STOP OR GO? HOW IS THE UK FOOD INDUSTRY RESPONDING TO FRONT-OF-PACK NUTRITION LABELS?

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Abstract

Food nutrition labels have been used for over a decade to aid consumers in making more informed diet choices and to potentially reduce societal costs from diet-related diseases and health conditions. While there is some evidence of the effectiveness of nutrition labels in changing consumption patterns, the scale of such improvements have been marginal. This has led certain government agencies to consider alternative forms of nutrition information. One such approach is front-of-pack (FOP) nutrition labels which provide simple, easily accessible information on a limited number of key nutrients. The use of FOP labels may facilitate healthier diets by influencing consumer behaviour and by providing an incentive for industry to formulate healthier products. This paper examines the adoption of FOP schemes by UK retailers and manufacturers. Label information for more than 5,500 food products released for sale from 2003 through 2009 were collected from a real-time food innovation resource (Mintel-Global New Product Database) and analyzed based on level of FOP adoption and nutrition profile. Food categories in the analysis included: bread, cakes, cereal, meat products, pastries, pizzas, prepared meals, sandwiches, and sweet biscuits. Binary and ordinal logistic regression models were used to calculate the likelihood of use of various "levels" of FOP labelling as a function of category, retailer/manufacturer brand, and nutritional attributes. Food products introduced by retailers, in more recent years and in categories that were targeted by FSA were more likely to carry an FOP label. In meat, pastry dish and prepared meal categories, increased sodium content decreased odds of use of traffic light label use, relative to guideline daily allowance (GDA) or no FOP label. However, no other nutrition variables were significant in either the pooled or category specific models. Discussion includes possible policy options to optimise manufacturer response, as well as implications for evolving mandatory FOP labelling proposals at the EU level.

Keywords: front-of-pack, nutrition labelling, traffic light, guideline daily allowance

JEL codes: Q18, L66 and L81

Introduction

Social and technological changes over the last century have resulted in more sedentary lifestyles and increased consumption of convenient, processed foods. An increasing body of scientific evidence links poor diet with a host of health conditions, including heart disease, diabetes, cancer and obesity (Curry Report 2002; EC 2005). The limited impact of traditional nutrition label formats on health outcomes has motivated research and policy debates within the European Union (EU) and around the world on alternative options for improving dietary choices. Providing simpler and more accessible nutrition information via front-of-pack (FOP) nutrition labelling has been suggested as a critical tool to facilitating more informed food choices and thus improving dietary quality (EC 2007).

The traffic light (TL) labelling system is one such FOP scheme that was introduced by the UK's Food Standards Agency (FSA) in March 2006, following a three year research and consultation period. The label highlights the amount of total fat, saturated fat, sugar and sodium in 100g or one portion (for servings greater than 100g) of a food product. These nutrients are colour-coded red, amber, or green, respectively corresponding to high, medium, or low levels of the nutrient using criteria based on national and international dietary guidelines (FSA 2010). FSA initially heavily promoted the use of the TL system and specifically targeted seven types of foods: ready meals, pizzas, sausages, burgers, pies, sandwiches and breakfast cereals. Recent research showed that consumers preferred baskets with the least amount of red symbols, suggesting that the TL system may facilitate better shopping basket level decisions (Balcombe *et al.* 2010). This behaviour may also create an incentive for food processors to innovate or reformulate their products to qualify for an amber or green nutrient rating, adding value to products. However, despite the FSA's push for the use of the TL format, the Guideline Daily Allowance (GDA) labelling scheme has been more widely adopted than the TL format among both targeted and non-targeted foods (Van Camp *et al.* 2010). Major UK retailers have more readily adopted TL labels than manufacturers, who have preferred to use the non-colour coded GDA format. However, these FOP labelling schemes are not necessarily carried on all food products produced by a given company (Van Camp *et al.* 2010; FSA 2010).

In response to independent research commissioned by the agency, FSA has recently altered its original recommendation by encouraging manufacturers and retailers to adopt an "integrated label" which combines traffic light colouring, GDA percentages, and text labelling of the amount of each nutrient as "high", "medium" or "low" (FSA 2010).

