Potential for the reformulation of pre-packaged snack foods:

Survey of children's school lunches and a food industry perspective

THE UNIVERSITY OF AUCKLAND
FACULTY OF MEDICAL AND HEALTH SCIENCES

Principal researcher: Tamsyn Elder
Supervisors: Dr Chris Bullen
Dr Jennifer Utter

Background

Childhood obesity

2002 CNS (5-14 years) - 21.3% Obese
9.8% Overweight

2006/2007 NZHS (2-14 years) - 20.9% Obese
8.3% Overweight

Food Industry

- The NZ health select committee conducted an inquiry into Obesity and Type 2 diabetes (2007). They recommended that targets be set for reformulation, with an initial focus on high volume products prominent in children's diets.
- Currently no regulation or legislative requirement of food industry to act responsibly with regards to the types and quantity of varying nutrients used in the manufacturing food.
- The Food industry group (FIG) was formed to encourage food companies to find ways to contribute to solving the obesity epidemic in NZ and to work with Government and the community in doing so. FIG arose out of the formation of the Food Industry Accord, developed in 2004.

Study design

Mixed method (qualitative and quantitative) design:

This allowed two distinctly different perspectives of food reformulation to be captured.

Phase One:

Collection of cross sectional quantitative data via direct observations of primary school children's pre-prepared lunches.

Phase Two:

Key stakeholder interviews with food industry representatives.

Study objectives

Phase One: Direct lunch observations

- To investigate the prevalence of pre-packaged snack foods present in participants lunches and to identify the main snack food contributors.
- To assess the nutrient profiles of common snack foods identified in school lunches to establish possible targets for reformulation (i.e. sugars and fats).

Phase Two: Food industry stakeholder interviews

- To identify food industry stakeholders' beliefs, views, understanding and perceptions of food reformulation.
- To identify food industry stakeholders' opinions about potential facilitators and barriers to the reformulation process.

