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Value of Parsimonious Nutritional Information in a Framed Field Experiment

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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

$$= \beta_1 \text{cereal}_k + \beta_2 \text{dairy}_k + \beta_3 \text{fruit}_k + \beta_4 \text{meat}_k + \beta_5 \text{mixed}_k + \beta_6 \text{snack}_k + \beta_7 \text{veggie}_k + \beta_8 \text{taste}_{ik} + \beta_9 \text{Healthy_before}_{ikt} + \beta_{10} \text{Unhealthy_before}_{ikt} + \beta_{11} \text{Healthy_after}_{ikt} + \beta_{12} \text{Unhealthy_after}_{ikt} + \beta_{13} \text{price}_{kt}$$

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 $k=1,2,\dots,173$, taste_{ik} is the i^{th} individual's perceived taste of the k^{th} food item where $i=1,2,\dots,129$, $\text{Healthy_before}_{ikt}$ is a dummy variable describing whether the i^{th} individual perceives that food k is healthy in treatment 1, $\text{Unhealthy_before}_{ikt}$ is a dummy variable describing whether the i^{th} individual perceives food k to be an unhealthy food in treatment 1, $\text{Healthy_after}_{ikt}$ is a dummy variable denoting whether food k is truly healthy food (in treatments 2 and 3 after information), $\text{Unhealthy_after}_{ikt}$ 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

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

where $\pi_{ikt}^0 = \frac{\exp(V_{ikt}^0)}{\sum_k \sum_t \exp(V_{ikt}^0)}$, β_{price} is a coefficient on price, V_{ikt}^* 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 π_{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.