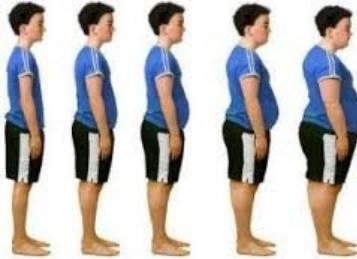




Context

Changing consumers behavior toward sustainable consumption



- **Obesity epidemic** rates have more than doubled since the 1970's (National Center for Health Statistics, 2009)
- More than one-third of U.S. adults are obese (Flegal et al., 2016)
- Obesity is a leading public health problem in the U.S. (Ogden et al., 2016)
- Annual health care costs in the United States stemming from obesity approaches **\$240 billion** (Schlosser, 2012)

• **Global warming :**
0.8° rise in mean



Context

Changing consumers behavior toward sustainable consumption

What are the tools at the disposal of the public deciders?

Improving social welfare by :

- solving market failures...
 - Fixing externalities through taxes and subsidies (eg. fat tax)
 - Providing the consumer with all the useful information (eg. Nutrition Labeling and Education Act)
- Helping consumers to avoid self-destructing decisions
 - Rating food items (eg. Traffic lights)
 - Nudging - also called *asymmetric paternalism* (Camerer et al, 2003) or *libertarian paternalism* (Thaler & Sunstein, 2003)



Context

Changing consumers behavior toward sustainable consumption

Use of framed-field experiments to evaluate policies

- **Study based on real purchase** rather than stated intentions or demand estimates
Self-reported studies can generate socially desirable answers
- **Observation of the whole food baskets** rather than one specific items or one product family
Global evaluation is not possible when all possible substitutions are not considered
- **Ceteris paribus conditions** rather than natural environment
Causality relationship can be unclear due to many explicative variables

Also : **Real consumers** for representativeness and **reproducibility** for robustness

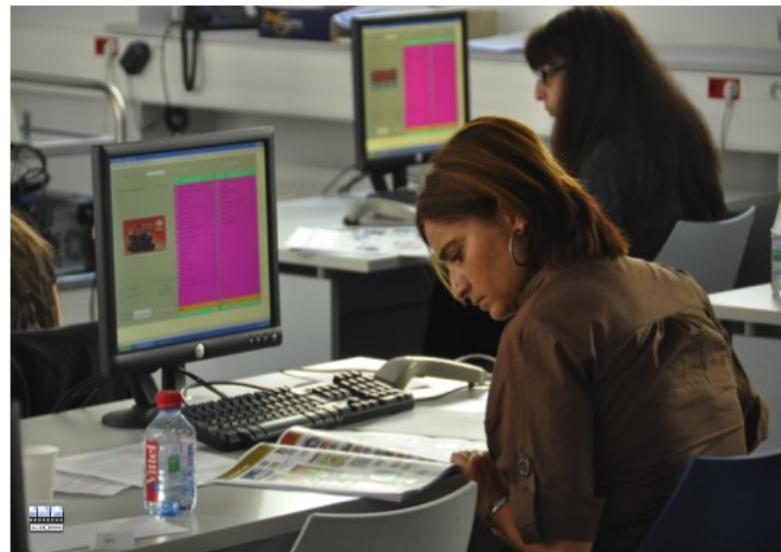


Context

Changing consumers behavior toward sustainable consumption

Use of framed-field experiments to evaluate policies

- Consumers are invited to do their food shopping in our laboratory store.
- We observe them *before* and *after* the implementation of a policy



The laboratory store

Paper catalogue



Computer interface



Real products



- The food catalogue lists 290 food items distributed in 37 food categories
- Items pop up on the computer screen when they are scanned with a barcode reader
- On screen, subjects have access to more information about the selected item and can, if they are willing to, place it in their shopping basket
- For each item, we have price (as observed in supermarkets), weight, ingredients, nutrient composition, environmental impact (CO_2 , SO_2 , PO_3)
- A subset (1/4) of the food supply is hidden from the subjects in a back office. If items from the food basket are actually available, subjects purchase them at the end of the experiment at the posted price

