

Front of Pack – Modelling and Options Analysis

Welcome and Introduction

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Purpose of the Meeting



- Determining thresholds - to review the evidence provided by interested parties and DH/Oxford modelling.
- Colour coding calories - to review the evidence provided by interested parties and DH/Oxford modelling.
- To receive the results of the BRC-led format work.

Further Submissions



- No new evidence submitted – except survey by Sainsbury’s on CC calories
- Submissions received from:
 - MRC Human Nutrition Research, Cambridge
 - Morning Foods (Oats Miller)
 - Kelloggs
 - Sugar Nutrition
 - Provision Trade Federation
 - Dairy Crest (dairy food producers)
 - Bighams (manufactured ready meals)
 - Almond Board of California
 - Sainsbury’s
 - The European Natural Soyfoods Manufacturers Association (ENSA)
 - International Chewing Gum Association (ICGA)

Thresholds

Thresholds



The thresholds you choose, and the degree of categorisation that is implemented, will depend on the purpose you ascribe to FoP labelling, i.e. whether it is:

- To nudge consumers towards healthier options by identifying those options in category.

Or

- To highlight levels of nutrients of public health concern in food, and that consumer behaviour change is achieved by a separate education programme.

Thresholds for Colour Coding



At the last meeting DH stated that its intention was to start from the current criteria developed by the Food Standards Agency* and to review the strength of any recent evidence, published in the literature, provided by stakeholders, and from the field of behaviour change, to establish whether there are grounds for change.

- * Note: the Food Standards Agency criteria were updated in 2009 but never re-issued. We will work from the basis of a red/amber salt cut off per 100g of 1g and the Reference Intake (RI) for sugar of 90g.

Category-based Approach

To examine this we....



- Colour coded (using existing scheme criteria) 106,000 pre-packed foods contained in Kantar database to identify the categories where there was little differentiation afforded.
- Reviewed the NDNS to identify those foods that contribute most fat, sat. fat, sugar and salt to the diet and where a 'nudge approach' might be usefully employed.
- Selected a random sample of pre-packaged foods, identified portions and applied the existing scheme and the Sainsbury's scheme in full.
- Applied both schemes to food categories raised with us during the consultation phase.

How to determine what foods should have category specific thresholds?



- Top contributors to the diet of fat, sat.fat, sugar and salt

AND

- Food categories where little differentiation seen when the current scheme is applied to all foods

Top contributors to the diet



- Nutrients are relatively broadly spread through food categories.
- Contribution to diet is a combination of amount eaten and nutrient levels.
- The only foods contributing 10% or more to the diet are:
 - Cheese – 10% sat. fat to adults' diets
 - White bread 11% of salt to adults' and children's diets

Categories raised in consultation responses

- Categories that have been suggested to us (consultation or in recent weeks) as categories where there is little differentiation provided by colour coding when the existing scheme is applied:
 - Biscuits
 - Cheese
 - Butter and Spreads
 - Yoghurts (sugar criteria – inability to carry a green)
 - Breakfast cereals (sugar)

Kantar food categories showing least differentiation – FSA criteria applied



Categories where at least 80% of foods carry 3 reds

Butter
Margarines
Chocolate biscuit bars
Chocolate confectionery
Chocolate spread
Cheese

Categories where at least 80% of foods carry 3 greens

Fruit (chilled/prepared, tinned)
Vegetables (chilled/prepared, canned, frozen)
Prepared peas and beans (not baked beans)
Canned pasta products, dried pasta, couscous and instant mash potato
Canned rice puddings (98% medium for sugar)
Chilled gravy and stock
Gum confectionery, herbs and spices, vinegar, salt, flour, lemon and lime juice
Packet stuffing (65% high for salt)
Shellfish
Tomato products
Ambient vegetarian products
Ambient soup

Outcome

- Combining the outcomes of the two analyses (contribution to the diet and lack of differentiation) identifies only one product category - cheese.
 - Issue of balance – whilst cheese can provide high levels of fat, saturates and salt, it also contributes vitamins A and D* and in particular is a good source of calcium.
 - Population intakes from food sources are adequate for these nutrients (except 11-18 where the situation is borderline – eat same amount of cheese as other groups but less milk)
 - There are other sources of these nutrients in the diet.

