic bread with cheese, chicken dippers or a portion of wedges with a variety of dips. For a snapshot of the nutritional content of various high fat side dishes and their accompanying dips see appendix 1F.

# 6 Recommendations

## Key messages for consumers

- Take away pizzas are high in fat and salt compared to many products prepared at home. Consider it as an 'occasional food' (e.g. once a week or less often) but be discerning in your purchases.
- Many pizzas are covered in cheese, a topping which adds considerably to the saturated fat content of the pizza. When ordering a pizza, ask for a smaller portion of cheese or ask for lower fat cheese options.
- For a healthier pizza option, opt for more vegetables such as sweet corn, peppers, mushrooms, onions, olives etc as this all contributes to the 'five a day' recommendation.
- Meat based toppings such as pepperoni, spicy beef or bacon are high in calories and salt, especially the 'meat lovers' or 'double pepperoni' options. Try adding chicken, turkey or tuna as protein/meat varieties, as these are all lower in fat, calories and salt.
- Pizza bases differ and many take aways offer both deep and thin crust varieties. To make a healthier choice, opt for a thinner crust, small or medium pizza rather than a large deep base.
- Consider sharing a pizza and serve with a side salad instead of the more usual sides of garlic bread with cheese or chips/wedges.
- The majority of shop bought frozen pizzas will have details about the nutritional content on the packaging. There should also be a comparison table with the GDA for those nutrients. Compare available options and have it as an occasional food e.g. once a week or less often (allowing for other foods consumed throughout the day).

## Key messages for catering industry

- **safefood** encourages pizza take away outlets and restaurants with a take away service to provide and promote healthy eating options and increase awareness of calories, total fat etc across different pizza varieties.
- **safefood** advocates that catering outlets offering pizzas should give customers a wider range of low fat options such as low-fat mozzarella and provide children's options such as mini pizzas or smaller novelty pizzas. They should also provide and promote healthier side portions.

# 7 Appendices

## Appendix 1

### A: Descriptive analysis of parameters of pizza varieties analysed by SPSS

Parameter	Pizza	N	Mean	Std. Deviation	Range	Minimum	Maximum
<b>Energy (kcal/pizza)</b>	Cheese & Tomato	80	1427	372.8	2183	638	2821
	Hawaiian	79	1639	457.3	2678	913	3591
	Pepperoni	81	1630	491	2967	745	3712
<b>Total fat (g/pizza)</b>	Cheese & Tomato	80	45.6	16.9	92.1	13.0	105.1
	Hawaiian	79	46.6	17.6	84.9	25.8	110.7
	Pepperoni	81	58.7	21.9	99.0	22.9	121.9
<b>Saturated fat (g/pizza)</b>	Cheese & Tomato	80	24.7	9.9	58.0	5.9	63.9
	Hawaiian	79	24.8	9.5	46.1	11.6	57.7
	Pepperoni	81	28.4	11.4	62.2	9.2	71.2
<b>Protein (g/pizza)</b>	Cheese & Tomato	80	65.9	20.5	112.3	27.9	140.2
	Hawaiian	79	75.2	22.4	101.2	42.4	143.6
	Pepperoni	81	73.7	23.0	98.7	334.2	132.9
<b>Na (g/pizza)</b>	Cheese & Tomato	80	2.0	0.9	5.1	0.5	5.8
	Hawaiian	79	3.0	1.2	5.7	1.0	6.9
	Pepperoni	81	2.9	1.0	5.1	1.1	6.2
<b>Salt</b>	Cheese & Tomato	80	5.2	2.4	12.9	1.3	14.2
	Hawaiian	79	7.5	3.0	14.4	2.5	17.0

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<b>(g/pizza)</b>	Pepperoni	81	7.0	2.7	12.8	2.9	15.7
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**B: Statistical difference between pizza varieties (per pizza)**