Food Catalogue

Viandes

2 STEAKS HACHÉS PUR BŒUF 15 % MG

4,25 €

260 g

16,35 €/kg

1138



2 STEAKS HACHÉS DE VIANDE CHAROLAISE FAÇON BOUCHÈRE 5%MG

3,80 €

250 g

15,20 €/kg

1190



CÔTE PREMIÈRE DE PORC

1,52 €

200 g

7,60 €/kg

1178



2 TRANCHES DE RÔTI DE PORC

1,26 €

100 g

12,00 €/kg

1181



2 FILETS DE POULET

3,84 €

320 g

12,00 €/kg

1165



Viandes

TRANCHE DE GIGOT D'AGNEAU

1,69 €

100 g

16,90 €/kg

1120



ENTRECÔTE DE BŒUF

4,57 €

200 g

22,85 €/kg

1169



8 CORDONS BLEUS DE VOLAILLE

2,82 €

800 g

3,53 €/kg

1184



AIGUILLETTES DE POULET PANÉ

2,35 €

200 g

11,75 €/kg

1135



Computer interface

The screenshot shows a grocery store computer interface. At the top left is a search bar with the number '1138' and a 'Chercher' button. Below the search bar is a box titled 'Votre caddie actuel:' containing the message 'Aucun produit dans ce panier.' and a 'Terminer' button. The main area displays a product: '2 Steaks hachés pur boeuf 15% mg'. The product image is a tray of Carrefour steak haché, weighing 260 g and costing 16,35 €/Kg. The unit price is 4,25 €. To the right of the product are buttons for quantity adjustment (minus, 1, plus) and an 'Ajouter au caddie' button. Below the product image are buttons for 'Ingrédients' and 'Valeurs nutritionnelles'.

1138

Votre caddie actuel :
Aucun produit dans ce panier.

Terminer

4,25 €
260 g
16,35 €/Kg

- 1 + Ajouter au caddie

2 Steaks hachés pur boeuf 15% mg

Steak haché pur boeuf Carrefour
Moelleux & savoureux
15% de matières grasses
x2 portions individuelles
250g (2x125g)