(*Reference Nutrient Intakes (RNIs) for vitamin D have only been set for children aged 0-4 years, adults aged 65+ years and pregnant/lactating women. In both young children and older adults, average intakes from food are below the RNI (although intakes by an individual below this level does not necessarily indicate deficiency). RNIs have not been set for other age groups and it is therefore not possible to characterise intakes from food as 'adequate' or 'inadequate'. The government recommends vitamin D supplements for those groups where an RNI has been set)

Outcome cont....

- Do we do not know the effect of categorisation on purchasing patterns ?
- Research is limited (relates mainly to claims), but shows that:
 - participants who were given products (M&Ms) labelled as 'light' or 'low fat' ate up to 50% more than they did with the same standard product.
 - participants ate approximately 35% more food when the product (cookies) was described as a healthy snack, compared to those who ate the cookies which were not described as healthy
 - participants, particularly those who are overweight, eat more calories of snack food when it is labelled as low fat than when it is labelled as regular, while low-fat nutrition claims led all consumers in a lab to increase the amount they believed to be an appropriate serving size, regardless of whether the snack was relatively hedonic or utilitarian.
 - participants perceive healthy foods as having a 'halo' which counteracts other foods. For example, participants believed the meal with a healthy side dish e.g. a salad had fewer calories when compared to the meal with no healthy side dish (a reduction of 43 calories / 6.4%)

Place in the Diet – we compared
existing scheme with Sainsbury's

How we approached the modelling



- 1150 random sample from Kantar data set
- We excluded: (foods little nutrition value; raw meat joints; fresh fruit and veg; seasonal e.g. Xmas/gifting; single ingredient e.g. flour)
- Final sample 919
- Coded to existing scheme (2 categories: Food and Drink)
- Coded to Sainsbury's scheme (6 categories: complete meals, part meals, starchy carbs, other foods (Snacks and ingredients), drinks, and fats)
- Portion size attributed to all foods in the sample: – actual, similar product, FSA portion size book* or portion size project**

(*Food Portion Sizes 3rd edition 2002 (Food Standards Agency) ISBN 0 11 242961 0 and

**Table 1. www.foodbase.org.uk/results.php?f_category_id=&f_report_id=82)

Summary of Results



- Classification of foods is not vastly different. There is good correlation between the two schemes and the proportion of foods that fall into particular colour categories on a nutrient-by-nutrient basis is very similar.
- When looked at in terms of portion size (products divided into quintiles): Sainsbury's scheme declared more ambers than the existing scheme for red sat. fat declarations on smaller portions. There was little difference for the other nutrients.
(note: higher sat fat cut offs per 100g for part meals may have affected this result and that this may also be a consequence of consumption unit rather than total portion consumed being used for FoP declarations e.g. per sausage, per rasher of bacon.)
- The other small differences that do exist relate to the Sainsbury's scheme including:
 - portion caps at the green/amber cut-off
 - tighter fat thresholds for part meals (including cheese)
 - less restrictive sat. fat thresholds on part meals

Sample divided into quintiles by portion size

		1 (smallest)		2		3		4		5 (largest)	
		S	FSA	S	FSA	S	FSA	S	FSA	S	FSA
Sugar	Red	47.54	47.28	33.15	33.15	36.96	36.96	25.00	24.46	28.26	28.26
	Amber	5.46	5.43	13.04	13.04	10.33	9.78	11.96	12.5	5.43	5.43
	Green	46.99	47.28	53.80	53.80	52.72	53.26	63.04	63.04	66.30	66.30
Fat	Red	38.80	35.87	57.61	52.17	35.87	15.22	28.80	16.85	15.76	15.76
	Amber	37.70	40.76	25.00	30.43	46.20	66.85	42.39	54.35	31.52	29.89
	Green	23.50	23.37	17.39	17.39	17.93	17.93	28.80	28.80	52.72	54.35
Saturated fat	Red	37.70	46.20	47.83	55.98	26.63	38.59	35.33	35.33	19.57	22.28
	Amber	34.97	26.63	28.80	20.65	41.85	29.35	22.28	21.74	22.28	14.67
	Green	27.32	27.17	23.37	23.37	31.52	32.07	42.39	42.93	58.15	63.04
Salt	Red	36.07	54.35	28.80	45.11	14.13	32.61	9.24	16.85	23.37	23.37
	Amber	42.62	24.46	41.30	25.00	64.67	46.20	44.02	35.87	29.89	28.26
	Green	21.31	21.20	29.89	29.89	21.20	21.20	46.74	47.28	46.74	48.37