Ultimately, the public health impact of any label can be determined by how and to what extent the information causes consumers to change consumption behaviours and food manufacturers to formulate healthier products. Although there is already a considerable body of research examining consumer responses to food nutrition labels in general, and specifically to FOP labelling schemes (Kraus *et al*. 2010; Kelly *et al.*, 2007; Jones and Richardson, 2007; Kozup *et al.*, 2003), evidence of the impact on consumer behaviour is marginal at best (Nayga 2008). Additionally, few articles have considered ways different (voluntary) nutritional criteria or nutrient profile models may influence the adoption of FOP labelling or food product formulation (notable examples are Moser *et al*. 2010; Azaïs-Braesco *et al.* 2009; Drewnowski *et al.* 2009; Nijman *et al.* 2007; Young and Swinburn 2002). Studies measuring actual nutritional quality of products using voluntary FOP labels have been limited by the rapidity, scope and proprietary nature of product (re)formulations.

To what extent does the nutritional content of foods influence the adoption of FOP labels? This research addresses this question and contributes to our understanding of industry usage of nutrition labels. Such information complements studies which have focused on the consumer response to these labels. Using a unique dataset of product innovations our goal is determine whether there are differences in adoption of these schemes and what factors seem to be motivating their use. Our research is based on discrete choice models that explore which, if any, product attributes are significant predictors of FOP label use and the extent that these predictors vary by category and "level" of FOP label. More specifically the objectives of this study are to determine: (1) what variables are the strongest predictors of FOP label use? (2) What product attributes are significant predictors of level of FOP adoption within a specific food category?

Methodology & Data

Data Collection and Standardisation

A real-time food innovation resource, Global New Product Database (GNPD) – Mintel was used to analyze packaged food products released in the UK from January 1, 2003 through December 31, 2009. The product level observations in the database were populated using information gathered by a network of field associates (GNPD 2009). All key retail distribution channels are monitored by GNPD's shopper network, including supermarkets, drug stores, natural food stores/health shops, petrol stations, convenience stores and other independent outlets. GNPD also gathers data on product innovations through trade shows, press releases and company tracking (GNPD 2009). Information available on each product included product attributes such as brand type, manufacturer, and nutrition information, as well as a picture of the front of package of each product.

Eleven food categories were analyzed including bread, cakes, cereal, meat products, pastries, prepared meals, sandwiches, crackers, salty snacks, and cookies (See Appendix A for category descriptions). These categories were selected because they encompass several of the specific food types targeted by FSA's TL labelling program (e.g. breakfast cereal, sandwiches, and ready meals), as well several foods that were not a focus of FSA's campaign (e.g. cookies, cakes, and bread). Pictures of the front of each product package were used to code for FOP labelling scheme use. Each label was classified into one of four categories: (a) No formal FOP scheme (b) GDA only (c) TL only (d) GDA and TL. The remaining data was run through a tailored macro to parse out serving size, energy (kcal), total fat (g), saturated fat (g), sugar (g), and sodium (g) information. If an observation reported only salt content, sodium content was calculated by dividing salt content (g) by the molecular weight of sodium chloride (58.443) and then multiplying by the molecular weight of sodium (22.990). Incomplete observations were removed, with the proportion of included products ranging from 63.1% in 2007 to 75.0% in 2006. All remaining data was standardized to a 100g serving size.

Statistical Analyses

Summary statistics of response and predictor variables were prepared on the entire dataset by category. A binary logistic regression model was used to determine significant predictors of FOP label use (Garson 2010). The dependent variable was adoption of any type of FOP label (e.g. TL or GDA). The empirical model is defined as:

$$y_i = \beta_i X_i + \varepsilon_i \quad \textbf{(1)}$$

where y_i is the probability of observing a FOP in the i^{th} observation. X_i is a row vector of exogenous variables assumed to affect a firm's selection of a nutrition label. β is a column vector of unknown coefficients, and ε is a product specific error term. Assuming the cumulative distribution of the error term is logistic, the empirical specification is defined as:

