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Consumers' understanding and use of NRVs

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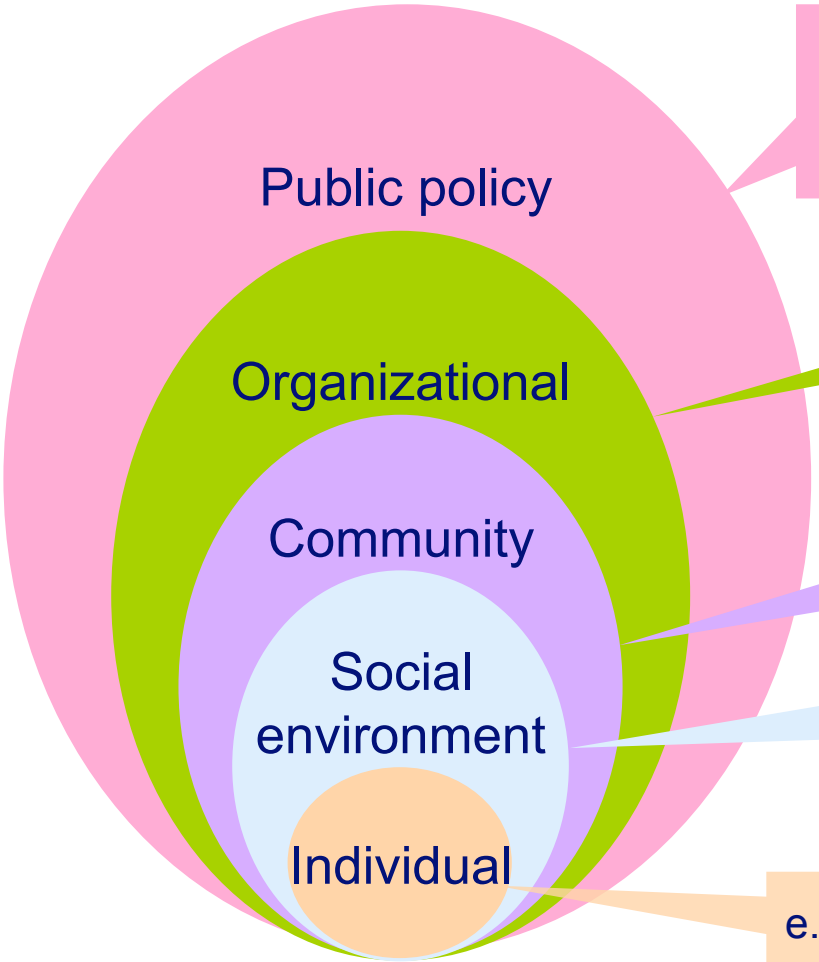
Influences on consumers



e.g. legislation, policies, taxes, and regulatory agencies, health system, social care system, political/ geographic environment

e.g. businesses, public agencies, churches, service organisations

e.g. community resources, neighbourhood organisations, social and health services, workplace

e.g. an individual's social networks, social supports, families, peers, friends, neighbours, health care providers

e.g. an individual's knowledge, skills, attitudes, values, preferences, emotions, values, behaviour

Renewed interest in behaviour change

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- Recognition that increasingly global problems require partnerships and local solutions
- Focus is increasingly on prevention rather than treatment
- Move from “state in control” to “state as facilitator” – where the state’s role is to manage multiple interests and perspectives in society

The state is in control

- Assumption about rational choice basis of behaviour
- State as expert and moral guide
- Instrumental policies
- Trust: Competence and legitimacy of regulation largely unchallenged
- e.g. BSE crisis

The state as facilitator

- Plural influences and modes of reasoning and behaving
- State as facilitator, mediator and co-creator
- Governance rather than government
- Increasing scientific uncertainty and scrutiny, distrust of science/ need for long-term solutions
- e.g. regulation of mobile phones risk

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The role of science in policy

Emphasis upon the role of experts (scientists, academics, professionals) in policy making (Jassanoff, 2003; Collingridge and Reeve, 1988)

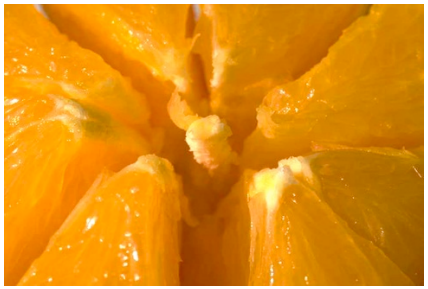
Cabinet Office, 1999 (Ch 2, para 6)
"The government expects more of policy makers. More new ideas, more willingness to question inherited ways of doing things, better use of evidence and research in policy making and better focus on policies that will deliver long term goals."

European Commission White Paper, 2001, pp19:
"…Scientific and other experts play an increasingly significant role in preparing and monitoring decisions. From human and animal health to social legislation, the institutions rely on specialist expertise to anticipate and identify the nature of problems and uncertainties that the Union faces, to take decisions and to ensure risks can be explained and simplified to the public."

Policy instrument types

- Social voluntary
  - Information, e.g. EatWell Plate
  - Public education campaign, e.g. 5 a day campaign, salt campaign
  - Labelling, e.g. front of pack and back of pack labelling
  - Advisory service, e.g. personalised advice from a GP or website
  - Representation service, e.g. Ombudsman

- Economic
  - Taxation, e.g. “fat tax”
  - Charges
  - Subsidies and vouchers, e.g. subsidized school lunches
  - Tax credits, e.g. Child Tax Credit
  - Benefits and grants, e.g. carbon emission tracking (a food security issue)
  - Tradable permit quotas, e.g. fish quotas
  - Award auctioning of franchises and licences, *e.g. mobile phones*
  - Government loans, loan guarantees and insurance, *e.g. student loans*



Policy instrument types

- Regulation and legislation
  - Price and market structure regulation, e.g. market monopoly regulation
  - Production and consumption regulation, e.g. licensing laws
  - Standard setting regulation, e.g. nutrient standards for school lunches
  - Prescription and prohibition legislation, e.g. banning of soft drinks machines in schools
  - Rights and representation legislation, e.g. human rights issues (a food security issue)
- Self regulation
  - Voluntary agreement, e.g. Voluntary reduction of salt
  - Codes of practice, e.g. Health Food Code of Practice
  - Co-regulation, e.g. Intervention short of legislation
- Intervention, short of legislation
  - Goal setting, e.g. salt reduction targets for industry
  - Provide infrastructure, e.g. Local Area Agreements (set out the priorities for a local area agreed between central government and a local area (the local authority and Local Strategic Partnership) and other key partners at the local level), e.g. Urban Development for Health