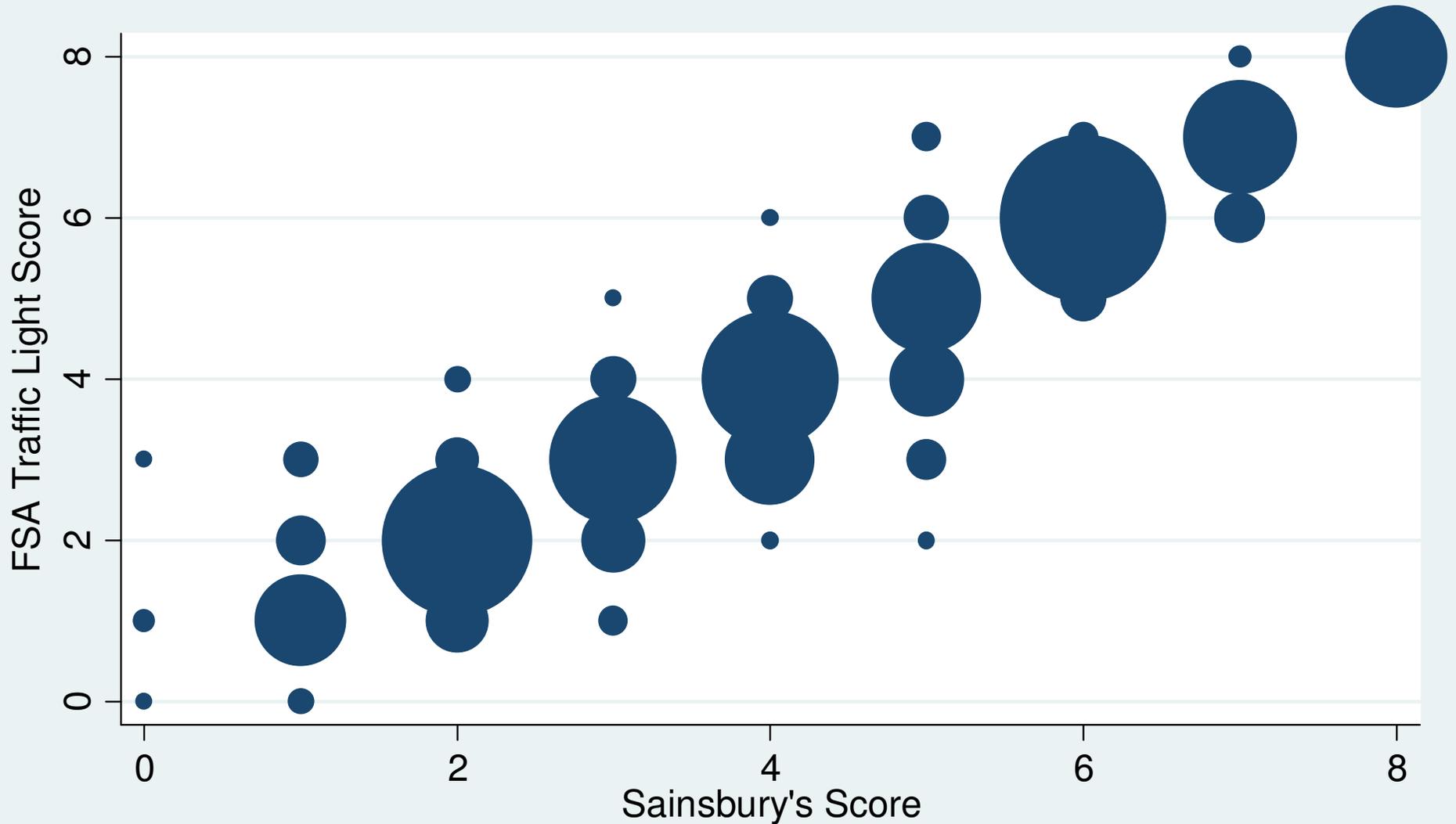
Differences only due to using proposed revised salt thresholds (1g/100g and 1.8 per portion.) for existing scheme and existing 1.5g/100g and 2.4g per portion in the Sainsbury's scheme.