$$\text{Prob}(y_i = 1) = \frac{e^{\beta_i X_i}}{1 + e^{\beta_i X_i}} \quad (2)$$

The exogenous variables included in the vector X are: brand, target, year, energy, sugar, saturated fat, total fat and sodium. The variables brand (0= national brand, 1= private label) and target (0= category not targeted by FSA, 1= category targeted by FSA) were included as dummy predictors. Year was included as a categorical predictor (0= 2007). Energy and sugar were included as continuous predictors. Total fat, saturated fat and sodium variables violated the assumption of linearity with the logit of the dependent variable. Therefore, to mitigate the effects of nonlinearity, these predictors were transformed into categorical variables based on the FSA's established high (red), medium (amber), and low (green) thresholds (Table 1). Indicator coding was used for all categorical variables, with the last or highest category serving as the reference category. Tolerance values were used to test for high multicollinearity among predictor variables, and any predictors with a tolerance value of less than 0.2 was removed from the model. A likelihood ratio test was used to measure model significance. Nagelkerke's pseudo R^2 and odds ratios were used to measure effect size of the model and individual predictors, respectively.

Table 1. Nutrient thresholds for traffic light coding in solid foods (FSA 2010).

Nutrient	Low (green)	Medium (amber)	High (Red)
Fat	≤ 3g	> 3g ≤ 20g	> 20g
Saturated Fat	≤ 1.5g	> 1.5g ≤ 5g	> 5g
Sugar	≤ 5g	> 5g ≤ 15g	> 15g
Salt	≤ .12g	> .12g ≤ .59g	> .59g

An ordinal regression model with logit link was used to analyze predictors of level of FOP label use within specific food categories (Garson 2009). Equation 2 shows the definition of this model for one predictor variable, where θ= prob(FOP level ≤ j)/prob(FOP level > j), where j ranges from one to the number of categories minus one and α is the threshold unique threshold for each category of the dependent variable (Norušis 2010). The odds ratio of each predictor is equal to $e^{(-\beta)}$.

$$\ln(\theta_j) = \alpha_j - \beta X \quad \textbf{(3)}$$

Only categories targeted by FSA's campaign were included in the ordinal regression analysis, because TL labelling had relatively low rates of adoption in non-target categories. Specifically, meat, pastry dishes, pizza, and prepared meal categories were analyzed. The sandwich and cereal categories were also targeted by FSA, but were not included in the reported results, because these categories failed to meet the assumption of parallel slopes. The response variable was FOP labelling, with three ranked levels: 0= "no FOP label", 1= "GDA only", 2= "TL only or TL and GDA". The ordinal ranking attributed to this otherwise nominal variable was defined according to the level of information that each format offers to consumers. Products without an FOP labelling scheme were given the lowest rank, because these labels offer little to no front of pack nutrition information. Products with only a GDA label provide a statement of amount and percentage daily value for key nutrients. However, TL labels offer the highest level of information by providing a statement of amount as well as visual cues to signify high, medium and low levels of key nutrients. Recently, the agency recommended an integrated label containing both TL and GDA labels as the optimal format. However an integrated label was not included as a separate FOP level due to low frequency of use. Predictor variables included the same brand dummy variable used in the binary logistic regression, as well as energy, saturated fat, sugar, and sodium as continuous covariates. Year was not a variable of interest in the ordinal model. Tolerance values were used to test for high multicollinearity among predictor variables, and any predictors with a tolerance value of less than 0.2 was removed from the model. A likelihood ratio test was used to measure model significance. Nagelkerke's pseudo R^2 and odds ratios were used to measure effect size of the model and individual predictors, respectively. All analyses were conducted using SPSS PASW statistical software version 17.0 (IBM; Chicago, IL).

Results

Summary statistics show that the prepared meal and cake categories had the largest number of product introductions over the time period (Table 2). Private label brands dominated most categories, with the exception of cereal, cracker, salty snack, and cookie categories where national brands led. TL and integrated labels were most widely adopted in categories targeted by FSA and those with a majority share of private label introductions. Table 2 also lists the mean and standard deviations of energy and selected nutrients for each food category.