Ingrédients Valeurs nutritionnelles

Computer interface

Scannez un produit

Votre carte

Aucun produit dans la liste

Terminer

2 Steaks hachés pur boeuf 15% mg

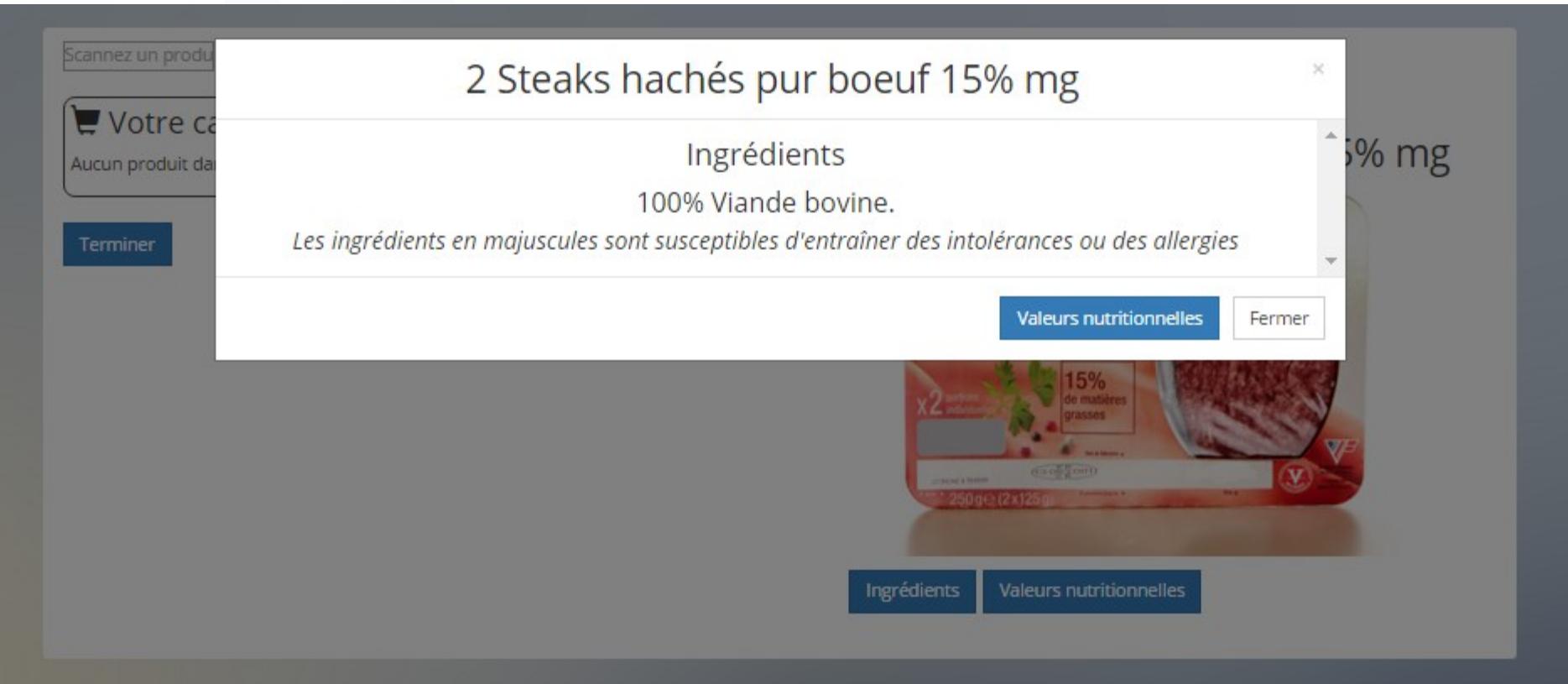
Ingrédients

100% Viande bovine.

Les ingrédients en majuscules sont susceptibles d'entraîner des intolérances ou des allergies

Valeurs nutritionnelles

Fermer



Computer interface



Scannez un produit

Votre caisse

Aucun produit dans la liste

Terminer

2 Steaks hachés pur boeuf 15% mg

Valeurs nutritionnelles

Pour 100g de produit :

Energie :	129 Kcal
Lipides :	5,00 g
donc Acides Gras Saturés :	2,30 g
Glucides :	0,00 g
dont sucres :	0,00 g
Protéines :	21,00 g
Sel :	0,23 mg

Ingrédients Fermer

Computer interface

Scannez un produit

Votre caddie actuel :

	x 1 = 4.25 €
	1 Articles
	Total = 4.25 €

- 1 + [Modifier la quantité](#) [Enlever du caddie](#)

2 Steaks hachés pur boeuf 15% mg



[Ingrédients](#) [Valeurs nutritionnelles](#)

Computer interface

1814 Chercher

1814

Votre caddie actuel :