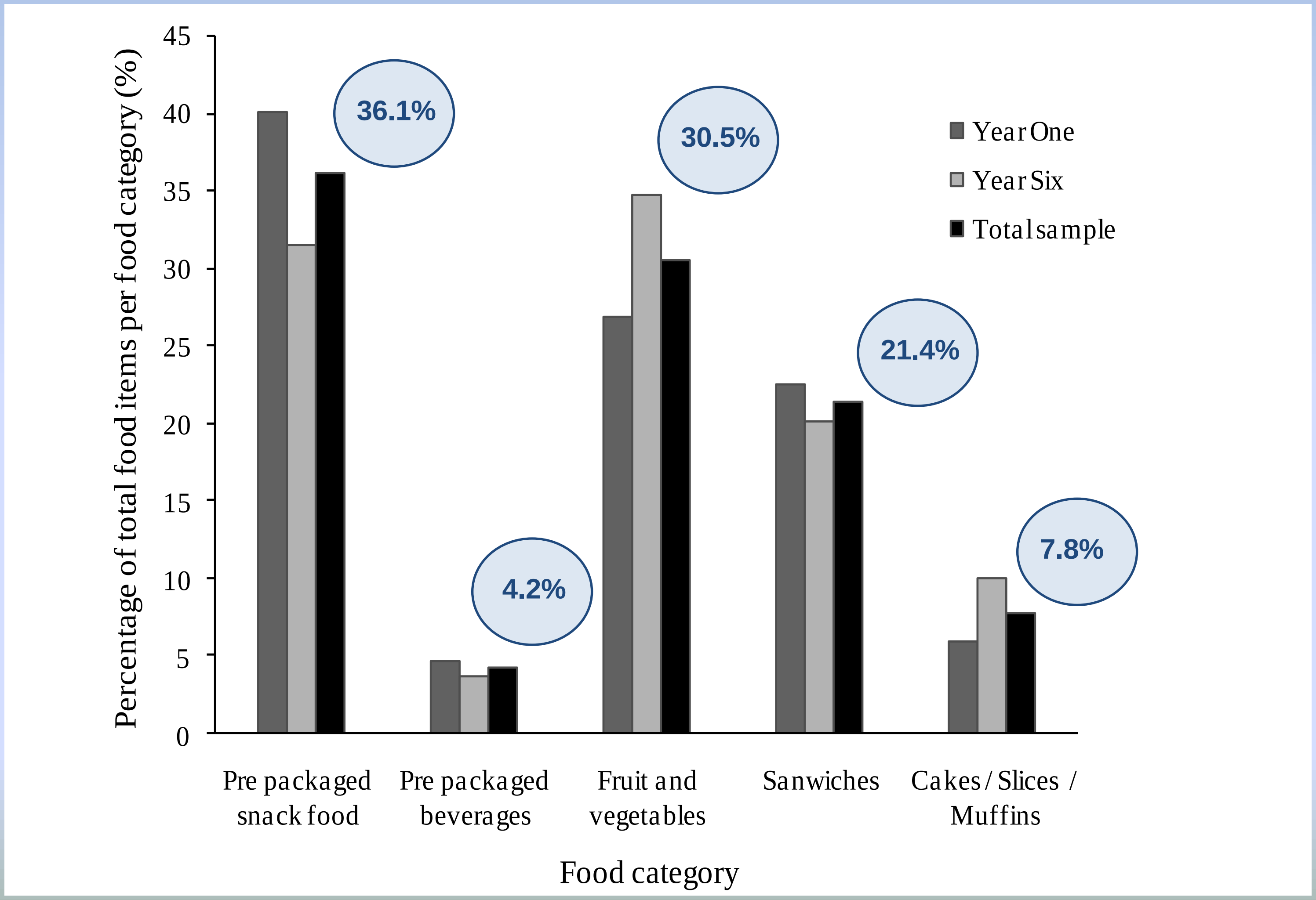
Phase One

Methodology: Phase One

- Ethical approval
- Three Auckland primary schools consented to participate
- Data were collected from a convenience sample of Year One and Year Six primary school children
- N = 127 (20 didn't meet eligibility criteria)
- Data collection via direct observations of pre-prepared lunches

Findings: Phase One

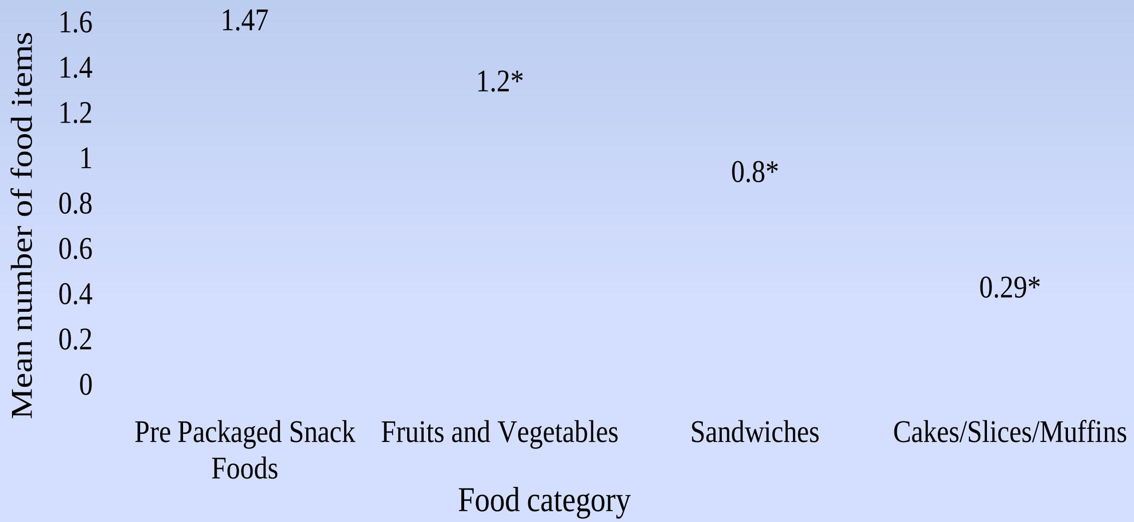
Observed food categories presented as a proportion of the total food items observed in the Year One, Year Six and total sample



The distribution of Year One, Year Six and total participants with 0, 1-2, or 3-5 food items from each of the five food categories

