Food Choice and Nutrition Labels: The UK Traffic Light System as a Case Study

Context

• UK FOP (Front-of-Package) food labelling is optional/voluntary
• Purpose – inform choice, healthy diet, reduce obesity, etc.
• 2006 – FSA – guidelines that manufacturers employ when labelling food nutrient content
  – Fat, Sugar, Saturates and Salt (Calories)
• The Traffic Light System (TLS) – Red, Amber and Green
• Colour – content nutrient per 100grams any food type
• But many manufacturers/retailers adopted own
An example of the UK Traffic Light System.

- **RED** - high nutrient content is present in a product
- **AMBER** - is in the middle
- **GREEN** - indicates much lower content

A **RED** - something we should be trying to cut down on
A **GREEN** - low in that nutrient
More **GREEN** lights - a healthier the choice

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**The coexistence of different label types**

Each pack contains

- 498 calories
- 5.4g fat
- 11.0g saturates
- 3.8g sugar
- 1.7g salt

of your guideline daily amount

The nutritional value of a 100g serving

- Fat 10.8g
- Sugars 2.0g
- Salt 8.9g

If your guideline daily amount is

- Calories 266
- Fat 4.8g
- Saturates 1.4g
- Sugar 6.1g

Each pack contains

- 476 calories
- 12.8g fat
- 9.8g saturates
- 2.4g sugar
- 1.9g salt

of your guideline daily amount

The nutritional value of a 100g serving

- Fat 9.8g
- Sugars 1.1g
- Salt 1.1g

If your guideline daily amount is

- Calories 266
- Fat 4.8g
- Saturates 1.4g
- Sugar 6.1g
- Salt 6.1g

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### Policy Environment

- June 2010 – MEPs voted on form of nutritional labelling in EU - TLS vs GDA
- Rejected TLS as compulsory - adopted GDA on a mandatory basis
- Many manufacturers stay with GDA - some modified the TLS
- FSA move toward “Integrated Labels” - combine:
  - Text (High, medium, low)
  - Traffic Light Colours
  - % GDA
- “Food labelling has become a collage of disparate, sometimes competing messages.”
- More generally, a “policy cacophony on obesity”

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### Research on TLS

- Large amount of research on consumer understanding
- Much less research on consumer use (use is typically self-reported, not actual)
- Some research on response by food sector to the TLS
- Choice Experiments (CE) examine information/price trade-off
- CE FOP and eye-tracking (pilot results)
Understanding of TLS

- Example - Borgmeier and Westenhoefer (2009)
  - Examined 5 labels – asked identify in pair-wise comparison the healthy option
  - TLS highest 24.8 out of 28, No label 20.2 out of 28
  - No significant differences between label type
  - 2nd task daily food consumption – for all nutrient labels above daily recommend levels
  - Participants ok single product – struggle constructing a basket of goods

Country Specific Results

- Grunert et al (2010) UK and EU studies
  - In-store observation – 27% look at FOP (high) in UK, 9% in France
  - High understanding UK - (70-90%) – motivation – healthy eating
  - UK best across all EU countries
  - Grunert et al observe, “the length and intensity of public debate on issues of nutrition and labelling leaves traces in the population.”
  - Consumer use – Sachs et al. (2009) major UK retailer 4wks before/after TLS introduced – no difference in sales
  - Some retailers reported to have substituted (reformulated) away from Red
  - Virtually no research examines price/information relationship
  - Lots of research does note that price can and frequently does “eclipse” other aspects of product
TLS Choice Experiment

- “Basket” of goods – used TLS to label nutrients - Why?
- TLS – need to consider whole diet – not just the single product
- Evidence – select a healthy option, over compensate with some sort of indulgence
- Very simple CE – 3 choices and a Don’t Know
- In general consumers appear to understand TLS
- WTP Reduce - Salt>Saturates>Sugar>Fat (These results are plausible given general attitudes expressed about nutrients)
- WTP Females > Males
- WTP Household with children > Without children

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<th>Option 2</th>
<th>Option 3</th>
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<td><strong>Food Basket</strong></td>
<td><strong>Salt</strong></td>
<td><strong>Sugar</strong></td>
<td><strong>Fat</strong></td>
</tr>
<tr>
<td>Salt</td>
<td>Amber</td>
<td>Red</td>
<td>Green</td>
</tr>
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<td>Red</td>
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But......

- WTP estimates – very high (not really credible)
- Various reasons are advanced in the literature:
  1. Choice set complexity
  2. Attribute non-attendance
- So what do WTP estimates reported actually mean?
- If non-attendance – an attribute is ignored (exclude in model estimation)
- Can be viewed as a strategy to cope (choice heuristic)
- How serious is this problem?
  - Scarpa et al (2009) – use all attributes (10%)
  - Ignore the monetary attribute 80-90% participants
- Various econometric/data manipulation methods available to deal with limitation
- But have been dependent on ex-post de-briefing – considered suspect.

CE/TLS and Eye-Tracking

- New research – use eye-tracking to examine how respondents under the CE task
- Check what they are looking at, and when ex-post we ask them, can check if consistent with actual behaviour
- Provides a robust approach to assess attribute non-attendance as well as other aspects of behaviour when completing the CE survey
- Have run a pilot exercise at University of Reading (n=30) with the TLS CE survey instrument
Eye-Tracking Research

- ET is already being used in FOP label research:
  - Jones and Richardson (2007)
  - FSA has commissioned research on ET and labels
- Eye movements – provide potentially important understanding of information acquisition – visual attention is a coordinating mechanism helping with information processing (i.e., search)
- Two types:
  - Fixations (“relatively” still)
  - Saccades (rapid)
- Research into what stimulates visual attention:
  - Top-down (traits and states of the individual)
  - Bottom-up (visual marketing stimulus) – more known

Preliminary Results

- Have just completed the lab work – all completed the CE survey instrument
- Basic data generated:
  - Video showing movement around the Choice card
  - Graphics showing fixation spots (circles) – with diameter and the numbers showing how many milliseconds the participant stayed there (e.g., 694 ms). The lines joining each circle shows the saccadic eye movement.
  - Heat maps – show fixation distributions. Hotter colours indicate more time spent at these locations.
- Also ask debriefing questions – which attributes did you use/not use
- Can combine with data on choices – better model actual attribute use
- Also potentially employ pilot CE design, randomly during CE to check attribute use
### CHOICE CARD 15

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<td>Green</td>
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<tr>
<td>Price of basket</td>
<td>£20</td>
<td>£15</td>
<td>£18</td>
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Click ONE and only one box.

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Click ONE and only one box.
So What?

- After completing the CE we ask a series of debriefing questions:
  - Only eg1 indicated considered price
  - Both eg2 and eg3 did not check price

- As a result we can cross check use of attributes ex-post with actual use.

- Modify data and estimate choice model consistently

- Avoid reliance on ex-post de-briefing

- Highly likely, inflated WTP will be significantly diminished

Closing Observations

- TLS (GDA) has been the subject much research

- TLS (GDA) has been the subject of intensive industry debate

- FOP in UK – generally high level of understanding

- FOP in UK – some evidence that consumers moderate consumption - substitution effect

- Labels can increase welfare even if they do not lead to any health benefits

- CE research – number of limitations

- But limitations induced a change in how we might conduct CE research in the future.