Nutrient Reference Values (NRVs)

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- These values may be used for helping consumers
  1) estimate the relative contribution of individual products to overall healthful dietary intake and
  2) as one way to compare the nutrient content between products.
- Governments
  - are encouraged to use the NRVs
  - may establish nutrient reference values for food labelling that take into account country or region specific factors that affect nutrient absorption, or utilization, or requirements
  - may also consider whether to establish separate food labelling reference values for specific segments of the general population such as pregnant and lactating women

CODEX Guidelines on Nutrition Labelling 2011

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Back of pack nutrition labels

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Nutrition facts/Valeur nutritive
Serving 1¼ cup (30 g) / Portion de 1¼ tasse (30 g)

Amount per serving / Teneur par portion	Cereal / Céréales	With 1/2 Cup 2 % Milk / Avec 1/2 tasse de lait 2 %
Calories / Calories	110	180
	% Daily Value / % valeur quotidienne	
Fat / Lipides 0 g†	0 %	4 %
Saturates / saturés 0 g + Trans / trans 0 g	0 %	8 %
Cholesterol / Cholestérol 0 mg	0 %	3 %
Sodium / Sodium 220 mg	9 %	12 %
Potassium / Potassium 30 mg	1 %	7 %
Carbohydrate / Glucides 26 g	9 %	11 %
Fibre / Fibres 1 g	4 %	4 %
Sugars / Sucres 2 g		
Starch / Amidon 23 g		
Protein / Protéines 2 g		
Vitamin A / Vitamine A	0 %	8 %
Vitamin C / Vitamine C	0 %	0 %
Calcium / Calcium	0 %	15 %
Iron / Fer	30 %	30 %
Vitamin D / Vitamine D	0 %	25 %
Thiamin / Thiamine	45 %	50 %
Riboflavin / Riboflavine	50 %	60 %
Niacin / Niacine	8 %	15 %
Vitamin B_6 / Vitamine B_6	10 %	15 %
Folate / Folate	8 %	10 %
Vitamin B_{12} / Vitamine B_{12}	0 %	25 %
Pantothenate / Pantothénate	6 %	15 %
Phosphorus / Phosphore	2 %	10 %
Magnesium / Magnésium	0 %	8 %
Zinc / Zinc	0 %	6 %

† Amount in cereal / Dans les céréales.

INGREDIENTS: FLAKED MILLED CORN, SUGAR/GLUCOSE-FRUCTOSE, MALT (CORNFLOUR, MALTED BARLEY), SALT, NATURAL COLOUR, VITAMINS (THIAMIN HYDROCHLORIDE, NIACINAMIDE, PYRIDOXINE HYDROCHLORIDE, FOLIC ACID, d-CALCIUM PANTOTHENATE), IRON, BHT ADDED TO PACKAGE MATERIAL TO MAINTAIN PRODUCT FRESHNESS. CONTAINS TRACES OF SOYBEANS.

INGRÉDIENTS : MAÏS MOULU EN FLOCONS, SUCRE/GLUCOSE-FRUCTOSE, MALT (FARINE DE MAÏS, ORGE MALTÉE), SEL, COLORANT NATUREL, VITAMINES (CHLORHYDRATE DE THIAMINE, NIACINAMIDE, CHLORHYDRATE DE PYRIDOXINE, ACIDE FOLIQUE, d-PANTOTHÉNATE DE CALCIUM), FER, POUR CONSERVER LA FRAÎCHEUR DU PRODUIT, DU BHT A ÉTÉ AJOUTÉ AU MATÉRIEL D'EMBALLAGE. CONTIENT DES TRACES DE SOYA.

NUTRITION INFORMATION

Servings per package: 3
Serving size: 150 g

	Quantity per serving	Quantity per 100 g
Energy	608 kJ	405 kJ
Protein	4.2 g	2.8 g
Fat, total	7.4 g	4.9 g
– saturated	4.5 g	3.0 g
Carbohydrate, total	18.6 g	12.4 g
– sugars	18.6 g	12.4 g
Sodium	90 mg	60 mg
Calcium	300 mg (38 %)*	200 mg

* Percentage of recommended dietry intake

Ingredients: Whole milk, concentrated skim milk sugar, strawberries (9 %), gelatine, culture, thickener (1442).

Nutrition information
Typical values per 100 g

Energy	245 kJ/58 kcal
Protein	4.6 g
Carbohydrate	7.2 g
of which sugars	6.5 g
Fat	1.2 g
of which saturates	0.2 g
Fibre	0.2 g
Sodium	0.1 g

Nutrition facts

Serving size 1/2 cup dry (40 g)
Servings per container: 13

Amount per serving

Calories 150 — Calories from Fat 25

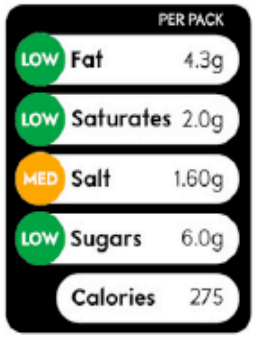
	% Daily value*
Total Fat 3 g	4 %
Saturated Fat 0·5 g	2 %
Trans Fat 0 g	0 %
Cholesterol 0 mg	0 %
Sodium 0 mg	0 %
Total Carbohydrate 27 g	9 %
Dietary Fiber 4 g	15 %
Sugars 1 g	
Protein 5 g	
Vitamin A	0 %
Vitamin C	0 %
Calcium	0 %
Iron	10 %

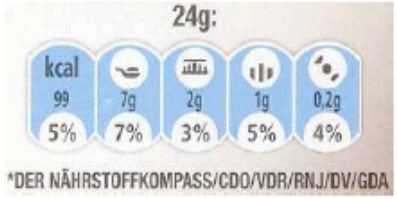
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

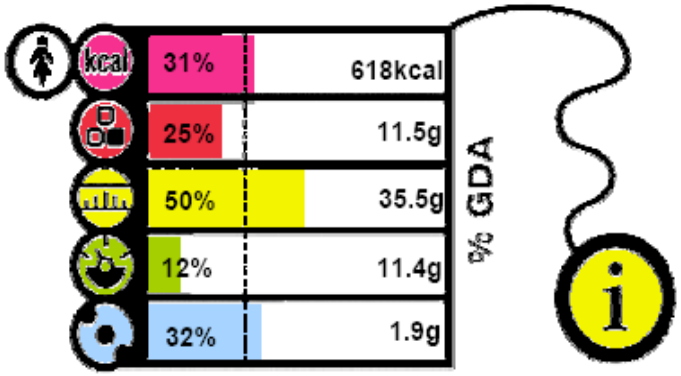
	Calories:	2,000	2,500
Total Fat	Less than	65 g	80 g
Sat Fat	Less than	20 g	25 g
Cholesterol	Less than	300 mg	300 mg
Sodium	Less than	2,400 mg	2,400 mg
Total Carbohydrate		300 g	375 g
Dietary Fiber		25 g	30 g