Parameter	Product Mean (SD)			Comparison	P -Value
	Cheese & Tomato (C&T)	Hawaiian (H)	Pepperoni (P)		
<b>Energy (Kcal/pizza)</b>	1427 (372.0)	1639 (457.0)	1630 (491.0)	C&T vs. H	0.003*
				C&T vs. P	0.004*
				P vs. H	0.890
<b>Total fat (g/pizza)</b>	45.6 (16.9)	45.8 (15.8)	58.6 (21.8)	C&T vs. H	0.956
				C&T vs. P	0.000*
				P vs. H	0.000*
<b>Saturated fat (g/pizza)</b>	24.7 (9.9)	24.4 (8.6)	30.9 (16.9)	C&T vs. H	0.877
				C&T vs. P	0.002*
				P vs. H	0.001*
<b>Protein (g/pizza)</b>	65.9 (20.5)	75.2 (20.8)	73.8 (22.9)	C&T vs. H	0.007*
				C&T vs. P	0.024*
				P vs. H	0.643
<b>Na (g/pizza)</b>	2.0 (0.9)	3.1 (1.2)	2.8 (1.0)	C&T vs. H	0.000*
				C&T vs. P	0.000*
				P vs. H	0.026
<b>Salt (g/pizza)</b>	5.2 (2.4)	7.9 (3.1)	6.9 (2.8)	C&T vs. H	0.000*
				C&T vs. P	0.000*
				P vs. H	0.029*

\*Denotes statistical significance (*BAA*- *B* is statistically significantly different to both *A*'s, where *B* has a statistically significantly lower mean score than both *A*'s. *A*'s are not statistically significantly different from each other. *ABB* - *A* is statistically significantly different to both *B*'s, where *A* has the highest mean value. Both *B*s are not statistically different from each other.

**C: Comparisons between thin and deep bases across pizza varieties (per pizza) (Base Mean (SD))**

<b>Parameter</b>	<b>Product</b>	<b>Thin Base</b>		<b>Deep Base</b>		<b>P - Value</b>
<b>Energy (kcal/pizza)</b>	Cheese & Tomato	1272	(278.8)	1590	(392.4)	0.000*
	Hawaiian	1483	(347.0)	1800	(503.0)	0.002*
	Pepperoni	1473	(373.0)	1792	(547.0)	0.003*
<b>Total fat (g/pizza)</b>	Cheese & Tomato	43.3	(15.1)	48.1	(18.6)	0.210
	Hawaiian	44.4	(17.4)	48.8	(17.7)	0.215
	Pepperoni	54.7	(20.8)	62.7	(22.4)	0.104
<b>Saturated fat (g/pizza)</b>	Cheese & Tomato	23.4	(8.5)	26.0	(11.1)	0.235
	Hawaiian	23.5	(9.0)	26.2	(9.9)	0.215
	Pepperoni	26.4	(10.8)	30.3	(11.8)	0.125
<b>Protein (g/pizza)</b>	Cheese & Tomato	59.4	(17.5)	72.9	(21.4)	0.003*
	Hawaiian	70.4	(21.1)	80.1	(22.9)	0.054
	Pepperoni	66.0	(20.0)	81.5	(23.4)	0.002*
<b>Na (g/pizza)</b>	Cheese & Tomato	1.9	(0.9)	2.3	(0.9)	0.043*
	Hawaiian	2.7	(1.2)	3.3	(1.3)	0.049*
	Pepperoni	2.5	(0.9)	3.0	(1.1)	0.029*
<b>Salt (g/pizza)</b>	Cheese & Tomato	4.6	(2.3)	5.8	(2.4)	0.043*
	Hawaiian	6.8	(3.0)	8.2	(3.2)	0.049*
	Pepperoni	6.4	(2.3)	7.8	(2.8)	0.029*