Food Category	Participants	Number and percentage of participants with zero food items	Number of participants with one or two food items	Number of participants with three to five food items
Pre-packaged snack food	Year One	13 (19.7%)	33 (50.0%)	20 (30.3%)
	Year Six	18 (29.5%)	36 (59.0%)	7 (11.4%)
	Total	31 (24.4%)	**69 (54.3%)**	**27 (21.3%)**
Pre-packaged beverages	Year One	59 (89.4%)	7 (10.6%)	0
	Year Six	53 (86.9%)	8 (13.1%)	0
	Total	112 (88.2%)	15 (11.8%)	0
Fruit and vegetables	Year One	13 (19.7%)	46 (69.7%)	7 (10.6%)
	Year Six	15 (24.6%)	39 (63.9%)	7 (11.5%)
	Total	28 (22.0%)	85 (66.9%)	14 (11.0%)
Sandwiches	Year One	13 (19.7%)	53 (80.3%)	0
	Year Six	22 (36.1%)	39 (63.9%)	0
	Total	35 (27.6%)	92 (72.4%)	0
Cakes/slices/ muffins	Year One	52 (78.8%)	14 (21.2%)	0
	Year Six	44 (72.1%)	17 (27.9%)	0
	Total	96 (75.6%)	31 (24.4%)	0

Prevalence of pre-packaged snack foods relative to the other food categories

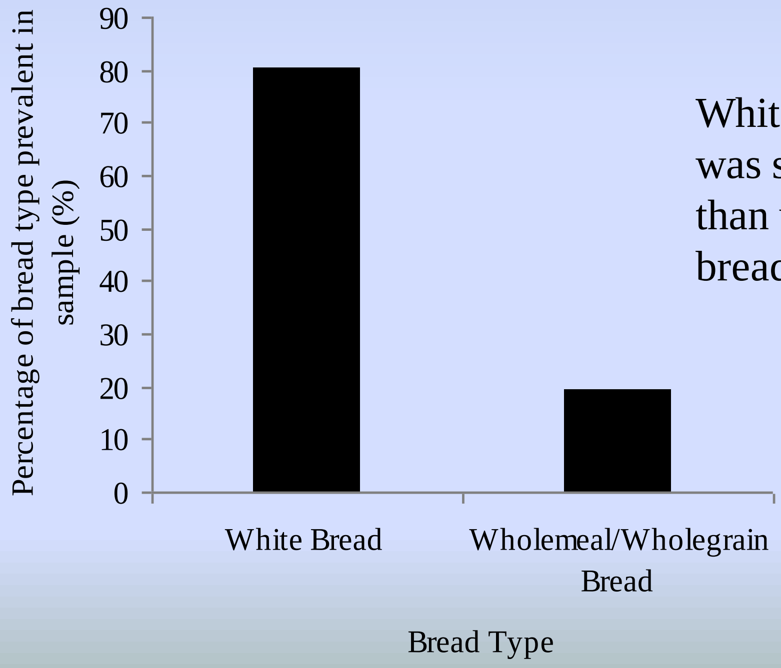


* Indicates significantly less than pre-packaged snack food ($p < .05$)