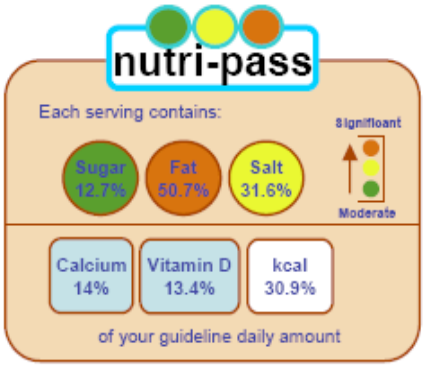
Nutrition labels in Europe

Nutrition information		
Typical values (Cooked as per instructions)	**Per 100g**	**Per pack**
Energy	610 kJ **146 kcal**	2580 kJ **618 kcal**
Protein	**4.8g**	**20.3g**
Carbohydrates of which **sugars** of which **starch**	**12.8g** **2.7g** 10.1g	**54.1g** **11.4g** 42.7g
Fat of which **saturates** mono-unsaturates polyunsaturates	**8.4g** **3.8g** 3.5g 1.1g	**35.5g** **16.1g** 14.8g 4.7g
Fibre	**2.0g**	**8.5g**
Salt of which sodium	**0.5g** 0.2g	**1.9g** 0.8g





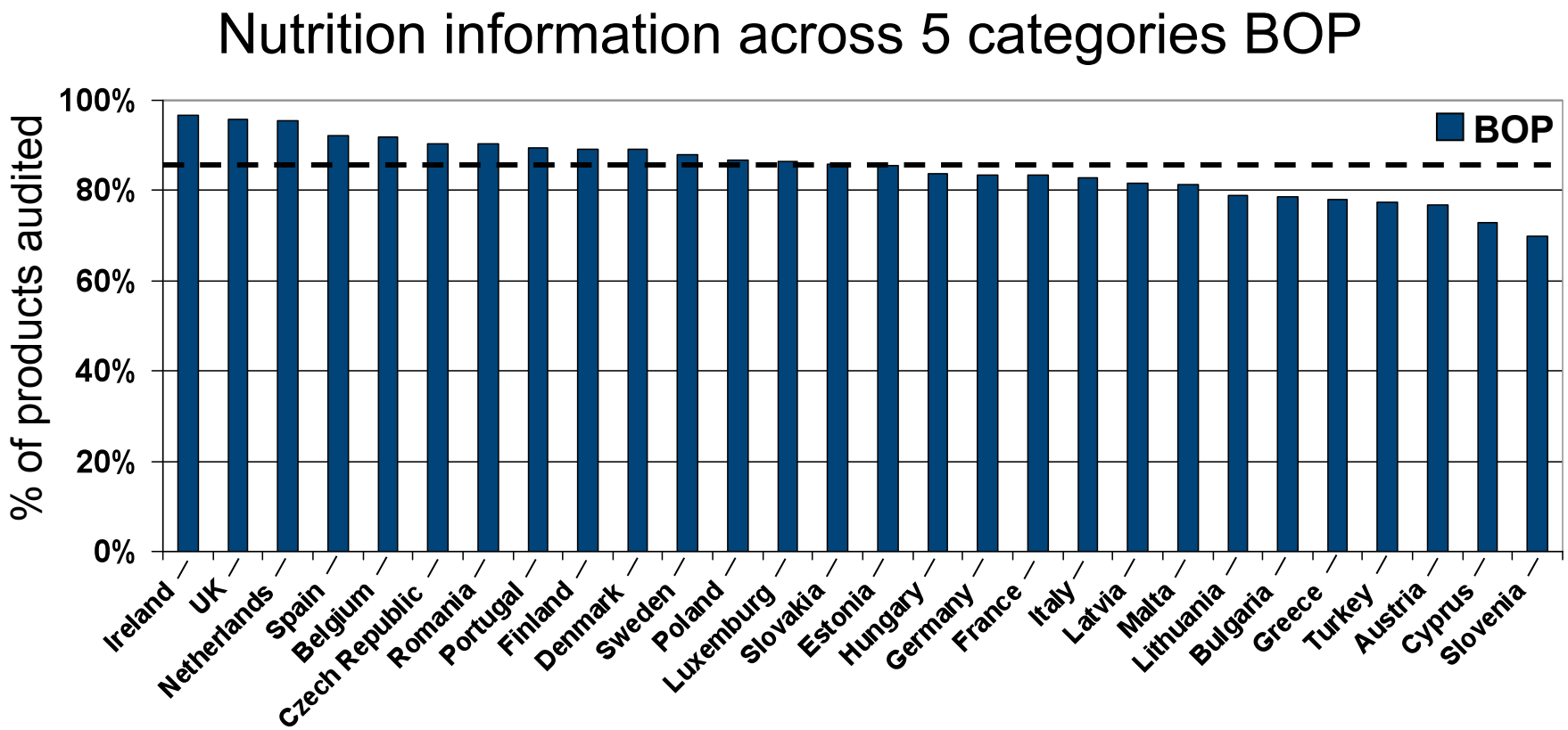




Methods

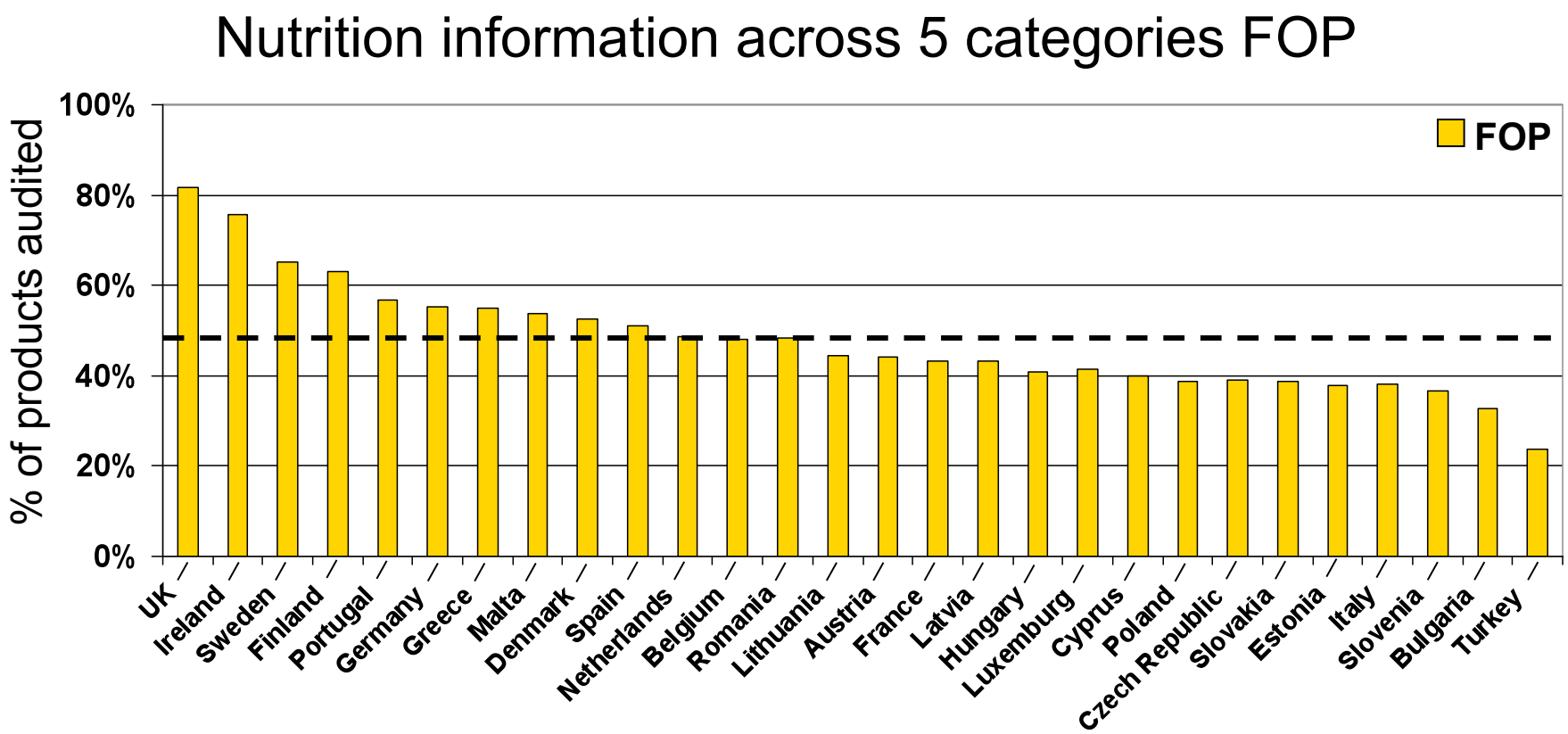
- 27 EU countries plus Turkey
- 3 retailers per country
  - Top 5, consumer cooperative/national, discounter
- Physical audit of all products in 5 product categories defined by consortium
  - **sweet biscuits (249-788 products)**
  - **breakfast cereals (97-416 products)**
  - **pre-packed fresh ready meals (0-293 products)**
  - **carbonated soft drinks (124-348 products)**
  - **yoghurts (161-667 products)**