\*Denotes statistical significance

**D: Comparisons in pizza varieties between fast food outlets (per pizza)**

<b>Base Mean (SD)</b>						
<b>Parameter</b>	<b>Product</b>	<b>National larger outlets (NLO)</b>	<b>Independent outlets (IO)</b>	<b>Restaurant outlet (RO)</b>	<b>Comparison</b>	<b>P - Value</b>
<b>Energy (kcal/pizza)</b>	Cheese & Tomato	1418.8 (354.6)	1500.6 (417.9)	1334.2 (317.2)	NLO vs. IO	0.405
					NLO vs. RO	0.431
					RO vs. IO	0.112
	Hawaiian	1613.0 <sup>AB</sup> (274.8)	1773.9 <sup>A</sup> (575.1)	1459.8 <sup>B</sup> (292.7)	NLO vs. IO	0.169
					NLO vs. RO	0.241
					RO vs. IO	0.011*
	Pepperoni	1546.4 (609.9)	1780.6 (411.3)	1524.7 (491.2)	NLO vs. IO	0.067
					NLO vs. RO	0.875
					RO vs. IO	0.061
<b>Total Fat (g/pizza)</b>	Cheese & Tomato	42.1 (14.7)	50.3 (19.6)	43.2 (14.6)	NLO vs. IO	0.065
					NLO vs. RO	0.807
					RO vs. IO	0.134
	Hawaiian	44.9 <sup>AB</sup> (12.4)	49.9 <sup>A</sup> (19.9)	40.3 <sup>B</sup> (8.8)	NLO vs. IO	0.229
					NLO vs. RO	0.334
					RO vs. IO	0.030*
	Pepperoni	54.0 <sup>B</sup> (19.2)	66.8 <sup>A</sup> (24.1)	53.2 <sup>B</sup> (18.9)	NLO vs. IO	0.024*
					NLO vs. RO	0.8992
					RO vs. IO	0.025*
<b>Saturated Fat (g/pizza)</b>	Cheese & Tomato	22.8 (8.8)	27.9 (11.6)	22.6 (7.9)	NLO vs. IO	0.052
					NLO vs. RO	0.938
					RO vs. IO	0.055
	Hawaiian	23.8 <sup>AB</sup> (6.1)	27.4 <sup>A</sup> (11.0)	22.0 <sup>B</sup> (5.9)	NLO vs. IO	0.114
					NLO vs. RO	0.506
					RO vs. IO	0.027*
	Pepperoni	25.1 <sup>B</sup> (9.3)	39.8 <sup>A</sup> (22.2)	25.9 <sup>B</sup> (9.1)	NLO vs. IO	0.001*
					NLO vs. RO	0.874
					RO vs. IO	0.002*
<b>Protein</b>	Cheese & Tomato	63.4 <sup>AB</sup> (17.9)	71.9 <sup>A</sup> (21.7)	60.7 <sup>B</sup> (20.7)	NLO vs. IO	0.115
					NLO vs. RO	0.630

		Mean	SE	SE	RO vs. IO	
<b>(g/pizza)</b>	Hawaiian	71.9 <sup>AB</sup>	81.9 <sup>A</sup>	68.7 <sup>B</sup>	NLO vs. IO	0.049*
		(13.9)	(24.1)	(19.4)	NLO vs. RO	0.067
					RO vs. IO	0.600
	Pepperoni	72.7	76.9	70.6	RO vs. IO	0.021*
		(14.6)	(28.4)	(23.6)	NLO vs. IO	0.476
					NLO vs. RO	0.750
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<b>Na</b> <b>(g/pizza)</b>	Cheese & Tomato	2.1	2.1	2.02	RO vs. IO	0.322
		(0.9)	(0.9)	(1.2)	NLO vs. IO	0.974
					NLO vs. RO	0.770
	Hawaiian	3.3 <sup>A</sup>	3.3 <sup>A</sup>	2.5 <sup>B</sup>	RO vs. IO	0.740
		(1.1)	(1.2)	(1.3)	NLO vs. IO	0.821
					NLO vs. RO	0.029*
Pepperoni	2.9	2.9	2.3	RO vs. IO	0.033*	
	(1.1)	(0.9)	(1.1)	NLO vs. IO	0.857	
				NLO vs. RO	0.065	
<hr/>						
<b>Salt</b> <b>(g/pizza)</b>	Cheese & Tomato	5.2	5.2	5.0	RO vs. IO	0.079
		(2.0)	(2.1)	(3.2)	NLO vs. IO	0.947
					NLO vs. RO	0.787
	Hawaiian	8.4 <sup>A</sup>	8.2 <sup>A</sup>	6.3 <sup>B</sup>	RO vs. IO	0.733
		(2.9)	(3.0)	(3.4)	NLO vs. IO	0.801
					NLO vs. RO	0.028*
Pepperoni	7.2	7.1	5.9	RO vs. IO	0.033*	
	(2.9)	(2.3)	(2.9)	NLO vs. IO	0.868	
				NLO vs. RO	0.063	
<hr/>						
RO vs. IO						0.080