Table 2. Summary statistics of foods released for sale between 2007 and 2009 (n=2201).

Category	Count	Private Label (%)	FSA Targeted Category	Nutrition Information (Mean ± SD)				
				Energy (kcal)	Sugar (g)	Saturated Fat (g)	Total Fat (g)	Sodium (g)
Bread	207	56.0	No	279 ± 77	4.1 ± 4.7	2.0 ± 2.8	6.3 ± 5.3	.44 ± .23
Cakes	391	58.6	No	376 ± 75	32.1 ± 12.7	7.1 ± 4.5	16.3 ± 7.2	.20 ± .15
Cereal	167	32.9	Yes	372 ± 72	17.4 ± 10.7	2.1 ± 2.5	8.2 ± 7.5	.16 ± .20
Cookies	214	38.8	No	477 ± 50	29.5 ± 10.3	11.2 ± 5.0	22.4 ± 6.6	.26 ± .18
Crackers	77	37.7	No	432 ± 85	4.5 ± 6.8	8.5 ± 8.1	17.4 ± 11.4	.67 ± .30
Meat Products	199	82.4	Yes	216 ± 76	1.8 ± 2.3	5.7 ± 3.5	13.9 ± 8.1	.54 ± .41
Pastry Dishes	172	70.3	Yes	257 ± 71	2.1 ± 1.6	7.2 ± 2.9	15.8 ± 5.9	.29 ± .15
Pizzas	118	68.6	Yes	241 ± 29	3.5 ± 1.3	3.9 ± 1.5	8.8 ± 2.9	.37 ± .13
Prepared Meals	419	79.2	Yes	125 ± 60	2.4 ± 2.1	1.8 ± 1.9	4.7 ± 3.8	.21 ± .13
Salty Snacks	164	32.3	No	459 ± 73	4.3 ± 4.5	4.4 ± 4.5	22.0 ± 9.8	.68 ± .37
Sandwiches	73	84.9	Yes	216 ± 70	3.0 ± 2.0	3.2 ± 2.2	8.7 ± 5.1	.36 ± .16
Total	**2201**	**60.2**	**NA**	**301 ± 136**	**11.8 ± 14.5**	**5.1 ± 4.8**	**12.7 ± 9.1**	**.33 ± .28**

Figure 1 shows the adoption of FOP labelling schemes in targeted and non-targeted food categories over time. Adoption of FOP schemes in non-targeted categories grew from 29.5% of food introductions in 2008 to 44.1% in 2009, largely driven by a sharp increase in use of GDA labels. Adoption of FOP schemes in targeted categories actually declined 6.2% in 2009.