Results – Nutrition information



- **85%** average penetration of **BOP** nutrition information of any kind

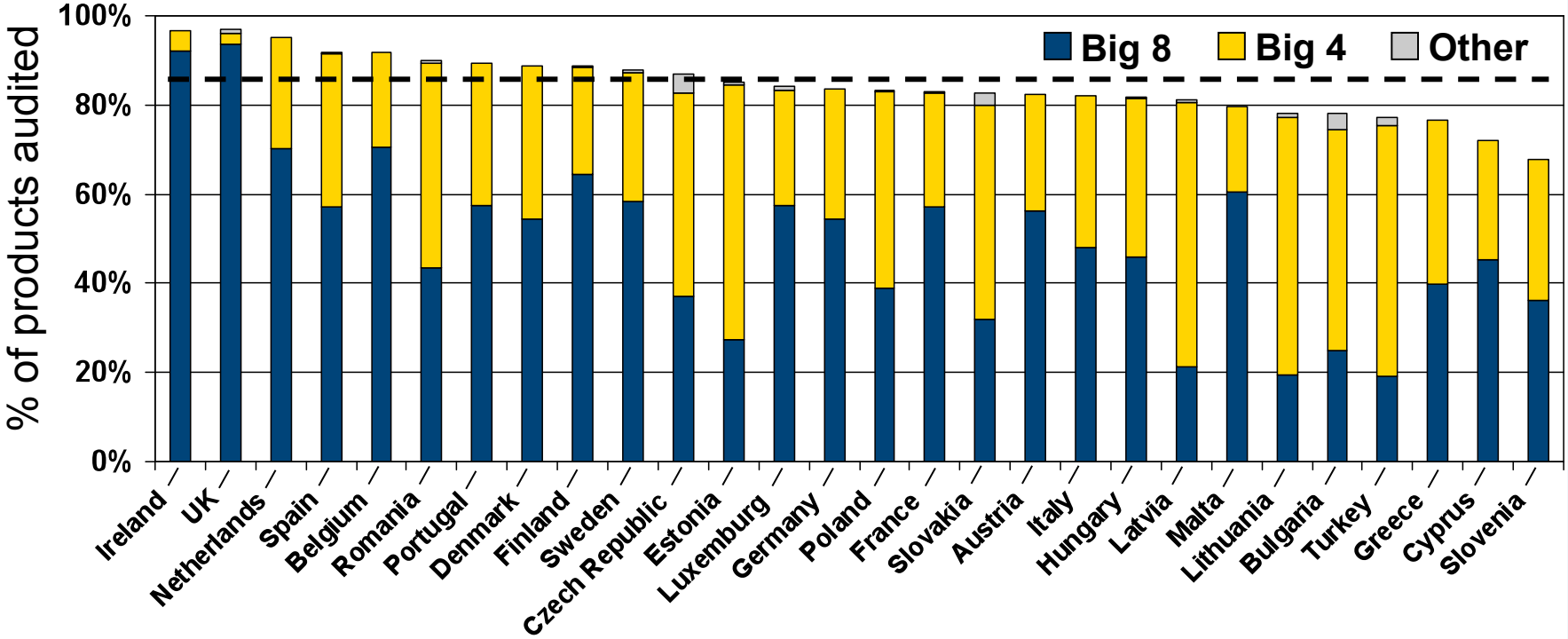
Results – Nutrition information



- **48%** average penetration of **FOP** nutrition information of any kind

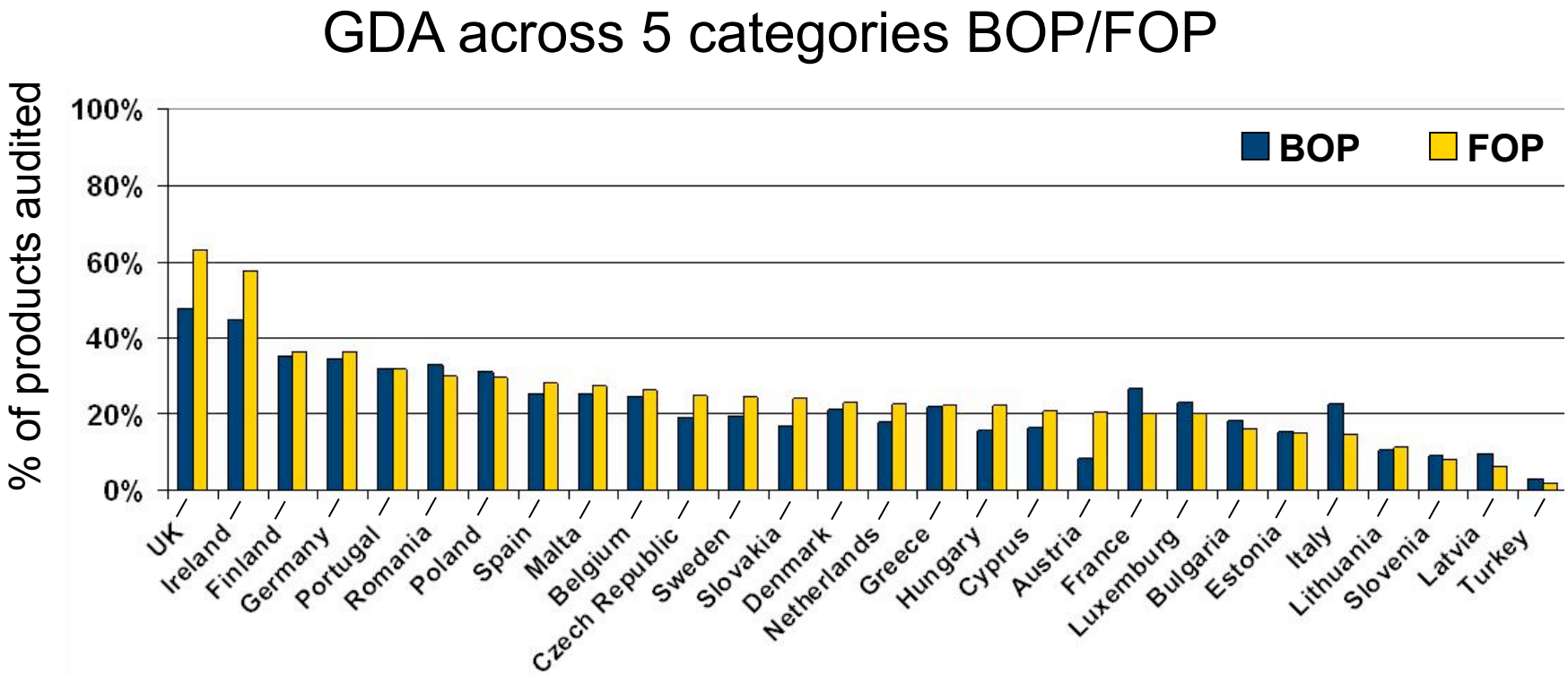
Results – Nutrition info tabular/linear

Tabular/linear nutrition information across 5 categories BOP



- **84%** average penetration of **BOP** tabular/linear nutrition info (big 4, big 8)

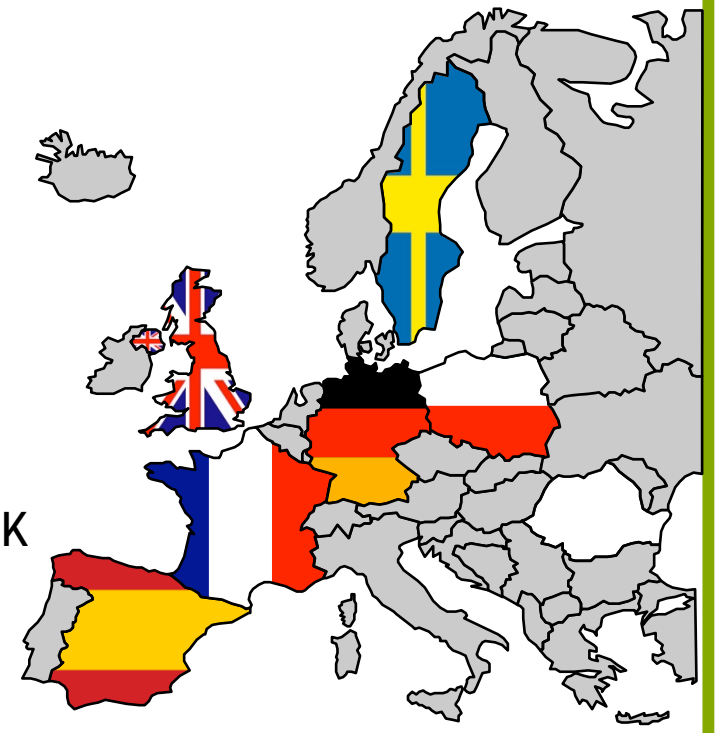
Results – Guideline Daily Amounts (GDA)



- **23%** average penetration of **BOP** GDA labelling (range: 3-48%)
- **25%** average penetration of **FOP** GDA labelling (range: 2-63%)

