FoodSwitch: A Mobile Phone App to Enable Consumers to Make Healthier Food Choices and Crowdsourcing of National Food Composition Data

Elizabeth Dunford, PhD
Carolina Population Center, UNC
& The George Institute for Global Health
Health Benefits of Improving the Food Supply

- Poor diet major contributor to chronic disease worldwide
- Current food supply has excess levels of total fat, saturated fat, sugar and salt in large serves of energy-dense foods
- Driving epidemics of obesity, high blood pressure, diabetes and dyslipidaemia, leading to ↑ heart attacks, stroke and cancer

“Even small changes in key constituents of the food supply have the potential to produce enormous health gains”
Health Benefits of Improving the Food Supply

> Get individuals to make healthier choices

or

> Change the environment that people live in (so they can’t help but make healthier choices)
The importance of monitoring the healthiness of “branded” products
Example – same brand in same country

Sodium per serve: 155mg

Sodium per serve: 55mg

65% less salt!

Product higher in salt

Product lower in salt
Example – same product in different countries

**Product higher in salt**

**USA**: Sodium per 100g: 720mg

**Product lower in salt**

**Australia**: Sodium per 100g: 550mg

*31% less salt!*
Example – white bread – different brands, same country

Sodium per 100g: 600mg

35% less salt!

Sodium per 100g: 400mg

Brand higher in salt

Brand lower in salt
Typical Australian daily food intake

- By switching to different brands of processed foods, **5g of salt** can be removed from the daily diet.
Global Food Monitoring Group

Aim
To bring together data on nutrient information (or lack thereof) for processed foods that can be used to drive national and international improvements in the food supply

Status
• 31 countries involved (2/3 are LMICs)
• >250,000 individual branded food items
Opportunity: harnessing smartphone technology for data collection

- iPhone or Android app downloaded
- App used to scan product barcode in-store
- App used to take a photo of the front of package
- App used to take a photo of the product’s nutrition info
Photos of food products uploaded and nutrition information entered into the FMG database

Photos uploaded from smartphone

Photos stored in Amazon cloud

Photos downloaded to central data entry system, data entered by team in India
The George Institute’s Food and Beverage Information Content Management System (FBI CMS)
<table>
<thead>
<tr>
<th>Product ID</th>
<th>GTIN</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>37873</td>
<td>9310055537392</td>
<td>Approved</td>
</tr>
</tbody>
</table>

**Brand:** Kellogg's  
**Manufacturer:** Kellogg Australia Pty Ltd

**Name:** Kellogg's Rice Bubbles

**Package Size:**  
**Package Unit:**  
- Grams  
- mLs

**Presence Daily Intake:** √

**Presence Nhft:**  
**Presence Vegetarian:**  

Image not found

**Product data entered**
Branded food products currently in database

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>80,000+</td>
</tr>
<tr>
<td>New Zealand</td>
<td>16,429</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>5,079</td>
</tr>
<tr>
<td>South Africa</td>
<td>12,000+</td>
</tr>
<tr>
<td>China</td>
<td>17,652</td>
</tr>
<tr>
<td>India</td>
<td>8,700</td>
</tr>
<tr>
<td>UK</td>
<td>100,000+</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4,000</td>
</tr>
<tr>
<td>USA</td>
<td>18,000+</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>250,000+</strong></td>
</tr>
</tbody>
</table>
International collaborative project to compare and monitor the nutritional composition of processed foods

Elizabeth Dunford¹,², Jacqui Webster¹, Adriana Blanco Metzler³,⁴, Sebastien Czernichow², Cliona Ni Mhurchu⁶, Petro Wolmarans⁷, Wendy Snowdon⁸,⁹,¹⁰, Mary L’Abbe¹¹, Nicole Li¹², Pallab K Maulik¹³, Simon Barquera¹⁴, Verónica Schoj¹⁵, Lorena Allemandi¹⁵, Norma Samman¹⁶, Elizabete Wenzel de Menezes¹⁷, Trevor Hassell¹⁸, Johana Ortiz¹⁹, Julieta Salazar de Ariza²⁰, A Rashid Rahman²¹, Leticia de Núñez²², Maria Reyes Garcia²³, Caroline van Rossum²⁴, Susanne Westenbrink²⁴, Lim Meng Thiam²⁵, Graham MacGregor²⁶ and Bruce Neal¹,² (for the Food Monitoring Group)

Overall goal and objectives

The overall goal of this project is to collate nutrient composition data for processed foods in different countries with the objective of improving the nutritional composition of the world’s processed food supply. Information about product composition will be collected in a standardized format in a number of countries and compared. A particular focus of the project will be supporting the participation of low- and middle-income countries. The primary outcome measures to be assessed will be energy content, saturated fat, total sugar, sodium, and serving size, in line with the World Health Organization’s global strategy on diet, physical activity, and health.¹ There will be three main objectives:

1. compare mean levels and ranges of the primary outcome measures in each food category between countries;

2. compare mean levels and ranges of primary outcome measures for food categories between companies. Comparisons for this objective will be restricted to companies manufacturing comparable product lines;

3. track changes over time in mean levels and ranges of the primary outcome measures in food categories by country and company.