	x 1 = 4.25 €
	x 1 = 3.95 €
	x 1 = 1.17 €
	x 1 = 2.83 €
	x 3 = 1.83 €

5 Articles
Total = 14.03 €

- **1** + Ajouter au caddie

Frites surgelées pour micro-ondes



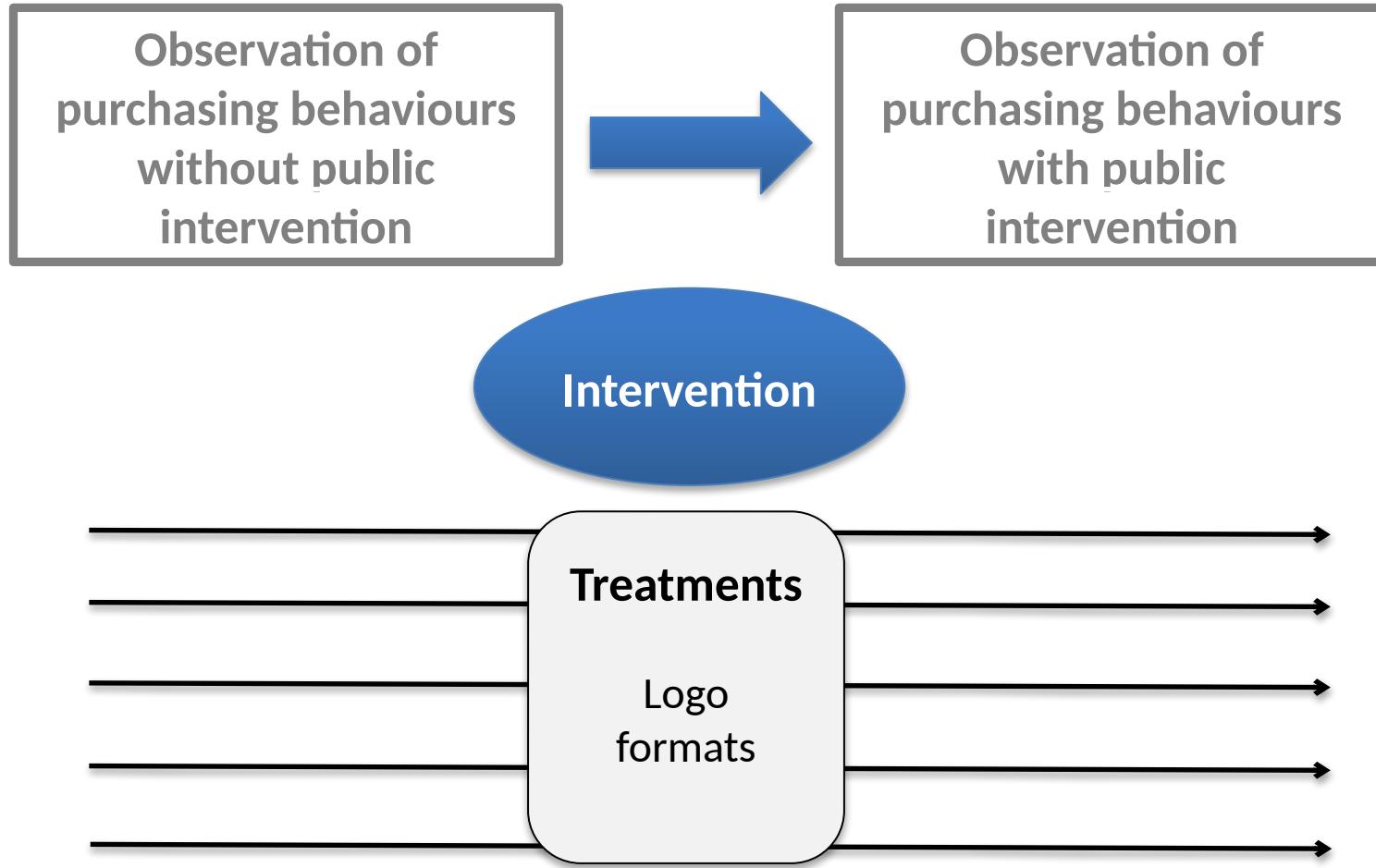
Ingrédients Valeurs nutritionnelles

Terminer



Experimental Protocol

Task: Composition of a food shopping cart for 2 days for the household



Subjects



Some policies already tested...

TAXES AND SUBSIDIES

- Muller, Lacroix, Lusk & Ruffieux « Distributional Impacts of Fat Taxes and Thin Subsidies » *The Economic Journal*, 2016
- Darmon, Lacroix, Muller & Ruffieux « Food price policies improve diet quality while increasing socioeconomic inequalities in nutrition », *International Journal of Behavioral Nutrition and Physical Activity*, 2014

INFORMATION AND POLICY MIX

- Jo, Muller, Ruffieux & Lusk « Value of parsimonious nutritional information in a framed field experiment », *Food Policy*, 2016

LOGO FORMATS

- Muller & Ruffieux « Shopper's behavioural responses to 'front-of-pack' nutrition logo formats: GDA Diet-Logo vs. 6 alternative Choice-Logos » Muller and Ruffieux, under revision in *Food Quality and Preference*
- Crosetto, Muller & Ruffieux « Consumers' response to two front-of-pack labels: *Reference Intake* vs. *Multiple Traffic Lights* » Working paper

ENVIRONMENTAL LOGOS

- Lacroix, Muller & Ruffieux « Environmental labeling and consumption changes: A food choice experiment » Working paper