Sainsbury's scheme has less reds and more ambers for sat fat than existing scheme for smaller portions

DH database

Correlation between FSA and Sainsbury's Traffic Light Scores



The score is derived using the following formula: $\text{Score} = (\text{Green} \times 2) + (\text{Amber} \times 1)$.

Size of markers is proportional to the frequency.

Sainsbury's score does not include energy (kcal) so as to make it more directly comparable with the FSA score

Fat

- 88 differences (Sainsbury's compared to existing scheme)
- 5 less strictly categorised using Sainsbury's scheme – whole meals – Sainsbury's higher per serve cut off at amber/red (Sainsbury's scheme 23g/portion; existing 21g/portion)
- 83 more strict categorisations using Sainsbury's scheme because of tighter fat criteria for parts of meals (16g/100g and 17.5g per serve (existing scheme 20g/100g, 21g per serve)) and portion size caps for snacks that are tighter than existing scheme (7.0g per serve vs existing scheme 21g/serve)
- Types of foods affected in the random sample:
 - Dessert tarts / snack cakes
 - Sausages
 - Bacon
 - Mackerel
- Does Sainsbury's scheme reflect contribution to the diet?
 - In snacks red awarded where products exceed 10% RI
 - but product categorised as part meals containing 3% to 30% RI coded red. This is due:
 - use of consumption unit to determine contribution to RI (not a realistic portion size e.g. per mini pork pie where actual consumption portion might be higher).
 - However, some foods even at reasonable portion sizes e.g. two fat sausages, code red at 20% RI and some dessert cakes at 18% whereas the scheme was designed to highlight part meals contributing more than 25%.

Saturated fat

- 84 changes
- 65 less strictly categorised using Sainsbury's scheme (red to amber) because
 - Portion cap (amber red) for whole meals represents 38% RI in Sainsbury's scheme (7.6g) and 30% in FSA (6g)
 - Per 100g cut-off for amber red at 10g/100g for meal centres: 10g = 50% RI for Sat Fat, existing scheme 5g/100g= 25% of RI
- 19 more strictly categorised using Sainsbury's scheme (green to amber 10, amber to red 9)
 - Amber to red because of portion cut offs at amber for snacks (2.3g) and meal centres (5.8g) (FSA 6g)
 - Green to Amber because of portion caps for green in part meals (2.3g) and whole meals (4g) (FSA 6g)
- Does Sainsbury's scheme represent contribution to the diet?
 - Portion size concerns – products with high levels of saturated fat but assessed based on consumption unit coding amber. e.g. one sausage, one rasher bacon. One thick sausage codes amber (24% RI). Likely consumption 2 thick sausages (48%).
 - Coverage of meal parts category wide – ice-cream codes amber at 20% RI, soup (300ml) containing 14% RI codes amber, pate (40g) 18% RI.

Salt

- 16 more strictly coded by Sainsbury's scheme (4 green to amber, 12 amber to red) because of portion size caps in Sainsbury's scheme for green/amber and amber/red.
- Affects mainly soups and ready prepared meal centres in the sample selected
- Colour coding for these products more accurately represents contribution to the diet using Sainsbury's scheme.

FSA	Sains code	Sains	%RI
	P/meal		29
	P/meal		28
	P/meal		28
	P/meal		27
	P/meal		27
	P/meal		26
	Snack		13

Sugar



- No differences found between schemes based on coding for total sugar.

We then looked in more detail at some specific food groups raised with us during the consultation and compared the existing schemes colour classification to the Sainsbury's scheme .

Cheese

- Cheese (standard matchbox 30g portion size used): sample size 4,097

Proportion of Products which Differ Under each Scheme by Direction of change

EXISTING TO SAINSBURY'S	Sugar Criteria	Fat Criteria	Saturates Criteria	Salt Criteria
GREEN TO RED	0%	0%	0%	0%
GREEN TO AMBER	0%	0%	0%	0%
AMBER TO GREEN	0%	0%	0%	0%
AMBER TO RED	0%	5%	0%	0%
RED TO GREEN	0%	0%	0%	0%
RED TO AMBER	0%	0%	7%	0%

Existing fat cut-off 20g/100g (29% RI); Sainsbury's 16g/100g (23%RI)

Existing sat. fat cut-off 5.0g/100g (25% RI); Sainsbury's 10g/100g (50% RI)