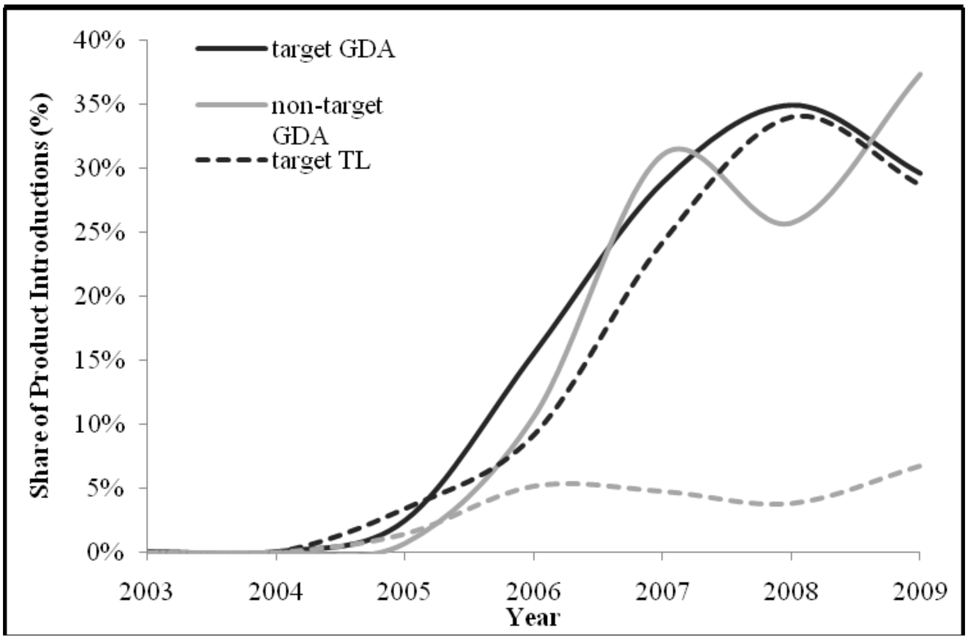

Figure 1. Share of product introductions in targeted and non-targeted categories using FOP schemes by year (n=5988).

The pooled binary logistic regression supported the findings of the summary statistics, showing that private label products were 81.6% more likely to carry an FOP label than national brand products. Additionally, products in non-target categories were 53.8% less likely to carry an FOP label than products in targeted categories. Products released in 2007 and 2008 were 49.4% and 34.4%, respectively, less likely to carry an FOP label than products released in 2009, which shows an increased adoption of FOP labelling over time. None of the nutrient variables were significant in predicting FOP label use in the pooled, binary logistic model.

Table 3. Results of pooled binary logistic regression of FOP use from in products released for sale in UK, 2007-2009 (n=2201).

Predictor	β	*SE* β	Wald's χ^2	*df*	*p*	e^{β} (odds ratio)	e^{β} 95% CI	
							Lower	Upper
Brand (0=national brand, 1=private label)	-1.692	.106	254.624	1	<.001	.184	.150	.227
Energy (kcal)	.000	.001	.039	1	.843	1.000	.999	1.001
Total Fat (green)	-.067	.248	.074	1	.786	.935	.575	1.521
Total Fat (amber)	.065	.155	.173	1	.677	1.067	.787	1.447
Saturated Fat (green)	.145	.166	.761	1	.383	1.156	.835	1.601
Saturated Fat (amber)	.197	.124	2.527	1	.112	1.218	.955	1.552
Sodium (green)	-.220	.189	1.356	1	.244	.802	.554	1.162
Sodium (amber)	-.034	.161	.044	1	.833	.967	.705	1.326
Sugar (g)	.000	.005	.004	1	.952	1.000	.991	1.009
Target (0=non-target, 1= target)	-.772	.134	32.930	1	<.001	.462	.355	.602
Year (2007)	-.682	.120	32.072	1	<.001	.506	.399	.640
Year (2008)	-.422	.117	12.970	1	<.001	.656	.521	.825
Constant	1.235	.324	14.574	1	<.001	NA	NA	NA
Overall model evaluation	**Pseudo R^2**	**-2LL**	χ^2	*df*	*p*			
Nagelkerke R^2	.252	2590.022						
Likelihood ratio			461.080	12	<.001			

The ordinal regression analyses measured predictors of level of FOP adoption across specific target categories. In these models the brand variable was highly significant, with private label brand corresponding to increased odds of higher levels of FOP use (Tables 4-7). Additionally, within food categories, certain nutrition variables were statistically significant. Increased content of highlighted nutrients decreased likelihood of higher levels of FOP use. However, statistical significance and effect size of nutrition variables differed by food category.

Table 4 shows the significant predictors of level of FOP use in meat products. Energy, saturated fat, sodium and sugar were all statistically significant predictors. Increased levels of any of these variables decreased likelihood of higher levels of FOP adoption. However, their practical significance, measured by the odds ratio, was relatively small compared to the effect of brand on FOP use. The odds of a product carrying a TL label rather than a GDA or no FOP scheme were increased by a factor of 10.937 if the product was private label. Among meat product introductions, sodium was the nutrient variable with the greatest practical significance. A one gram increase in sodium content decreased the likelihood of higher levels of FOP use by a factor of 2.535.