Today's example: RI vs. TL

Reference Intake

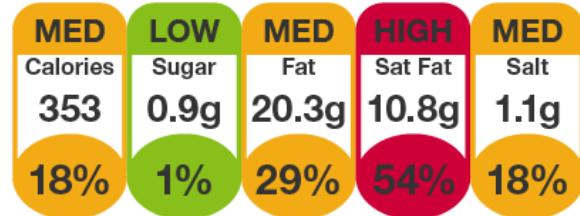
Each portion contains



of an adult's Guideline Daily Amount

Multiple Traffic Lights

Each 1/2 pack serving contains



of your guideline daily amount

Source: Food Standards Agency

- Indicates the proportion of each nutrient according to recommended daily values
- Origin: UK, adopted in the UE (2009, standard industriel), Australia (2006, *Daily Intake Guide*) et US (2012, *Facts up fronts*)

- Ranks sugars, fat, saturated acids and salt by assigning colours
- Recommended by British Food Agency Standard. Litigation proceedings opened by the European Commission in 2014.

Viandes

2 STEAKS HACHÉS PUR BŒUF 15 % MG

4,25 €

260 g

16,35 €/kg

1138



Information Nutriti

onnelle pour 100 g



2 STEAKS HACHÉS DE VIANDE CHAROLAISE FAÇON BOUCHÈRE 5%MG

3,80 €

250 g

15,20 €/kg

1190



Information Nutriti

onnelle pour 100 g



CÔTE PREMIÈRE DE PORC

1,52 €

200 g

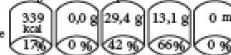
7,60 €/kg

1178



Information Nutriti

onnelle pour 100 g



2 FILETS DE POULET

3,84 €

320 g

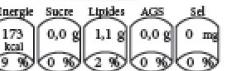
12,00 €/kg

1165



Information Nutriti

onnelle pour 100 g



Viandes

2 STEAKS HACHÉS PUR BŒUF 15 % MG

4,25 €

260 g

16,35 €/kg

1138



Information Nutriti

onnelle pour 100 g



2 STEAKS HACHÉS DE VIANDE CHAROLAISE FAÇON BOUCHÈRE 5%MG

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Information Nutriti

onnelle pour 100 g



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Information Nutriti

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Information Nutriti

onnelle pour 100 g



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320 g

12,00 €/kg

1165



Information Nutriti

onnelle pour 100 g



4



1138

1138

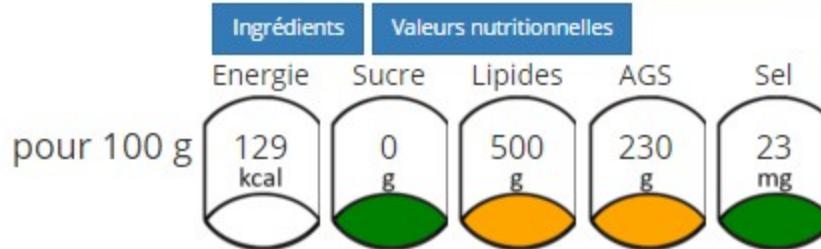
 Votre caddie actuel :

Aucun produit dans ce panier.