Types of cheese most affected

<u>Type of cheese:</u>	<u>Fat:</u> No. Amber – Red	<u>Sat fat:</u> No. Red to Amber	Total No. of each type of cheese
Cheddar	3	34	1627
Edam	0	4	75
Mozzarella	45	11	92
Processed Cheese Slices	10	13	64
Processed Cheese Snacks	0	23	66
Processed Cheese Spreads	19	19	78
Soft White Cheese	95	149	243

Cut-offs to define 30% reduced fat cheeses

- Sainsbury's scheme differentiates between 50% reduced fat cheddars and other lower fat cheeses.
- to differentiate 30% reduced fat cheeses:
 - amber/red cut-off needs to be set at around 22g/100g for fat (range 13.9 – 23 for fat levels in healthier cheeses as declared on label but median at around 21.8)
 - around 13.6g/100g sat fat (range 9.9 – 14.9 but a good number of products at 13.6g – those at 9.9 tend to be the half-fat cheeses)
- A 30g matchbox piece of cheese would code amber until it provides more than 9% of an adult's RI for fat and 20.4% of the RI for sat fat.
 - 30g – is a small portion size (FSA portion size project 75th percentile for men 55g and for women 44g and median for both at 40g)
 - At a portion size of 55g a portion would contribute up to 37% of RI for sat. fat before coding red, 17% of RI for fat and 17% of RI for salt

Fats and Spreads

- Butters and spreads (portion size 10g; sample size 363)

Proportion of Products which Differ Under each Scheme by Direction of change

EXISTING TO SAINSBURYS	Sugar Criteria	Fat Criteria	Saturates Criteria	Salt Criteria
GREEN TO RED	0%	0%	0%	0%
GREEN TO AMBER	0%	0%	0%	0%
AMBER TO GREEN	0%	0%	0%	0%
AMBER TO RED	0%	0%	0%	0%
RED TO GREEN	0%	0%	0%	0%
RED TO AMBER	0%	13%	46%	0%

Existing fat cut-off 20g/ml100g (29% RI); Sainsbury's 50g/ml100g (71%RI)
 Existing sat. fat cut-off 5.0g/ml100g (25% RI); Sainsbury's 20g/ml/100g (50% RI)

Types of fats and spreads affected

Proportion of Products which Differ Under each Scheme

Subcategory	Sugar	Fat	Saturates	Salt	Total Products
Dairy Spread	0%	5%	66%	0%	41
Liquid Margarine	0%	0%	100%	0%	1
Non Pufa Low Fat Spread	0%	71%	88%	0%	49
Other Soft Margarine	0%	14%	77%	0%	22
P.U.F.A Soya Marg/Spread	0%	17%	100%	0%	6
Packet Margarine	0%	0%	29%	0%	7
Pufa/Mufa Margarine/Sprd	0%	8%	97%	0%	59
Slightly Salted	0%	0%	8%	0%	38
Standard	0%	0%	6%	0%	100
Unsalted	0%	0%	13%	0%	40
Grand Total	0%	13%	46%	0%	363

Butters and Spreads



- The cut-offs designed by Sainsbury's reasonably identify healthier lower fat spreads.
- A 10g portion provides up to 5g of fat (7% RI) and up to 2g Saturates (10% RI) before coding red.