Table 4. Ordinal logistic regression analysis of meat products released for sale in the UK, 2007-2009 (n=199).

Predictor	B	*SE* β	Wald's χ^2	*df*	*p*	$e^{-\beta}$ (odds ratio)	95 % CI	
							Lower	Upper
Brand (0=national brand, 1=private label)	-2.392	.480	24.845	1	<.001	10.937	4.27	28.016
Energy (kcal)	-.008	.004	3.763	1	.052	1.008	1	1.016
Saturated Fat (g)	.211	.092	5.299	1	.021	0.810	0.677	0.969
Sodium (g)	-.930	.385	5.850	1	.016	2.535	1.193	5.389
Sugar (g)	.141	.065	4.729	1	.030	0.869	0.766	0.986
Overall model evaluation	**Pseudo R^2**	**-2LL**	χ^2	*df*	*p*			
Nagelkerke R^2	.261							
Likelihood ratio		379.473	52.379	5	<.001			

Table 5 shows the significant predictors of level of FOP use in pastry dishes. Similar to meat products, brand and sodium variables had the largest effect size. However, in pastry dishes sodium was an even more important predictor than brand. Odds of a higher level of FOP use are increased by a factor of 17.519 if the product was private label rather than national brand. Increasing sodium content by one gram decreased the odds of a higher level of FOP use by a factor of 35.158. Increasing saturated fat and sugar content in pastry dishes also decreased odds for higher levels of FOP use, but these variables had small effect size with odds ratios close to one.

Table 5. Ordinal logistic regression of FOP label use in pastry dishes released for sale in the UK, 2007-2009 (n=172).

Predictor	B	*SE* β	Wald's χ^2	*df*	*p*	$e^{-\beta}$ (odds ratio)	95 % CI	
							Lower	Upper
Brand (0=national brand, 1=private label)	-2.863	.436	43.083	1	<.001	17.519	7.4506	41.193
Energy (kcal)	-.000	.004	.002	1	.967	1.000	0.992	1.008
Saturated Fat (g)	.133	.095	1.972	1	.160	0.875	0.727	1.054
Sodium (g)	-3.560	1.271	7.847	1	.005	35.158	2.913	424.344
Sugar (g)	-.278	.120	5.340	1	.021	1.320	1.043	1.671
Overall model evaluation	**Pseudo R^2**	**-2LL**	χ^2	*df*	*p*			
Nagelkerke R^2	.377							
Likelihood ratio		303.272	69.957	5	<.001			

Brand and energy were statistically significant variables in predicting level of FOP use in pizza products (Table 6). Brand was the most important predictor, with odds of higher levels of FOP use were increased by a factor of 4.971 if the product was private label rather than national brand. A one kilocalorie increase in energy decreased the same odds by only 3%.

Table 6. Ordinal logistic regression analysis of FOP label use in pizzas released for sale in the UK, 2007-2009 (n=118).

Predictor	B	*SE* β	Wald's χ^2	*df*	*p*	$e^{-\beta}$ (odds ratio)	95 % CI	
							Lower	Upper
Brand (0=national brand, 1=private label)	-1.604	.420	14.609	1	<.001	4.971	2.184	11.313
Energy (kcal)	-.030	.009	10.707	1	.001	1.030	1.012	1.049
Saturated Fat (g)	.227	.169	1.811	1	.178	0.797	0.572	1.109
Sodium (g)	1.201	1.406	.729	1	.393	0.301	0.019	4.739
Sugar (g)	.125	.148	.713	1	.398	0.882	0.660	1.180
Overall model evaluation	**Pseudo R^2**	**-2LL**	χ^2	*df*	*p*			
Nagelkerke R^2	.264							
Likelihood ratio		223.659	31.460	5	<.001			

Finally, table 7 reports the results for prepared meals. Brand, sugar, and sodium were the most important predictors of level of FOP use in prepared meals. Odds of higher levels of FOP use were increased by a factor of 11.782 if the meal was private label and were decreased by a factor of 5.349 for every one gram increase in sodium content. Sugar was also a statistically significant predictor, but had relatively small practical significance with an odds ratio close to one. Sodium was less statistically significant, but had a large effect size. A one gram increase in sodium decreased the odds of higher levels of FOP use by a factor of 4.622.