International collaborative project to compare and track the nutritional composition of fast foods

The Food Monitoring Group*
Global branded food database was used to compare sodium levels in UK and Australia

In India, information on food labels was used to examine the presence of labelling compliance.

Figure shows proportion of products from major food companies meeting local (grey) and CODEX (black) requirements for nutrition labelling.

Publish publish publish....

International collaborative project to compare and monitor the nutritional composition of processed foods.


Variations in serving sizes of Australian snack foods: food composition database...


Sodium content in processed foods in Argentina: compliance with the national law.


An evaluation of the sodium content of packaged foods.


Are gluten-free foods healthier than non-gluten-free foods? An evaluation across six countries: opportunities for supermaket products in Australia.


Nutritional quality of Australian breakfast cereals.


Target salt 2025: a global overview to reduce salt in foods.


The Australian Food and Health Dialogue - the recommendation for pasta sauces.


Nutritional interim assessment of the Australian Government's Food and Health...
How do we use these data to empower the consumer?
Reading food labels
# Reading food labels

<table>
<thead>
<tr>
<th>NUTRITION INFORMATION</th>
<th>Average Quantity Per Serving</th>
<th>%D* Per Serving</th>
<th>Avg Qty Per 30 g With 1.25 mL Reduced Fat Milk</th>
<th>%D* Per 30 g With 1.25 mL Reduced Fat Milk</th>
<th>Average Quantity Per 100 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings Per Pack: 19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serving Size: 30 g</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>490 kJ</td>
<td>6%</td>
<td>770 kJ</td>
<td>9%</td>
<td>1620 kJ</td>
</tr>
<tr>
<td>Protein</td>
<td>2.7 g</td>
<td>5%</td>
<td>7.8 g</td>
<td>16%</td>
<td>9.0 g</td>
</tr>
<tr>
<td>Fat, Total</td>
<td>1.4 g</td>
<td>2%</td>
<td>3.5 g</td>
<td>5%</td>
<td>4.7 g</td>
</tr>
<tr>
<td>- Saturated</td>
<td>0.4 g</td>
<td>2%</td>
<td>1.7 g</td>
<td>7%</td>
<td>1.4 g</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>21.6 g</td>
<td>7%</td>
<td>28.6 g</td>
<td>9%</td>
<td>72.1 g</td>
</tr>
<tr>
<td>- Sugars</td>
<td>8.2 g</td>
<td>9%</td>
<td>15.1 g</td>
<td>17%</td>
<td>27.3 g</td>
</tr>
<tr>
<td>Dietary Fibre</td>
<td>2.3 g</td>
<td>8%</td>
<td>2.3 g</td>
<td>8%</td>
<td>7.7 g</td>
</tr>
<tr>
<td>Sodium</td>
<td>35 mg</td>
<td>2%</td>
<td>105 mg</td>
<td>5%</td>
<td>115 mg</td>
</tr>
</tbody>
</table>
The problem with food labels
INDEPENDENT REVIEW OF FOOD LABELLING LAW AND POLICY

MEDIA RELEASE

28 January 2011

RELEASE OF FINAL REPORT OF THE REVIEW OF FOOD LABELLING LAW AND POLICY

The Panel conducting the Independent Review of Food Labelling Law and Policy, commissioned by the Australia and New Zealand Food Regulation Ministerial Council, today formally presented its Final Report entitled Labelling Logic to the Hon Catherine King Parliamentary Secretary for Health and Ageing, as the Chair of that Ministerial Council. The Report has also been made publicly available on the Food Labelling Review website.

