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# Value of Parsimonious Nutritional Information in a Framed Field Experiment

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**Selected Poster prepared for presentation at the 2016 Agricultural & Applied Economics Association Annual Meeting, Boston, MA, July 31- Aug. 2.**

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## INTRODUCTION

Nutritional labels are a key federal policy used to assist consumers in food choice, but there remain questions about the economic value of labels.

- Need an approach that can estimate an explicit monetary value for nutritional that is aggregated over a whole day's choices
- Utilize an experimental approach based on real food and real money as opposed to hypothetical statements about label use
- Based on simple information based on nutritional indices

## OBJECTIVES

- Determine how product choice is affected by price, taste, and perceived healthfulness and the provision of health information
- Determine the value of health information

## DATA

- Framed field experiment in Grenoble France
- 129 women between the ages of 18 and 76
- Chooses of foods to purchase for breakfast, lunch, snack and dinner for a given day (repeated three times)



### Step 1

Rate tastiness of 173 food items

### Step 2 (Food day 1)

Choose all first day food items out of 173 food options

### Step 3

Rate healthiness  
Receive health objective information for all 173 foods

### Step 4 (Food day 2)

Choose all second day food items out of 173 food options

### Step 5 (Food day 3)

Decrease the price of healthy foods and increase the price of unhealthy foods  
Choose all third day food items out of 173 food options

## ECONOMETRICS METHODS

A RUM, MNL is estimated where the  $i^{th}$  individual's utility of choosing the  $k^{th}$  food item in treatment  $t$ ,  $V_{ikt}$ , is

$$= \beta_1 cereal_k + \beta_2 dairy_k + \beta_3 fruit_k + \beta_4 meat_k + \beta_5 mixed_k + \beta_6 snack_k + \beta_7 veggie_k + \beta_8 taste_{ik} + \beta_9 Healthy\_before_{ikt} + \beta_{10} Unhealthy\_before_{ikt} + \beta_{11} Healthy\_after_{ikt} + \beta_{12} Unhealthy\_after_{ikt} + \beta_{13} price_{kt}$$

where,  $cereal_k$ ,  $dairy_k$ ,  $fruit_k$ ,  $meat_k$ ,  $mixed_k$ ,  $snack_k$  and  $veggie_k$  are the binary variables indicating food  $k$ 's type, where  $k=1,2,...,173$ ,  $taste_{ik}$  is the  $i^{th}$  individual's perceived taste of the  $k^{th}$  food item where  $i=1,2,...,129$ ,  $Healthy\_before_{ikt}$  is a dummy variable describing whether the  $i^{th}$  individual perceives that food  $k$  is healthy in treatment 1,  $Unhealthy\_before_{ikt}$  is a dummy variable describing whether the  $i^{th}$  individual perceives food  $k$  to be an unhealthy food in treatment 1,  $Healthy\_after_{ikt}$  is a dummy variable denoting whether food  $k$  is truly healthy food (in treatments 2 and 3 after information),  $Unhealthy\_after_{ikt}$  is a dummy variable indicating whether food is truly an unhealthy food (in treatments 2 and 3),  $price_{kt}$  is the price of the  $k^{th}$  food item in treatment  $t$  where  $t=1,2,3$  and  $\beta_1, \dots, \beta_{13}$  are the coefficients (marginal utilities) for each explanatory variable

The value of information, CV, is

$$= -\frac{1}{\beta_{price}} \left[ \log \left( \sum_{t=1}^N \sum_{k=1}^J \sum_{t=1}^T \exp(V_{ikt}^{1*}) \right) - \log \left( \sum_{t=1}^N \sum_{k=1}^J \sum_{t=1}^T \exp(V_{ikt}^{0*}) \right) - \sum_{i=1}^N \sum_{k=1}^J \sum_{t=1}^T \pi_{ikt}^{0*} (V_{ikt}^{0*} - V_{ikt}^{1*}) \right]$$

where  $\pi_{ikt}^{0*} = \frac{\exp(V_{ikt}^{0*})}{\sum_k \sum_t \exp(V_{ikt}^{0*})}$ ,  $\beta_{price}$  is a coefficient on price,  $V_{ikt}^{1*}$  is the  $i^{th}$  consumer's perception of the  $k^{th}$  food item's health in treatment 2 and 3 after receiving information,  $V_{ikt}^{0*}$  is the  $i^{th}$  consumer's perception of the  $k^{th}$  food item's health in treatment 1 before receiving information,  $V_{ikt}^0$  is the true  $k^{th}$  food item's health before receiving information in treatment 1, and  $\pi_{ikt}^{0*}$  is the probability of choosing the  $k^{th}$  food item based on pre-disposed information perception.

## RESULTS

Variable	Estimate
Cereal	-1.421** (0.187)
Dairy	-1.080** (0.168)
Fruit	-1.112** (0.205)
Meat	-1.411** (0.225)
Mixed	-1.294** (0.332)
Snack	-1.136** (0.278)
Veggie	-1.673** (0.167)
Taste	0.534** (0.043)
Healthy_before	0.077 (0.050)
Unhealthy_before	-0.615* (0.298)
Healthy_after	0.178** (0.038)
Unhealthy_after	-1.753** (0.316)
Price	-0.123** (0.024)



Willingness-to-Pay	Before information	After information
Healthy vs. neutral	0.625€/kg (0.433)	1.442€/kg (0.444)
Unhealthy vs. neutral	-5.000€/kg (2.642)	-14.243€/kg (3.881)
Healthy vs. unhealthy	5.624€/kg (2.618)	15.685€/kg (4.084)
Taste tradeoff per kg	Before information	After information
Healthy vs. neutral	0.144 taste units (0.095)	0.332 taste units (0.077)
Unhealthy vs. neutral	-1.152 taste units (0.568)	-3.282 taste units (0.651)
Healthy vs. Unhealthy	1.296 taste units (0.550)	3.615 taste units (0.651)

## CONCLUSION

- Simple nutrient index information increases WTP for healthy food and decrease WTP for unhealthy food.
- There is a type of loss aversion in that WTP for healthy vs. neutral food is lower than is WTP for neutral vs. unhealthy food, and this loss aversion increases with information.
- Negative information is more influential than positive information.
- The value of the type of health information explored in this study is €0.98/family/day.