Table 7. Ordinal logistic regression analysis of FOP label use in prepared meals released for sale in the UK, 2007-2009 (n=419).

Predictor	B	*SE* β	Wald's χ^2	*df*	*p*	$e^{-\beta}$ (odds ratio)	95 % CI	
							Lower	Upper
Brand (0=national brand, 1=private label)	-2.491	.296	70.685	1	<.001	12.072	6.754	21.575
Energy (kcal)	.002	.002	.628	1	.428	0.998	0.994	1.003
Saturated Fat (g)	.080	.063	1.641	1	.200	0.923	0.816	1.043
Sodium (g)	-1.531	.897	2.914	1	.088	4.622	0.797	26.800
Sugar (g)	-.231	.061	14.178	1	<.001	1.260	1.117	1.421
Overall model evaluation	**Pseudo R^2**	**-2LL**	χ^2	*df*	*p*			
Nagelkerke R^2	.293							
Likelihood ratio		794.084	126.520	5	<.001			

Across the four food categories analyzed, sodium content was the most important nutrition predictor of level of FOP use. Figure 2 shows the average sodium content per 100g in these categories. From 2003 to 2009, the average sodium content per 100g in prepared meals and pastry dishes dropped 43.8% and 42.9%, respectively. The change in average sodium in pizzas and meat products was less dramatic, with 25.0% and 22.1% declines, respectively.

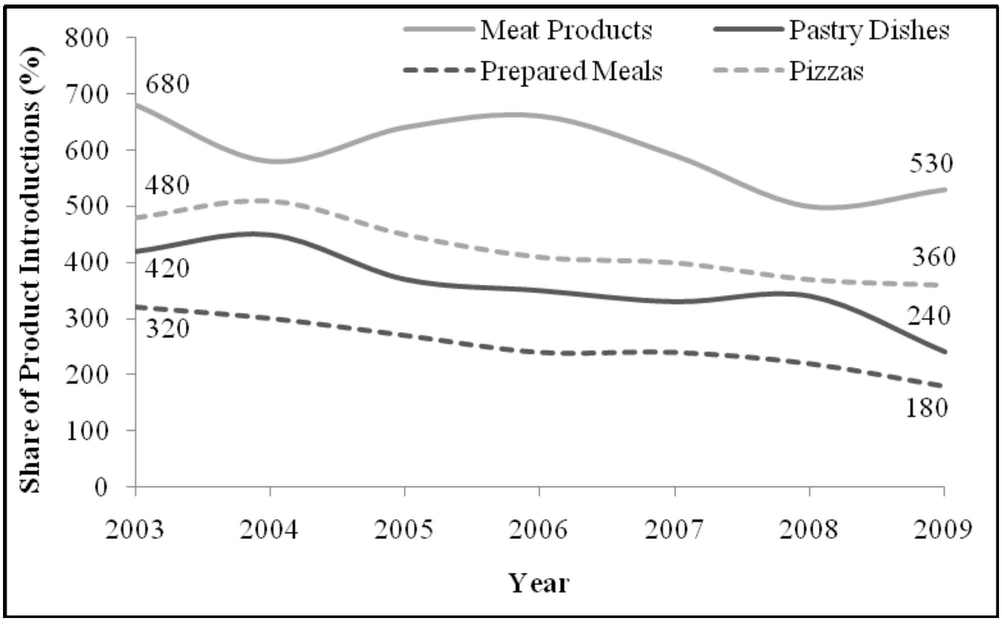

Figure 2. Average sodium content (mg) in meat product, pastry dish, pizza, and prepared meal introductions from 2003-2009.

Discussion

Limitations and Consumer Behavior

This study provided the first comprehensive assessment of the predictors of FOP label use. The analysis included thousands of food products released in the UK from 2003 to 2009. Nevertheless, it is important to note that the dataset (1) did not capture *all* product introductions; and (2) was not collected using a structured sampling technique and some observations were omitted because they lacked nutrition information or an image for the product. This research also relied on label reported measures of nutritional variables, therefore it was not possible to measure error in these reported amounts.