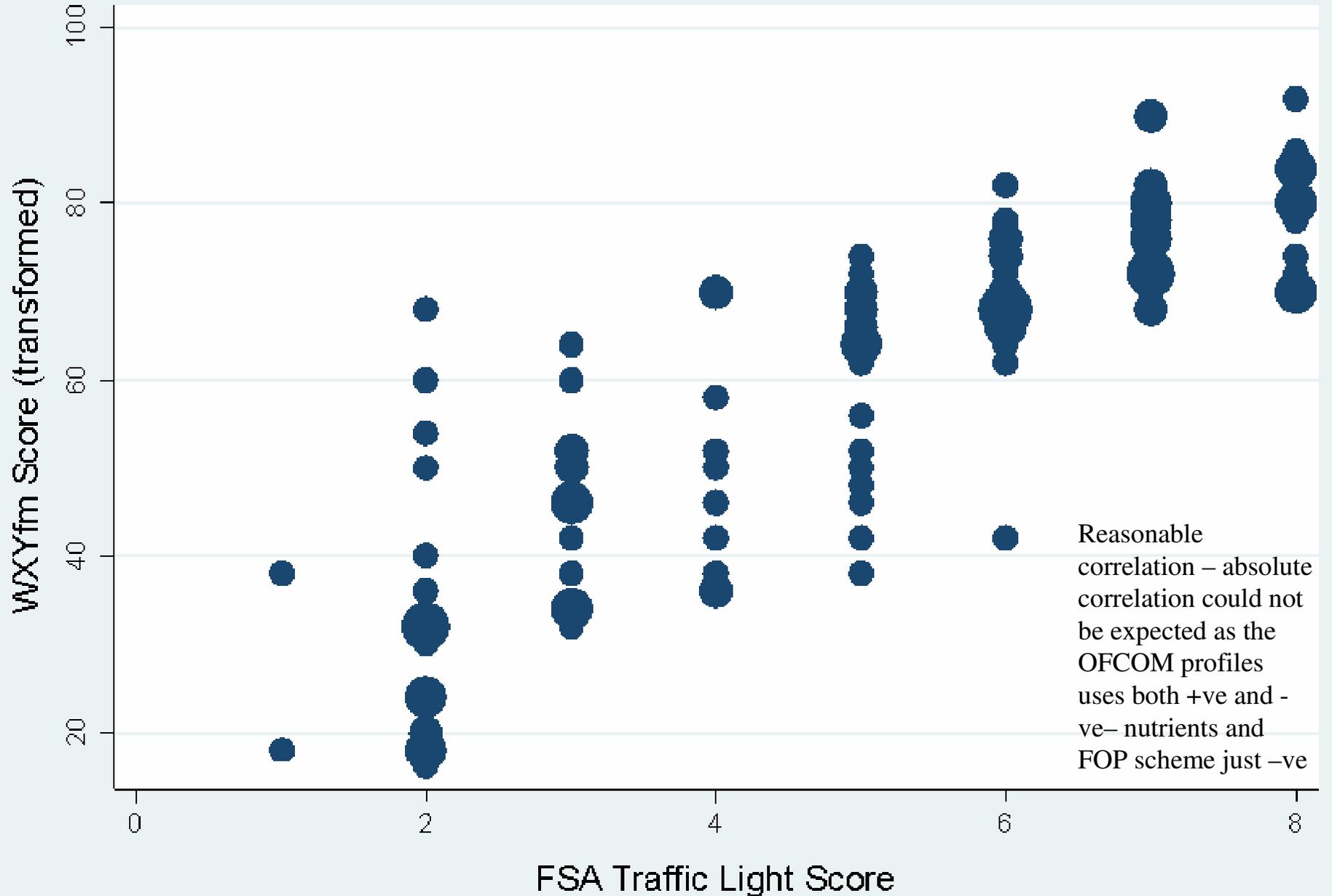
We also looked at table
sauces – there was no
difference in classification
between schemes.