4,25 €
260 g
16,35 €/Kg

- 1 +

2 Steaks hachés pur boeuf 15% mg





Results

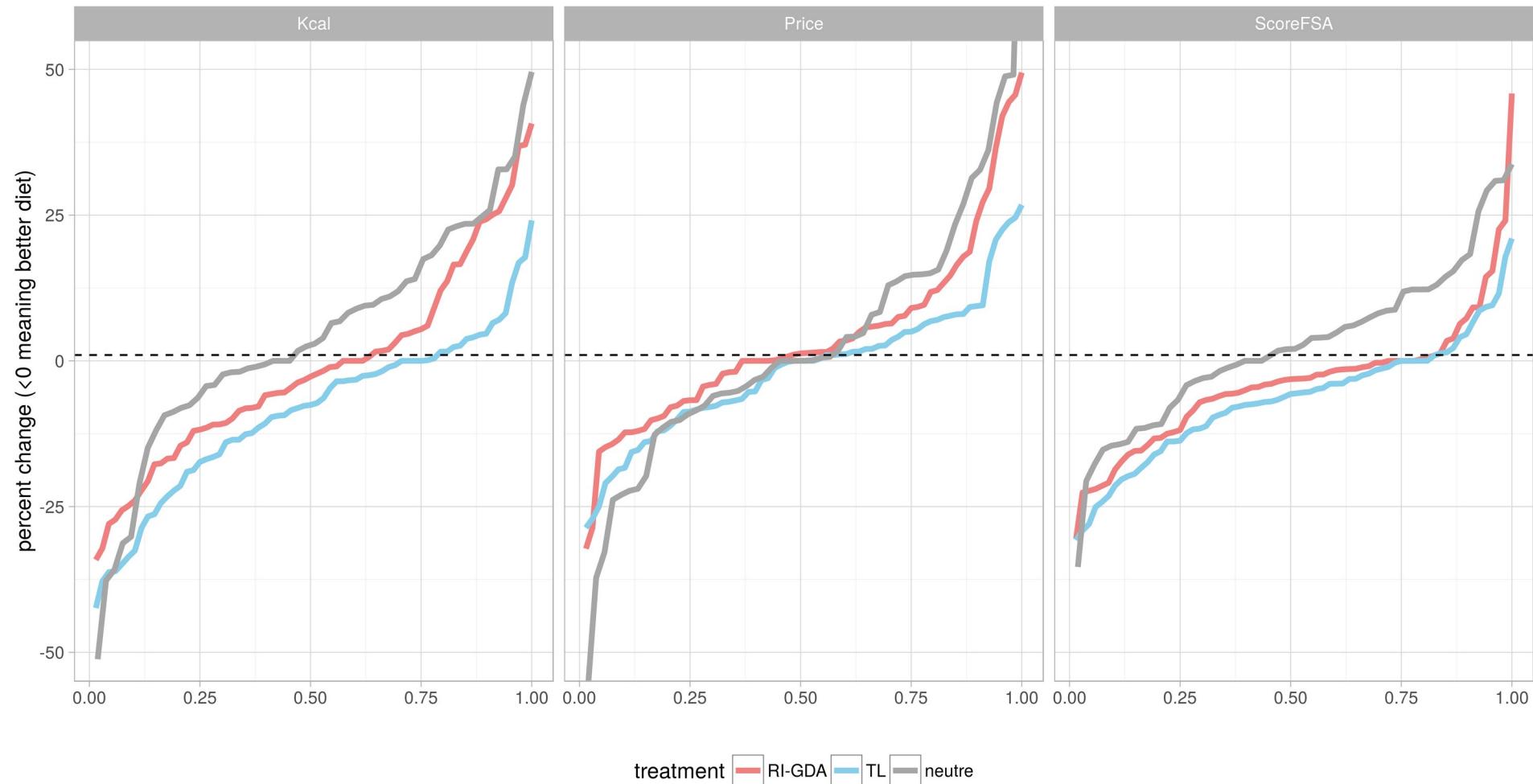
- For each individual, we measure the distance between the two phases (*within*)
- We then compares these distances between samples/treatments (*between*)

$$\Delta_i = \frac{X_i^{l=2} - X_i^{l=1}}{X_i^{l=1}} \times 100$$

	TL	RI	Neutral
FSA Score per 100g	-6.6% ^a	-3.7% ^a	+2.8% ^b
Energy (kCal per 100g)	-8.9% ^a	-1.1% ^b	+4.2% ^c
Price (€ per 100g)	-1.5% ^a	+3.7% ^b	+3.8% ^b
Sugar (g per 100g)	-8.1% ^a	-1.7% ^b	+11.2% ^c
SFA (g per 100g)	-23.2% ^a	-12.8% ^b	+12.2% ^c
Salt (mg per 100g)	-2.0% ^a	-1.3% ^a	+4.7% ^a