Proportion of bread type observed in lunches

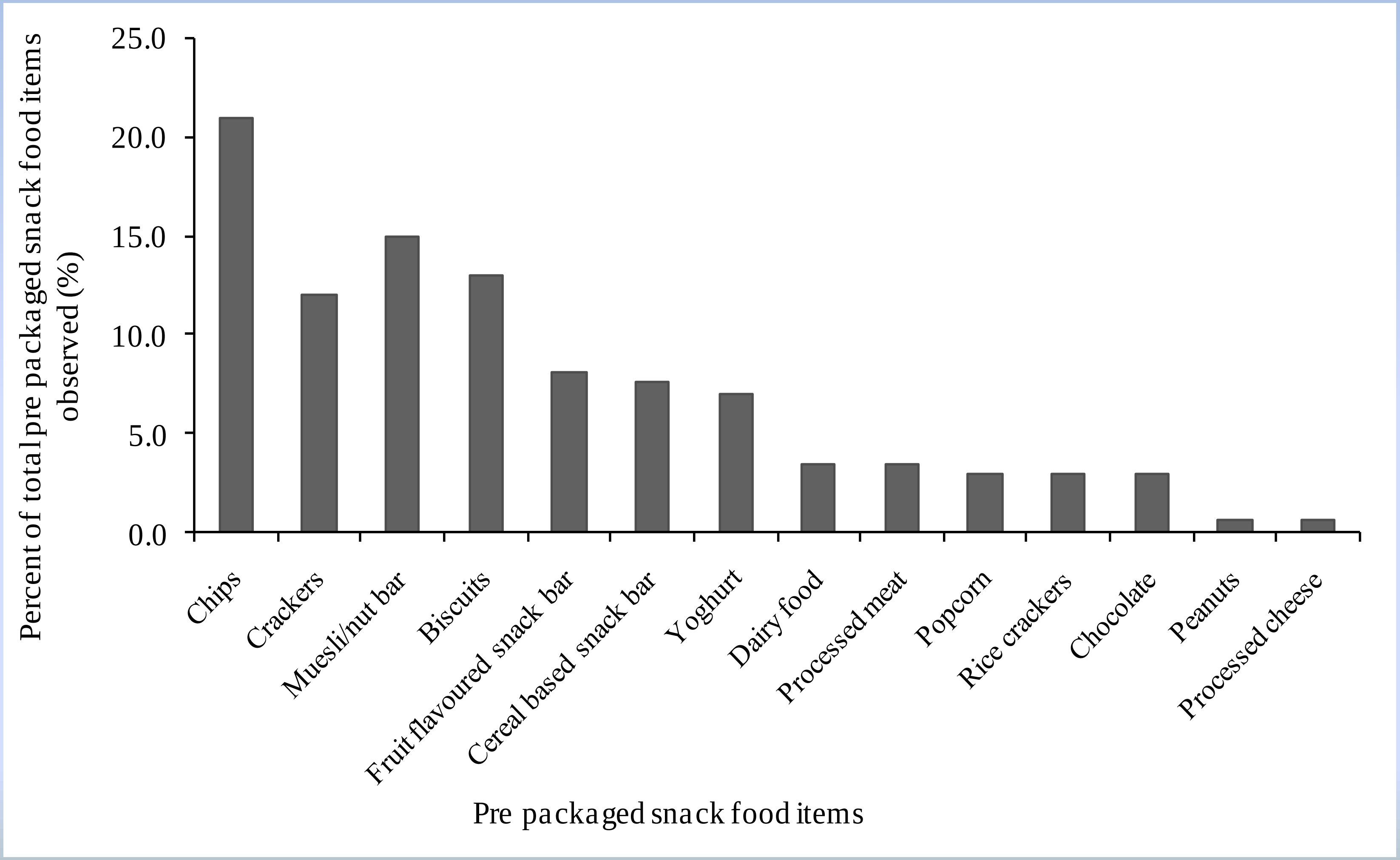
Results of Chi-Square Goodness of Fit Test on the proportion of white and brown bread present in the sample

	Observed N	**Expected N**	**χ^2**	**DF**	**P value**
White Bread	74	46	34.087	1	<.001
Brown Bread	18	46			



White bread (80.4% of bread) was significantly more prevalent than wholemeal/wholegrain bread (19.6%)

Percent of pre-packaged snack food items observed in home prepared lunches of the total sample



Nutritional composition

- Nutritional composition data were then collected on the 12 most prevalent snack food products.
- In order to crudely compare this nutrient data to relevant guidelines, the UK Food Standards Agency's nutritional signpost labelling traffic light criteria were used.
- This enabled each individual snack food item to be analysed to determine if they met the **green (low)**, **amber (medium)** or **red (high)** criteria for total fat, saturated fat, total sugars and sodium.

UK traffic light criteria for low, medium and high quantities of key nutrients

Nutrient	Low (Green)	Medium (Amber)	High (Red)
Total fat	≤ 3.0 g/100g	> 3.0 to ≤ 20.0 g/100g	> 20.0 g/100g
Saturated fat	≤ 1.5 g/100g	> 1.5 to ≤ 5.0 g/100g	> 5.0 g/100g
Total sugars	≤ 5.0 g/100g	> 5.0 to ≤ 15.0 g/100g	> 15.0 g/100g
Sodium	≤ 0.3 g/100g	> 0.3g to ≤ 1.5g/100g	> 1.5g/100g

Nutrient comparison of popular pre-packaged snack foods with traffic light criteria

	Carbohydrate sugars - Traffic light criteria met	Total fat - Traffic light criteria met	Saturated fat - Traffic light criteria met	Sodium - Traffic light criteria met
Bluebird potato chips	Low	**High**	**High**	Medium
Bluebird Grainwaves	Medium	**High**	**High**	Medium
ETA potato chips	Low	**High**	**High**	Medium
Mean potato chips	Low	**High**	**High**	Medium
Arnott's Choc Chip Hits	**High**	**High**	**High**	Low
Arnott's Tiny Teddy's	**High**	**High**	**High**	Medium
Cookie Time Rookie	**High**	Medium	**High**	Medium
Mean of biscuits	**High**	**High**	**High**	Low
Mother Earth Baked Fruit	**High**	Low	Medium	Low
Tasti Nut Bar	**High**	**High**	Medium	Low
Flemmings Chewy Bar	**High**	Medium	**High**	Low
Mean muesli/nut bar	**High**	Medium	**High**	Low
Uncle Toby's Le snack	Medium	**High**	**High**	Medium
Griffins snax	Medium	**High**	**High**	Medium
Arnott's Shapes	Low	**High**	**High**	Medium
Mean Crackers	Medium	**High**	**High**	Medium