Agreement with OFCOM Model

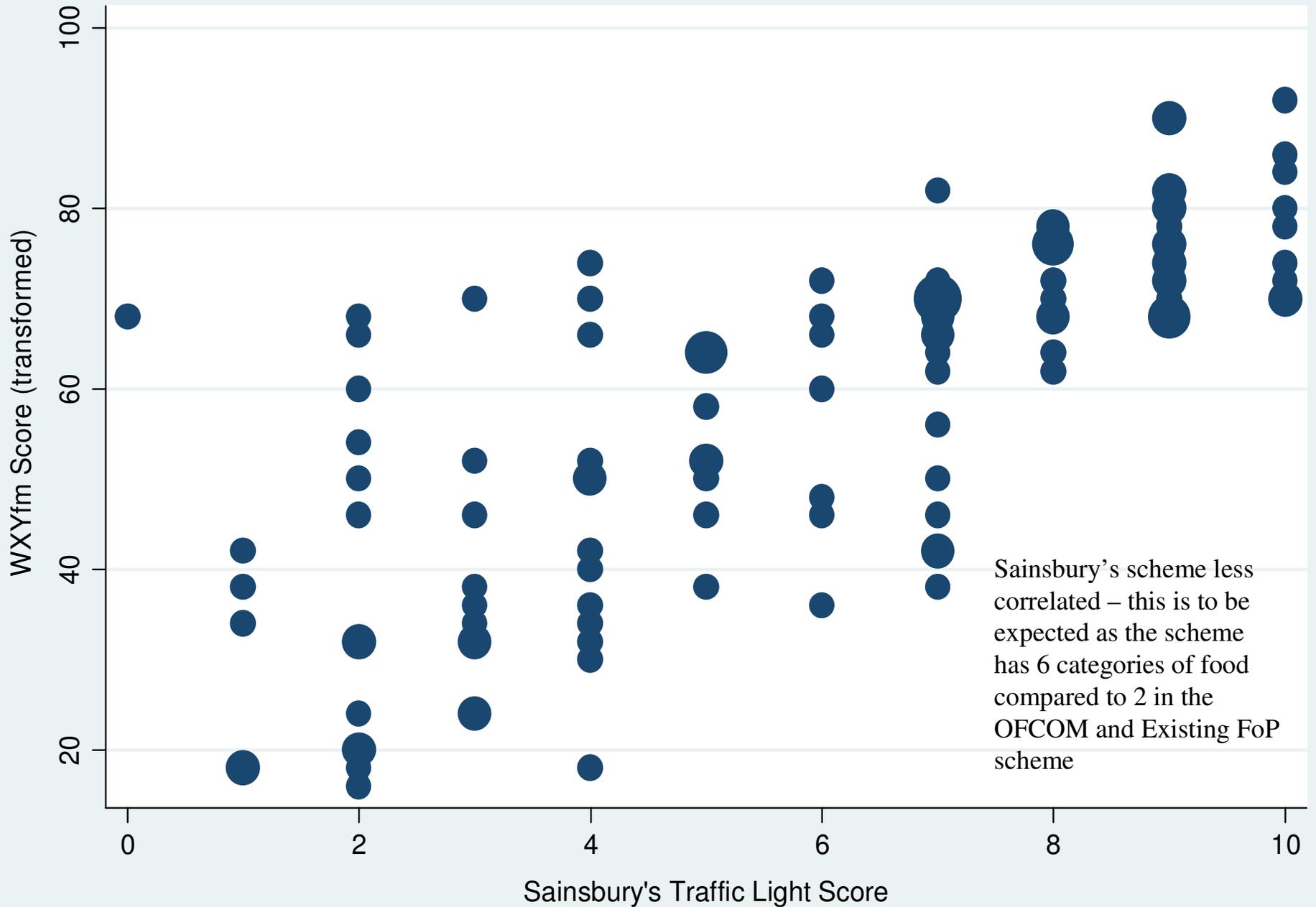


- Colour codes were converted to scores based on the following:
 - Green = 0
 - Amber = 1
 - Red = 2
- These were compared to OFCOM scores for the foods.

Correlation between FSA Traffic Light Score and transformed WXYfm score



Correlation between Sainsbury's Traffic Light Score and WXYfm transformed score



Colour Coding Calories

- Good policy reasons to highlight energy content of food
- However:
 - Unlike the other nutrients there is little differentiation if you use the across the board cut-offs in the same way as the FSA scheme does for other nutrients. (low energy 40kcal/100g – 25% of RI = 500kcal.)
Most foods would code amber. Seeking to understand from Commission how much latitude we have to move green thresholds from the levels associated with ‘low energy claim’.
- Could look at an approach such as that used already by retailers based on place in the diet. For example, existing DH guidance on institutional catering breaks the day down as:
 - Breakfast 20% RI
 - Lunch and Dinner 30% of RI
 - 2 snacks of 10% RI each.
- However:
 - how to categorise foods, for example those making up parts of meals, condiments and fats and oils?

What would be meaningful and helpful to consumers?

The Sainsbury's approach is provided by way of example of a place in the diet approach to energy labelling

Sainsbury's Approach



Category	Green	Amber	Red
Complete Meals	≤ 450 kcal	450 – 660 kcal	>660 kcal
Meal components	≤ 200 kcal/100g AND per serve	250 – 400 kcal/100g AND 200 – 350 kcal/serve	> 400 kcal/100g >350 /serve
Starchy Carb. meal comp.	≤ 250 kcal/100g AND ≤ 200 kcal/serve	250 -400 kcal/100g AND 200 -400 kcal/serve	> 400 kcal/100g >350 /serve
Snacks	≤ 400 kcal/100g AND 100 kcal/serve	400 – 500 kcal/100g AND 100-200kcal per serve	> 500 kcal/100g AND > 200 kcal per serve