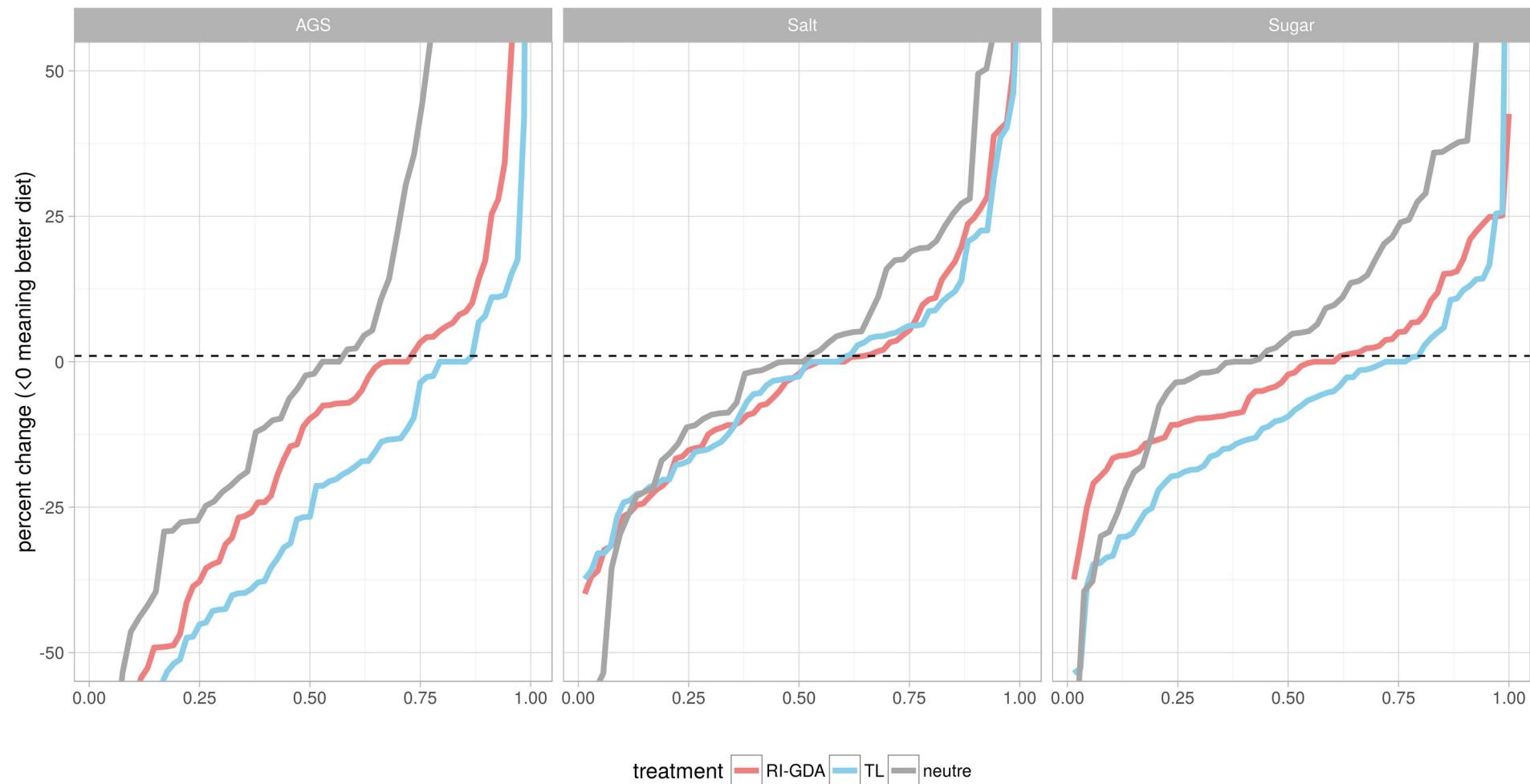


Distribution of subjects according to indicator, /100g





Distribution of subjects according to indicator, /100g





Discussion

Framed field experiment allows strong internal validity :

- Global evaluation of policies based real purchase
- Great control ensuring causality effects Individual analysis allowing test on population
- Reproducibility
- Test of policies that have not yet been implemented

BUT... SOME LIMITATIONS that may hinder external validity

- Great saliency and possible social desirability bias despite monetary incentive
- Environment favorable to reasoned decisions