Phase One: Key Findings

- Primary school aged children eat a large quantity of pre-packaged snack foods
- Pre-packaged snack foods consumed by children have poor nutrient profiles and have the potential to impact negatively on health

Phase Two

Methodology: Phase Two

- Food industry stakeholders that were identified as being involved with the manufacturing of popular pre-packaged snack foods were identified from Phase One
- Interviews were conducted to gain an enhanced understanding of food industry’s views and perceptions with regard to food reformulation
- 15 food organisations contacted to request participation, 9 declined (all part of FIG)
- N = 8 key stakeholder interviews (6 food organisations)
- Analysis via the general inductive approach

Process involved with recruiting food industry stakeholders to participate in interviews

Consultation Process	Number of food industry contacts obtained from consultation	Number of interview participants secured
National Heart Foundation	Three	Consent received for four interviews
Food Industry Group	Two	Consent received for one interview
University of Auckland	One	Consent received for zero interviews
Cold calling food organisations	-	Consent received for three interviews

Key themes emerging from stakeholder interviews

Main theme	Categories within themes
Perceived barriers to the product reformulation process	Technological issues Cost Customer resistance Taste
Opinions and attitudes towards product reformulation	'Reformulation is important' versus 'we are snack food companies' Government regulation of the food industry Company image
Primary focus on food industry	Financial success Meeting consumer demand Provision of consumer choice Healthy food goals
Views on public health responsibility	Joint approach and responsibility Individual responsibility Meeting corporate responsibility

Barriers to reformulation:

a) **Overcoming technological issues**

Functionality, shelf life, product aesthetics

You need a certain amount of fat in there to give the product its mouth feel, its body and taste, there is only so much you take out without altering the overall taste profile, the texture of the product, and the way it performs

Stability is an issue, for instance, changing away from palm oil. If you take that out and switch to a polyunsaturated fat, the product becomes more unstable. So products may only last five months or so, and that is never going to stack up, you can't really sell anything with less than six months shelf life, so stability is an issue

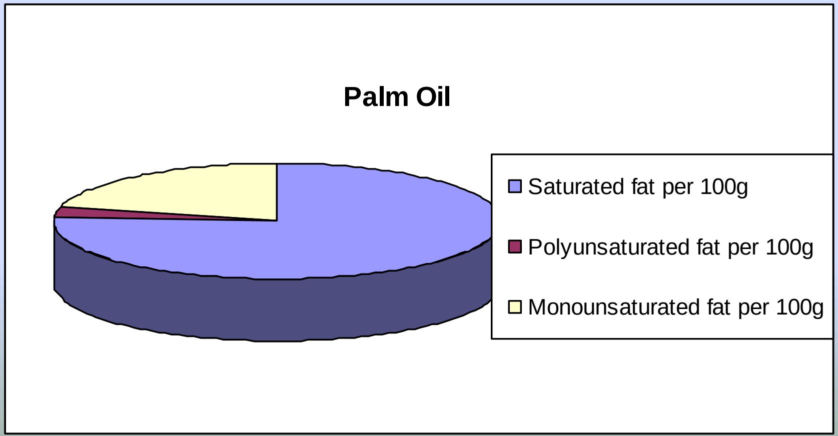
Barriers to reformulation:

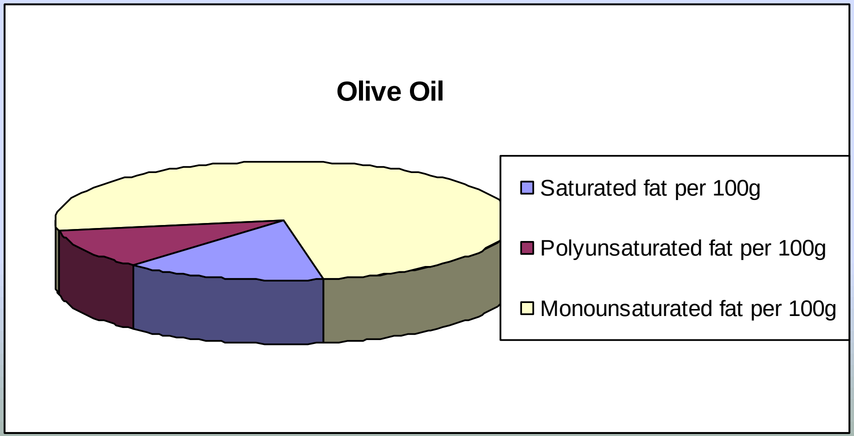
b) Cost

Ingredients, reduced market share, lost profitability

> *Going into reformulation the production will cost, there is a big difference between the cost of palm oil and sunflower oil. There is a big difference between wholegrain ingredients compared to highly processed ones.*