- the introduction of a multiple traffic light front-of-pack labelling system; this system is to be voluntary in the first instance, except where health claims are made;
Traffic Light Label Solution

- **LOW**: Healthier choice
- **MED**: Ok choice
- **HIGH**: less healthy choice
FoodSwitch

• Poor diet major contributor to chronic disease worldwide
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FoodSwitch

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- 65% of Australians own a smartphone
- 76% use their phones to get recommendations for health and other lifestyle-related factors
Post-launch development

- **SaltSwitch**
  - November 2012

- **GlutenSwitch**
  - May 2013

**SaltSwitch**

- **FoodSwitch**
  - Making healthier choices for you and your family

- **SaltSwitch**
  - Great for people with, or being treated for, high blood pressure

- **GlutenSwitch**
  - Great for people looking for gluten free products

- **FatSwitch**
  - Great for people looking for products low in cholesterol

- **EnergySwitch**
  - Great for people looking for products lower in kilojoules/calories

- **SugarSwitch**
  - Great for people looking for products lower in total sugar

**GlutenSwitch**

- **Kikkoman Gluten Free Soy Sauce**
  - Each serve (15 mL) contains:
    - Energy: 63 kJ
    - Fat: 0.0 g
    - Sat Fat: 0.0 g
    - Sugars: 0.3 g
    - Salt: 2.4 g

- **Uncle Tobys Oats Quick Sachets Creamy Honey**
  - Each serve (35 g) contains:
    - Energy: 574 kJ
    - Fat: 2.3 g
    - Sat Fat: 0.6 g
    - Sugars: 9.2 g
    - Salt: 0.0 g

**HEALTHIER CHOICES WITH LOWER SALT**

There are no low-salt products in this category. We have listed any similar products with a healthier profile and less salt, but suggest you limit your intake in this category.

- **Trident Sweet Soy Sau...**
- **Lewan Whole Foods R...**
### Post-launch development

- **FatSwitch**
  - Praise Thousand Island Dressing
    - Each serve (20 mL) contains:
      - Energy: 236 kJ
      - Fat: 4.1 g
      - Sat Fat: 0.5 g
      - Sugars: 4.3 g
      - Salt: 0.5 g
    - 3% of an adult’s daily intake

### Healthier Choices Lower in Saturated Fat
- Taylor’s French Dressing
- Coles Simply Less Col...
- Nando’s Lemon & Her...
- Eta Lite & Free Feta &...

### SugarSwitch
- Nestle Milo Oatie Bar
  - Each serve (35 g) contains:
    - Energy: 571 kJ
    - Fat: 2.9 g
    - Sat Fat: 0.8 g
    - Sugars: 7.9 g
    - Salt: 0.0 g
  - 7% of an adult’s daily intake
  - The sugar content of products in this category mostly derive from added sugar

### Choices with Lower Sugar
- There are no low-sugar products in this category. We have listed any similar products with a healthier profile and less sugar, but suggest you limit your intake in this category.
  - Quaker Chewy Choc F...
  - Uncle Toby's Le Snak Tasty Cheese Dip with Crackers
    - Each serve (22 g) contains:
      - Energy: 361 kJ
      - Fat: 5.4 g
      - Sat Fat: 3.0 g
      - Sugars: 1.4 g
      - Salt: 0.7 g
    - 4% of an adult’s daily intake

### EnergySwitch
- Uncle Toby’s Le Snak Tasty Cheese Dip with Crackers
  - Each serve (22 g) contains:
    - Energy: 361 kJ
    - Fat: 5.4 g
    - Sat Fat: 3.0 g
    - Sugars: 1.4 g
    - Salt: 0.7 g
  - 4% of an adult’s daily intake

### Healthier Choices Lower in Energy
- Coles Snack Packs Ba...
- Damora Dippits Frenc...
- Coles Snack Packs Fr...
- Damora Dippits Ched...

---

<table>
<thead>
<tr>
<th>Scan</th>
<th>Lists</th>
<th>Recents</th>
<th>Mode</th>
<th>More</th>
</tr>
</thead>
</table>

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Other Countries

- **FoodSwitch NZ**
  - Launched Aug 2013

- **FoodSwitch UK**
  - Launched Feb 2014

- **HealthyFood Switch SA**
  - Launched Nov 2015

- **Launch plans:**
  - China (2015), India (2015), USA (2016), Switzerland (2016)
  - Hong Kong (2017)
Aussie FoodSwitch app announced as top 100 global innovative solutions

13 June 2013

Australia’s most popular food-scanning app, FoodSwitch, has been recognised as one of the world’s top 100 innovative initiatives, selected from entries spanning more than 79 countries.

At the International 2013 Sustainia 100 launch event in London, FoodSwitch was acknowledged for its efforts to help Australians make healthier food choices and reduce their risk of heart attack and stroke.