Research methods

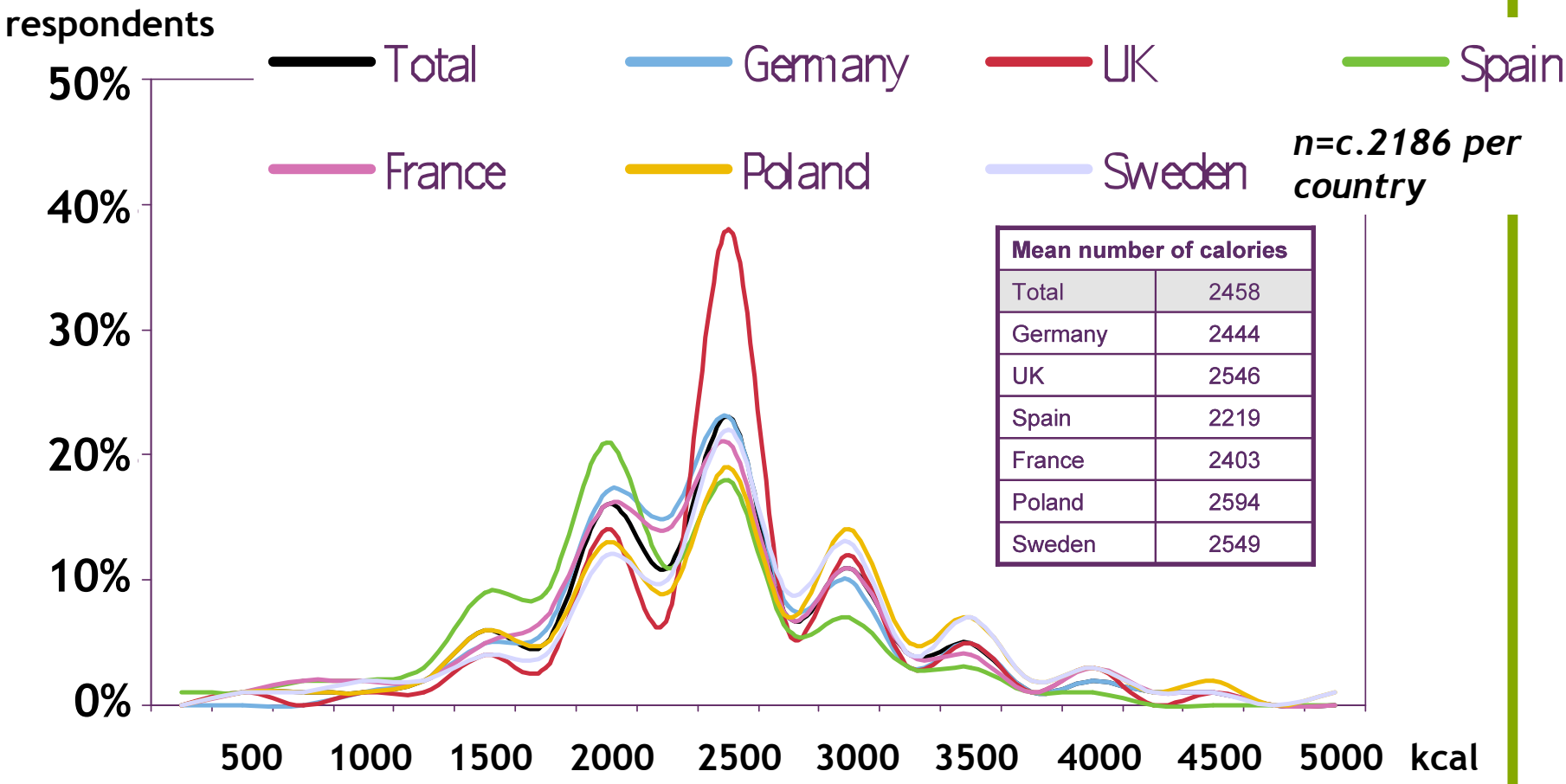
- Representative sample (n = 13,117) in six countries:
  - France (n=2,209)
  - Germany (n=2,171)
  - Poland (n=2,169)
  - Spain (n=2,206)
  - Sweden (n=2,207)
  - UK (n=2,155)
- Approximately equal numbers of men and women aged 18-65
- UK pilot study (n=200) in early July 2010
- Main research July and August 2010 in the UK and in September 2010 in other countries
- Online data collection, most efficient route within a reasonable timescale
- Market Research Agency: MMR Research Worldwide



How many calories per day do you think an active adult needs?

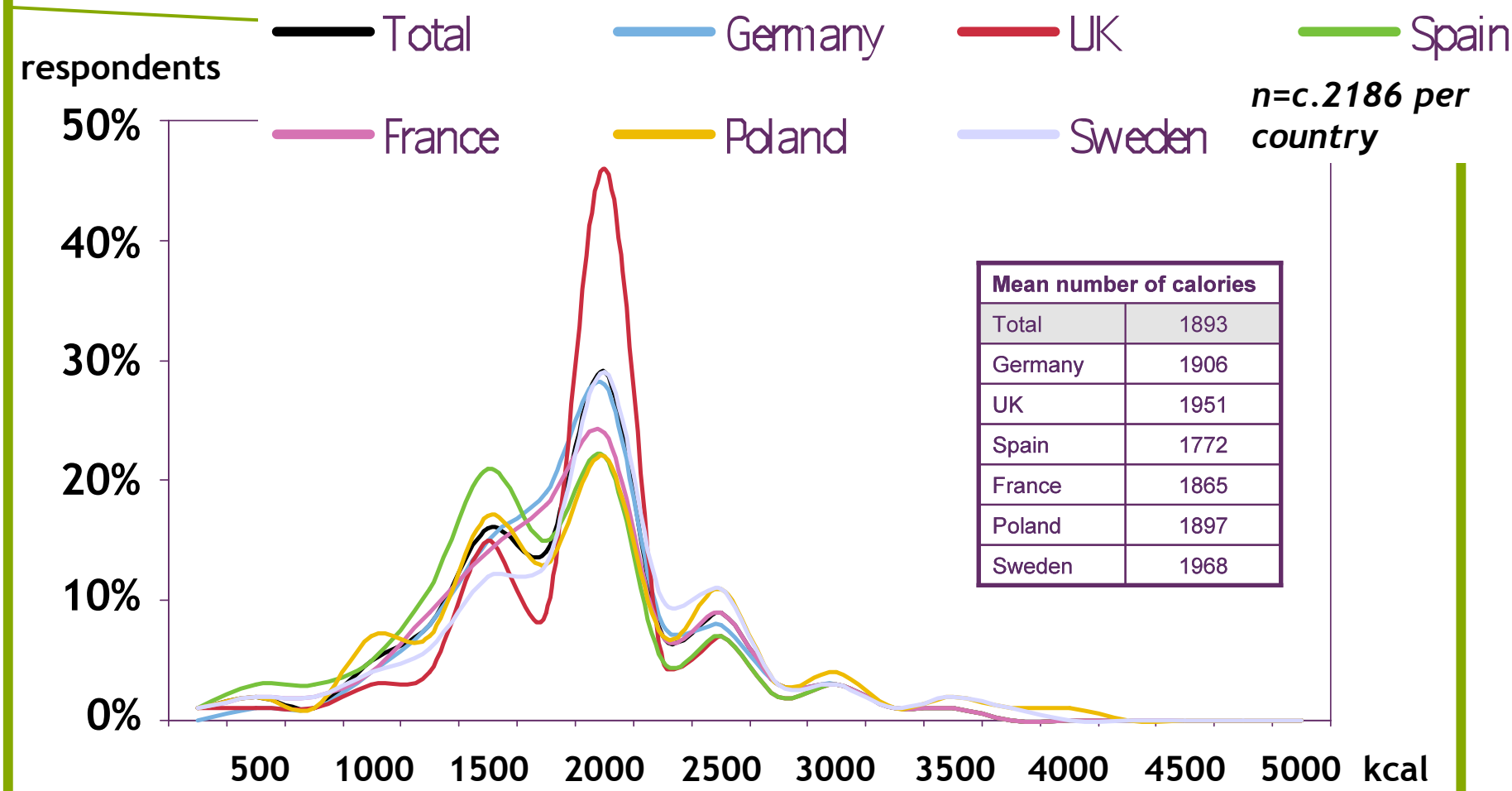
Slider scale, 250 kcal increments, both genders same screen