> *One of the biggest problems is cost. Most things* [more nutritious ingredients] *cost more. Sugar is one of the cheapest ingredients compared to artificial sweeteners, or fibre, and palm oil is a lot cheaper.*





Barriers to reformulation

c) Consumer resistance

It is frustrating, you know, you get people saying that you need to reformulate to make a product x, y, and z but they don't take into account that people wouldn't touch that product if you actually brought it down to those levels.

d) Taste

*There are some products that you can reformulate that will **taste like cardboard** so you are not going to go and put them on the market.*

Opinions and attitudes towards product reformulation

a) ‘Reformulation needs to be adopted’ versus ‘we are snack food companies’

Participant 1

> *From my perspective, I am seeing the need and we are actively working towards improving our products because the statistics are real and they are out there.*

Followed by:

> *There is also a part of me that says we are a snack food company, we are trying to improve our product portfolio.* ***But actually, we are a snack food company and snacks are not intended to be a staple part of the diet****. In a balanced healthy diet there should be nothing wrong with eating a full fat and sodium packet of chips now and then. The issue is when it becomes too much of a habit and peoples diets are made up of salty snacks and* [sugar laden drink] *and foods like that ……* ***But at the end of the day they are still snacks and they are not intended to be the main part of the diet, so they tend to be energy dense because that is what snacks are.***

Opinions and attitudes towards product reformulation

b) Government regulation of the food industry

I do not think it is something that needs to be regulated ... People have their own responsibility to make choices and decisions and I think if it gets regulated it takes that choice away.

I am very reluctant to have the government decreeing what we [food industry] *have to do, I hate this whole nanny state thing…we don't need to be managed.*

Food Industry Goals

a) **Financial success**

(All participants viewed financial success as the key goal for their food organisation)

At the end of the day we are a commercial entity, and we are a global food company that survives on its returns to shareholders at the end of the day so our incentive is getting improved sales performance from the products we make.

b) **Meeting consumer demand**

So the ***main*** *reason we reformulate is to improve the consumer acceptance of products*

There is some consumer demand for products that are better for you, but you have a big mainstream populace who don't want 'better for you' products.

Food Industry Goals

c) **Provision of consumer choice**

We have a responsibility to provide consumers with products that are better for them but we have to provide consumers with choice as well, there are some consumers who don’t want the healthy products… I think it is worth working towards having enough options for people. I think it is more about having more options than reformulating products themselves.

Food Industry Goals

d) Healthy food goals

The goal is always to make 'better for you' products that taste good. I think every company wants to take little steps so that everything they are making is eventually better.

One participant made a concise statement that improving health was not a driving force behind their intentions to reformulate.

We don't reformulate to improve public health. *Mostly, we reformulate to improve the consumer acceptability of the product....*

Summary

- Children eat a large quantity of pre-packaged snack food which have poor nutritional profiles and do not contribute to their nutritional wellbeing

- Food industry advocate for voluntary reformulation but generally concede that their goals (principally profitability) are at odds with reformulation for public health purposes.

- It seems likely that barriers, such as reduced profitability/market share, will prevent large scale voluntary reformulation by food industry, indicating that legislative regulation may be the only method by which to produce significant change.

- As concluded by the majority of the Health Select Committee (2007), if the industry does not take affirmative action toward reformulation, this action may need to be driven by regulation. The present findings suggest that large scale immediate action on the part of the food industry is unlikely, necessitating the regulatory approach.

- Furthermore, by having industry wide regulations, it would effectively ‘level the playing field’, alleviating concerns about loss of market share by individual companies.

However

Regulatory action is not likely to occur in the foreseeable future, so we need to direct focus on developing strategies to decrease consumption of foods with poor nutrient profiles

eg. - marketing/advertising
- accessibility and affordability
- labelling

Questions