The app, developed by Bupa and The George Institute for Global Health, uses the best available science and evidence to help people make healthier food choices.

FoodSwitch allows everyday shoppers and diners look up food in real-time to check the nutritional content of foods they are considering buying.

More than 800,000 downloads

More than 1,000,000 photos of new items sent in by users

FoodSwitch app wins Public Health Award

FoodSwitch app wins Public Health Award

Food apps top innovation awards

13 June 2013
Changes to Australian food labelling – Health Star Rating System

The HSR system was developed through a collaborative process involving public health and consumer organisations, industry and government representatives.

On June 27 2014 the government agreed that the HSR system should be implemented voluntarily over the next 5 years with a review of the progress of implementation after 2 years.
While we waited for the industry to adopt stars........
Health Star Rating mode

Healthier choices can be shown in expanded view
All foods other than dairy foods – flow diagram of HSRC calculation steps

Is category 2 or 3 food? NO

YES

Calculate baseline points (see Tables 1 and 2)

Is category 1 beverage? NO

YES

Use flowchart for D category products

Calculate baseline points (see Table 1)

Calculate V points (from V points field OR if missing, from Master FoodGroups table)

Baseline points <13? NO

YES

Calculate protein points (see Table 3)

Are V points ≥5? NO

YES

Assign protein score = 0

Calculate fibre points (see Table 3)

Calculate final HSR Score: Baseline points – V points

Category 1 beverage must score
≤-6 5 stars
-5 4½ stars
-4 4 stars
-3 3½ stars
-2 3 stars
-1 2½ stars
0 2 stars
1 1½ stars
2 1 star
≥3 ½ star

Category 2 foods must score
≤-31 5 stars
-10 to -7 4½ stars
-6 to -2 4 stars
-1 to 2 3½ stars
3 to 6 3 stars
7 to 11 2½ stars
12 to 15 2 stars
16 to 20 1½ stars
21 to 24 1 star
≥25 ½ star

Calculate final HSR Score: Baseline points – V points – P points – F points

Category 3 foods must score
≤13 5 stars
14 to 16 4½ stars
17 to 20 4 stars
21 to 23 3½ stars
24 to 27 3 stars
28 to 30 2½ stars
31 to 34 2 stars
35 to 37 1½ stars
38 to 41 1 star
≥42 ½ star
Behind FoodSwitch
Monitoring food environments

Process

DATA COLLECTION → DATA PROCESSING → DATA UTILISATION

- Data Collector App (monitoring data)
- FoodSwitch App (crowd-source data)
- Content Management System:
  - Data entry
  - Data review
  - Categorisation
- Research outputs
- FoodSwitch App (consumer education)
The real power behind FoodSwitch: crowd-sourcing of data

- Originally FoodSwitch Australia was launched with ~17,000 products (SKUs)
- When products do not appear in the database, users are asked to help by taking 3 photographs – the front of the product, the nutrition information and the ingredients list – and send them to us.
- In this way the database can be constantly updated and new products entered.
- 26,000 photos sent in by FoodSwitch users in the first 2 days, and a minimum of 200 photos are sent in every day currently
  - Database now includes >80,000 products
## Crowd-sourced products in each country

<table>
<thead>
<tr>
<th>Country</th>
<th>Started With...</th>
<th>To Date Has...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>17,000</td>
<td>84,000+</td>
</tr>
<tr>
<td>New Zealand</td>
<td>8,000</td>
<td>45,000+</td>
</tr>
<tr>
<td>UK</td>
<td>70,000</td>
<td>95,000+</td>
</tr>
<tr>
<td>South Africa</td>
<td>7,000</td>
<td>12,000+</td>
</tr>
</tbody>
</table>
Crowd-sourcing data in FoodSwitch

Crowd-sourcing process in FoodSwitch
Crowd-sourcing data in FoodSwitch

Reporting incorrect product information in FoodSwitch

[Images of FoodSwitch app screens showing the process of reporting product information]
But what does this add up to?

- How do we know whether there have been actual reductions in adverse nutrient levels in foods?
- How do we know whether this has translated into healthier food purchases?
Do food labels influence food purchases?
- Food Label Trial

- Randomised trial with 2000 participants
- The aim is to find out which type of label is best at helping people make healthier food and drink choices
- Participants scan items they purchase and send in till receipts from grocery shops
- Results will evaluate whether different label formats influenced foods purchased
Participants are randomised to one of 5 trial arms
FoodSwitch has been launched
FoodSwitch is in development
Thank you!

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www.foodswitch.com.au
www.foodswitch.co.uk
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