How many calories per day do you think an average active adult man needs?



Mean number of calories	
Total	2458
Germany	2444
UK	2546
Spain	2219
France	2403
Poland	2594
Sweden	2549

How many calories per day do you think an average active adult woman needs?



Mean number of calories	
Total	1893
Germany	1906
UK	1951
Spain	1772
France	1865
Poland	1897
Sweden	1968

Background

- From a consumer perspective, nutrition labelling provides a means of reducing the information asymmetry that exists between producers and consumers by providing product specific information. From a producer or retailer perspective, it provides a means of exhibiting positive nutritional characteristics of products in a credible way.

- Despite an abundance of research in this area, as detailed in two comprehensive reviews (Cowburn & Stockley, 2005; Grunert & Wills, 2007), no consensus as to the optimal labelling systems

- Testing generally suggests that under experimental conditions the vast majority of participants can successfully identify more healthful products using any of the prominent labelling formats (e.g. Malam et al, 2009).

Qualitative laddering

Specific objective

To investigate how health is articulated from signpost labels and the extent to which different labeling formats can encourage healthier choices.

Participants

N=60 in the UK, three groups of 20 participants

- Group 1: Parents of children (3-12yrs) aged between 25-55 yrs
- Group 2: 55+ yrs
- Group 3: Teenagers 14-17yrs (must buy some of their own food)

Procedure

- Laddering interviews, lasting approximately 1 hour.
- Each participant sees 8 cards. Each card displays a different labelling system across a range of 3 products within one of the two food categories included in the study (Category 1 = Biscuits, Category 2= Pizzas).
- The researcher then elicits the relevant attributes of the FOP formats participants rate as most and least useful and use these attributes to establish ladders to the higher level constructs that guide these preferences.
- These emerging constructs are then be subjected to hierarchical value mapping and qualitative analysis.

Systems used

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g

Each 200g portion (half of the pizza) contains

	LOW	MED	MED	MED
Calories 430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

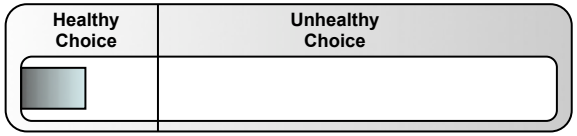
Each 200g portion (half of the pizza) contains

Calories	LOW	MED	MED	MED
430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g

Each 200g portion (1/2 pizza) contains

Calories	430	22%
Sugar	9.4g	10%
Fat	8.8g	13%
Sat Fat	4.0g	20%
Salt	2.0g	33%

of your guideline daily amount



Systems used – number of information elements

6

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g

11

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

14

Each 200g portion (half of the pizza) contains

Calories	LOW	MED	MED	MED
430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g

1

19

Each 200g portion (half of the pizza) contains

	LOW	MED	MED	MED
Calories 430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

2

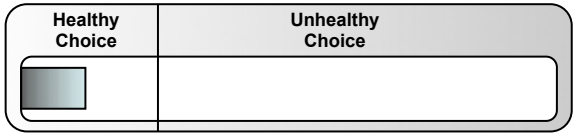
16

Each 200g portion (1/2 pizza) contains

Calories	430	22%
Sugar	9.4g	10%
Fat	8.8g	13%
Sat Fat	4.0g	20%
Salt	2.0g	33%

of your guideline daily amount

3



Systems used – directive at food level

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g

Each 200g portion (half of the pizza) contains

	LOW	MED	MED	MED
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430	9.4g	8.8g	4.0g	2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

Nutri-scale 2

Less than 4 is a healthy choice

Each 200g portion (half of the pizza) contains

	LOW	MED	MED	MED
Calories 430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g

Each 200g portion (1/2 pizza) contains

Calories	430	22%
Sugar	9.4g	10%
Fat	8.8g	13%
Sat Fat	4.0g	20%
Salt	2.0g	33%

of your guideline daily amount

Healthy Choice

Healthy Choice	Unhealthy Choice

Systems used – partially directive at food level and directive at nutrient level

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

Each 200g portion (half of the pizza) contains

Calories	LOW	MED	MED	MED
430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g

Each 200g portion (half of the pizza) contains

	LOW	MED	MED	MED
Calories 430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

Each 200g portion (1/2 pizza) contains

Calories	430	22%
Sugar	9.4g	10%
Fat	8.8g	13%
Sat Fat	4.0g	20%
Salt	2.0g	33%

of your guideline daily amount

Healthy Choice	Unhealthy Choice

Systems used – directive at nutrient level at a daily diet level

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
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22%	10%	13%	20%	33%

of your guideline daily amount

Each 200g portion (half of the pizza) contains

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of your guideline daily amount

Less than 4 is a healthy choice

Nutri-scale

2

Each 200g portion (1/2 pizza) contains

Calories	430	22%
Sugar	9.4g	10%
Fat	8.8g	13%
Sat Fat	4.0g	20%
Salt	2.0g	33%

of your guideline daily amount

Healthy Choice

Healthy Choice

Unhealthy Choice

Non directive at food & nutrient level

Each 200g portion (half of the pizza) contains

Calories	Sugar	Fat	Sat Fat	Salt
430	9.4g	8.8g	4.0g	2.0g

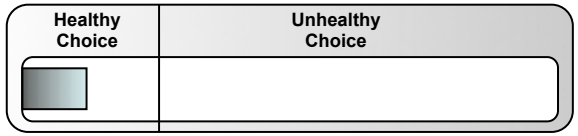
It says what they are but them numbers mean nothing to me apart from the calories, because I know how many calories I'm allowed in a day. Apart from that the rest of it just doesn't mean anything. So that's really bad. (14-17 year old)