It is also important to note that these results are not linked to sales or consumption data, which would be a logical and necessary next step to determine the impact of FOP adoption on consumer behaviour. How consumers respond to FOP information is key in determining if TL or GDA, single or integrated labels are to be recommended.

Importance of Brand Strategy

The significance of the presence of retailer brand in predicting level of FOP adoption signifies that brand strategy played a critical role in the use of FOP labels. The fact that private label firms were more likely to use FOP labels in general and TL labels specifically, may be attributed to number of factors including influences from government and consumers, as well as differences in overall brand strategy. For example, in contrast to iconic national brands, private label products may have a shorter life cycle, and retailers may make a more willing to adopt tactical marketing strategies. Additionally, they may have chosen to be early adopters of traffic light to add value for consumers and to pre-empt possible mandatory labelling policies. It will be interesting to follow if similar strategies are adopted by retailers in other countries where private label products are less common.

Government Influence

The results of this study provide some evidence of the success of government as a driver of standardisation and prioritisation in voluntary FOP labelling. FSA's consecutive recommendations on FOP labelling have lead the food industry from a plethora of manufacturer specific schemes to a convergence on a GDA and/or TL labelling (Van Camp et al. 2010). Additionally, FSA's strategic choice to target specific food categories, as well as complimentary efforts to reduce intake of specific nutrients, such as sodium, have prioritised the implementation and impact of FOP labelling on food introductions.

Sodium: A Model for Category Focus

When analysing the adoption of different levels of FOP use among targeted categories we observe that while brand is still the main predictor of use, certain nutrients come in to play. It is notable that salt content is a driver of the level of FOP use in two categories. The practical significance of sodium content as a predictor of FOP label use across meat, pastry dish, and prepared meal categories offers evidence that government policies may be serving as a catalyst for food supplier innovation and food manufacturer reformulation. Recent ingredient innovations in salt alternatives and flavour enhancers have made sodium reduction feasible across a wider range of food products (Tarver 2010). The availability of this technology, added incentive from FOP labelling, and increased pressure from key stakeholders groups may have all been key influences, at least in target categories, to reduction of sodium content.

The evidence of sodium reduction seems to support the argument that there are strategic interactions at the category level especially where undesirable nutrients are less common or more easily reformulated. Further, it may be due to interplay with other nutrition policies, such as the salt campaign in the UK, and therefore nutrient-specific. Additionally, that no nutrients were statistically significant predictors of FOP use in the pooled model may be evidence that FOP labels are not yet encouraging substantial product reformulation or broad improvements in the nutritional profile of packaged foods in the UK. This result deserves further consideration, particularly in light of the recommendation to move to integrated labels which include TL information. That various categories exhibited different results may be evidence of the need revisit category level thresholds for TL labels.

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Appendix A

Table 1. Descriptions of food categories included in analysis.

Category Name	Description
Bread	Includes bread loaves and rolls, plain croissants, bagels, tortilla, taco shells, etc.
Cakes	Includes Danish pastries, donuts, snack cakes, brownies, toaster pastries, filled croissants, frozen/chilled/shelf-stable pies, waffles, pancakes, etc.
Cereal	Any cereal product which is primarily intended to be eaten cold or hot
Cookies	Includes sweet rice cakes.
Crackers	Includes savoury rice cakes and cracker/dip combinations
Meat Products	All processed meat products excluding meat-based prepared meals (see Meals & Meal Centers); also excludes fish, poultry and egg based products
Pastry Dishes	All pies/tarts, flans & quiche; all "centre-of-plate" meal pastry dishes
Pizzas	All types of pizzas.
Prepared Meals	All complete (main course) meals, generally including protein, starch and vegetable.
Salty Snacks	All types of (ready-to-eat) savoury or salty snacks, including popcorn
Sandwiches	All types of ready-to-eat sandwiches and wraps.