Category	Green	Amber	Red
Drinks	<= 100kcal/100ml AND <= 100kcal/100ml	100 – 500 kcal/100ml AND 100-200 kcal per serve	>500kcal/100ml AND > 200kcal/serve
Fats	<= 100kcal/100g/ml	100-500 kcal/100g/ml	>500kcal/100g/ ml

Modelling approaches to Colour coding on our Kantar sample



Products	Sainsbury's		Ex1		Ex2		Ex3	
	n	%	n	%	n	%	n	%
Green	357	39%	82	9%	82	9%	114	12%
Amber	332	36%	756	82%	658	72%	724	79%
Red	230	25%	81	9%	179	19%	81	9%
Total	919	100%	919	100%	919	100%	919	100%

Possible limits	Ex 1 per 100g		Ex 1 per portion	
	kcal limits		kcal limits	
Food	40	500	n/a	670
Drink	100	500	n/a	n/a

Possible limits	Ex 2 per 100g		Ex 2 per portion	
	kcal limits		kcal limits	
Food	40	400	n/a	670
Drink	100	500	n/a	n/a

Possible limits	Ex 3 per 100g		Ex 3 per portion	
	kcal limits		kcal limits	
Food	60	500	n/a	670
Drink	100	500	n/a	n/a

Extra slides.

Foods contributing 4% and above total fat to the diet

Adults

- 6% Cheese
- 5% Fried potato products
- 5% Pizza, rice, pasta misc. cereal
- 5% Chicken and turkey dishes
- 4% Reduced fat spread (not poly)
- 4% Beef and veal Dishes
- 4% Egg and Egg dishes
- 4% Savoury sauces
- 4% Buns, cakes, pastries and fruit pies

Children (4-10)

- 6% Buns, cakes, pastries and fruit pies
- 6% Whole milk
- 6% Fried potato products
- 5% Pizza, pasta, rice, misc. cereal
- 5% Cheese
- 5% Biscuits
- 5% Savoury snacks
- 5% Reduced fat spread (not poly)
- 4% Sausages (some iron but could be got else where)
- 4% Chocolate Confectionery

Foods contributing 4% and above sat. fat to the diet (NDNS)



Adults

- 10% Cheese
- 5% Pizza, pasta, rice
- 5% Beef and veal dishes
- 5% Butter
- 4% Chocolate confectionery
- 4% Biscuits
- 4% Semi skimmed milk
- 4% Chicken and turkey dishes
- 4% Buns, cakes, pastries and fruit pies
- 4% Reduced fat spread (not poly)
- 4% Egg and egg dishes

Children 4 – 10

- 9% Whole milk
- 8% Cheese
- 6% Biscuits
- 6% Buns, cakes, pastries and fruit pies
- 6% Pizza, pasta, rice
- 5% Chocolate confectionery
- 5% Semi Skimmed Milk
- 4% Sausages
- 4% Butter
- 4% Ice – cream
- 4% Reduced fat spread (not poly)

Foods contributing 4% and above sodium to the diet (NDNS)



Adults

11% White bread
7% Bacon and ham
6% Pizza, pasta, rice
6% Veg. and veg. dishes not raw
5% Savoury sauces, condiments
etc.
5% Chicken and turkey dishes
4% Cheese
4% Sausages
4% Beef and veal dishes

Children (4-10)

11% White bread
8% Pizza, pasta, rice
6% Sausages
6% Veg. and veg. dishes not raw
5% Bacon and ham
4% Cheese
4% Savoury Snacks
4% Savoury sauces, condiments
etc.

Foods contributing 4% and above total sugar to the diet (NDNS)



Adults

- 9.4% Table sugar
- 8.7% Carbonated soft drinks (not low cal)
- 5.3% Chocolate confectionery
- 5.2% Fruit juice
- 5.1 % Bananas
- 4.9% Beers and lager
- 4.2 % Semi-skimmed Milk

NB data source work done for SACN carbohydrate review as NDNS only includes data on extrinsic sugars.

Children (4-10)

- 8.8 % Fruit juice
- 5.6% Sugar confectionery
- 5.4% Chocolate confectionery
- 4.8% Biscuits
- 4.8% Buns, cakes and pastries
- 4.6% Semi-skimmed milk
- 4.6 % Bananas
- 4.6 % Soft Drinks (not low cal.)
- 4.2 % Apples and pears (not canned)
- 4.1% Carbonated soft drinks (not low cal)