\*Denotes statistical significance

AB, A, B – Pizza A is statistically significantly different to Pizza B only. Pizza AB is not statistically significantly different to A or Pizza B.

BAA – B is statistically significantly different to both A’s, where B has a statistically significantly lower mean score than both A’s. A’s are not statistically significantly different from each other.

ABB – A is statistically significantly different to both B’s, where A has the highest mean value. Both B’s are not statistically different from each other.

**E: Comparisons in pizza varieties between take away and shop bought pizzas (per pizza)**

Parameter	Product	Base Mean (SD)		P value
		Take away	Shop bought	
<b>Energy (kcal/pizza)</b>	Cheese & Tomato	1272 (278.9)	1047 (364.3)	0.007*
	Hawaiian	1483 (347.4)	754 (318.9)	0.000*
	Pepperoni	1473 (373.0)	1097 (352.6)	0.001*
<b>Total fat (g/pizza)</b>	Cheese & Tomato	43.3 (15.0)	40.4 (17.8)	0.480
	Hawaiian	44.4 (17.4)	23.1 (12.9)	0.000*
	Pepperoni	54.8 (20.9)	43.8 (17.8)	0.059
<b>Saturated fat (g/pizza)</b>	Cheese & Tomato	23.4 (8.6)	17.9 (6.0)	0.004*
	Hawaiian	23.4 (9.0)	9.8 (6.2)	0.000*
	Pepperoni	26.4 (10.9)	18.2 (8.0)	0.006*
<b>Protein (g/pizza)</b>	Cheese & Tomato	59.4 (17.4)	44.8 (14.9)	0.001*
	Hawaiian	70.4 (21.1)	35.9 (16.7)	0.000*
	Pepperoni	66.0 (19.9)	46.3 (15.9)	0.000*
<b>Na (g/pizza)</b>	Cheese & Tomato	1.9 (0.9)	1.6 (0.7)	0.116
	Hawaiian	2.8 (1.1)	1.3 (0.8)	0.000*
	Pepperoni	2.5 (0.9)	2.1 (0.9)	0.084
<b>Salt (g/pizza)</b>	Cheese & Tomato	4.8 (2.3)	3.9 (1.9)	0.662
	Hawaiian	6.9 (3.0)	3.6 (1.9)	0.000*
	Pepperoni	6.44 (2.3)	5.3 (1.9)	0.054

\*Denotes Statistical significance

**F: Energy, fat and sodium content per side order and accompanying dip (15, 16)**

<b>Side order (Average portion)</b>	<b>Energy (kcal)</b>	<b>Total fat (g)</b>	<b>Saturated fat (g)</b>	<b>Salt (g)</b>
<b>Chips (165g)</b>	462	25.6	9.6	0.51*
<b>Garlic bread (120g)</b>	438	22.0	11.6	0.77
<b>Garlic bread &amp; cheese (150g)</b>	560	32.1	18.0	0.98

\*Fat content varies depending on a number of factors related to their preparation

<b>Dip</b>	<b>Portion size (g)</b>	<b>Energy (kcal)</b>	<b>Total fat (g)</b>	<b>Saturated fat (g)</b>	<b>Sodium (mg)</b>
<b>Sweet chilli</b>	28	53	0.2	0.0	0.0
<b>Sour cream</b>	28	101	10.4	0.0	92
<b>BBQ</b>	28	38	0.0	0.0	336
<b>Mayonnaise</b>	28	193	21.2	3.1	126
<b>Tomato ketchup</b>	28	31	0.0	0.0	336

(28g represents the usual pot serving of dip)

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