I don't think that this system is very good because it's just giving you the data ... most people are not going to understand the relevance of 1.4g of salt ... (14-17 year old)

Nutritionally-wise I'm not qualified enough to say is that one better for them or is that one better. (Parent)

Leaving it up to them to decide whether it's healthy or not, I think, for young people can be mind-boggling. (14-17 year old)

Directive at food level



I hate these, I think they're ridiculous because who are you to tell me what's healthy or not? You're always trying to sell me something! (Parent)

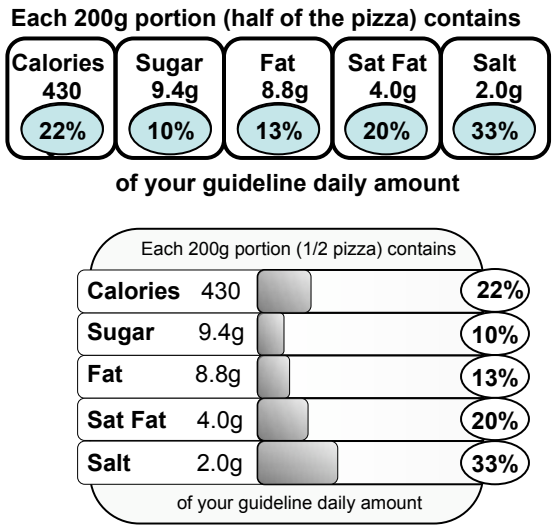
If you haven't seen one with a healthy sticker on it you wouldn't really know that there wasn't a sticker on it. (14-17 year old)

That's somebody else's choice. So in a way I can't make a choice, either I take it or I don't. And I probably wouldn't be happy with that. (Over 55)

It doesn't give you anything to compare. If you're on a diet you're either counting fat or you're counting calories, it doesn't give you any of that. I think people are more intelligent than this, actually. I think it insults people's intelligence. (Parent)

I don't want someone to hold my hand when I shop . . . I just, like most people, want the guidelines there to give me that basic information so I can choose. (Over 55)

Non directive at food level and directive at daily diet level for nutrients



I'm not sure it's healthy to become obsessed by how much of a percentage you're having with each meal of each different thing. (Over 55)

There's the numbers on this side and the numbers on that side and the bars going across, and it's just like "Uuuuurg!" [expression of panic] It's a lot like maths! And maths isn't what you want to do when you shop. (14-17 year old)

If it's, like, 13% you might not know if that's good or that's bad or whatever. (14-17 year old)

They're all the same colour and they're all in the same circle thing and everything, so you just kind of think of them as similar." (14-17 year old)

Partially directive at food level, directive at nutrient level and directive at daily diet level for nutrients

Each 200g portion (half of the pizza) contains

	LOW	MED	MED	MED
Calories 430	Sugar 9.4g	Fat 8.8g	Sat Fat 4.0g	Salt 2.0g
22%	10%	13%	20%	33%

of your guideline daily amount

Although there is a lot of information there it is quite clear, and it's quite easy to look at quite quickly and just pick out certain things. (Parent)

You may think these two [pizzas] are much of a muchness because they've got three reds apiece. But then you look at the saturated fat and you're sort of being conned inasumuch as one's 32% and the other's 93%, so you can't totally rely on the colour system. (14-17 year old)

If I looked at this and saw "20%", like, it's quite high, but it wouldn't come up in my mind as being really high. But on that it would maybe make me think twice because that's red. (14-17 year old).

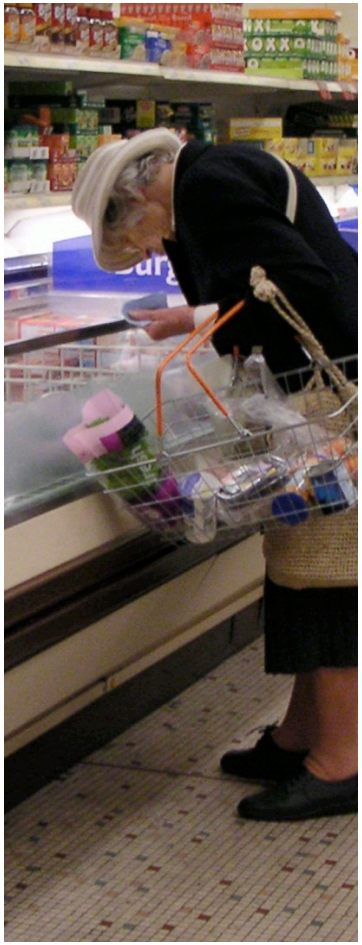
You feel like you've walked away with a lot more information. (Parent)

Conclusions

- The relationship between gross amount of information presented and label perceived use is mediated by the type of directiveness used and by what participants this implies about them.

- Participants suggested they could decrease the cognitive workload of an ostensibly complex system by initially only engaging with the traffic light colours.

- Participants were unlikely to engage with non-directive systems because these were slow to use and difficult to understand, offering objective information but no tools for use; thus suggesting an erosion self-efficacy and decreased likelihood of use in future, particularly less experienced shoppers.



Conclusions

- Nutrient-level directive systems gave both information and tools for meaningful engagement, increasing self-efficacy and perceived ability to use labels effectively.

- Food-level directive systems sacrificed all else for speed and ease of use, reducing decision-making rather than empowering the making of informed choices. This is consistent with Judgeability Theory, which implies that although simple cues might be easier to interpret, decision-makers like to think they are making rational choices based on credible information.

Current projects

SIXTH FRAMEWORK PROGRAMME	European Micronutrient Recommendations Aligned	eurreca
SEVENTH FRAMEWORK PROGRAMME	Food Labelling to Advance Better Education for Life	flabel
	Food Risk Communication - Perceptions and communication of food risks/benefits across Europe: development of effective communication strategies	foodRisC BENEFIT & RISK COMMUNICATION
	The Effect of Diet on the Mental Performance of Children	NutriMENTHE
	Plant food supplements: Levels of intake, benefit and risk assessment	PlantLIBRA EC project number 245199
	Inclusive research programming for sustainable food innovations	Inprofood
EUFIC	Consumer Research on how Consumers Interpret and use Portion Information on Food and Drink Packaging	
safefood	Good Days and Bad Days" An Investigation of the Habits of Shoppers When They Do or Don't Buy Healthy Foods	