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# Impact of Food Price Policies on Daily Food Choices of Low-IMC Women. A Field Experiment

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## Hypothesis and context

### Food price policies may lead towards healthier diets

Low-income populations are particularly exposed to the current obesity epidemic as they consume less fruits and vegetables and, maybe, more fat and sugar products. If bad food behaviors are driven by monetary motives – healthy products seem to be more expensive than nutrient-dense products – then price may be the right tool for the decision makers willing to improve diets.

Here, we test the efficiency of price-policies (*i.e.* healthy products subsidies and unhealthy products taxes) on food choices with a particular focus on low-income population.

## Method

The hypothesis is tested in a field setting, by adapting the habitual concepts and tools of experimental economics. The impact on daily food choices of two policies were estimated among low-income and average-income women.



## Experimental Design

Women were asked to choose a typical daily food intake before and after policy implementation.

	Period 1	Period 2	Period 3	Period 4
Task	Yesterday Food Intake	Tomorrow Food Intake	Tomorrow Food Intake	Tomorrow Food Intake
Information	No posted price	Market Price	Price "F&V" policy	Price "NP" policy
Computation	Nutritional scores (distance) Budget	Nutritional scores (benchmark) Budget (benchmark)	Nutritional scores (distance) Budget (distance)	Nutritional scores (distance) Budget (distance)

## Two policies at stake

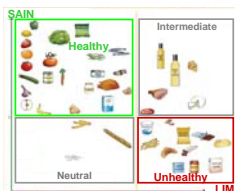
The 'Fruits & Vegetables (FV) policy' consisted in a 30% decrease in the selling price of fruits and vegetables.

The 'Nutrient Profile (NP) policy' consisted in a 30% decrease in the healthy products selling prices and a 30% increase in the unhealthy products selling prices.

Products are categorized according to the following nutrient profiling:

## SAIN;LIM nutrient profiling

Nutrient profiling is determined on the occurrence of 5 qualifying nutrients, expressed as the percentage of nutrient adequacy per 8 MJ (SAIN score), and 3 negative or disqualifying nutrients, expressed as the percentage of the maximal recommended values for saturated fatty acids, added sugar, and sodium per 1.4 kg (LIM score).



The SAIN and LIM scores were used for classifying foods other than fruit and vegetables into three nutrient profiling classes:

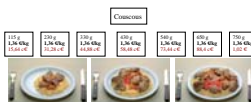
- other healthy products (OHP: high SAIN, low LIM)
- intermediate and neutral products (NIP: low SAIN, low LIM or high SAIN, high LIM)
- unhealthy products (UP: low SAIN, high LIM)

The nutritional quality of the global diet was assessed by:

- an indicator of good nutritional quality: the MAR score (equivalent to the SAIN score, but calculated on a daily basis and 16 nutrients)
- two indicators of bad nutritional quality: the LIM score calculated on a daily basis as well as the dietary energy density

## Software

In this experiment, subjects were asked to buy food and beverage they would consume during 24 hours (daily food intake). They selected products from a 180-product list with prices, portion-sizes and photographs (SuViMax database).



## Two populations

The low-decile income group : 95 females below the poverty line, 18.5% were obese

The reference group : 33 females near the French median income , 6.3% were obese.

## Results

### At baseline, low-income women had less healthy diets

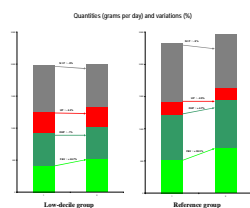
Compared with the reference group, low income women declared a lower consumption of fruits, vegetables, and other healthy products (OHP). Moreover, they consumed more unhealthy products (UP) than the reference group (low-income women devoted 15% more budget to unhealthy products).

### Impact of the 'Fruits & Vegetables' policy

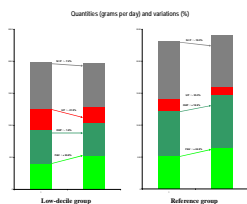
In both population groups, F&V consumption significantly increased.

However, the magnitude was less important for the low-income population.

Contrary to the reference group, low-income women did not take advantage of their budget increase by consuming more OHP products.



### Impact of the 'Nutrient Profiling' policy



In both population, healthy products consumption increased significantly whereas the consumption of unhealthy products decreased.

As in the FV policy, the impact was less important for the low-income women, especially for the decrease in the unhealthy products consumption.

## Disparities in Diet Improvement

At baseline, the diet of the low income group was of lower nutritional quality than that of the reference group.

- The NP policy improved the dietary quality in the two populations,
- The F&V policy also improved the nutritional quality in the reference group, but in the low-income group, some side-effects were noticeable (unexpected increase in LIM).

The magnitude of the favorable effects of both policies was lower among the low-income group, although the gap was less important with the NP policy.

	Initial pattern		F&V policy		NP policy	
	LIM	RG	LIM	RG	LIM	RG
Energy density (kcal per 100g)	142	123	134	106	131	107
MAR score (% per 100 kcal)	4.09	4.61	4.28	5.13	4.32	5.06
Reference value = 5						
LIM score (% per 100g)	9.97	9.84	10.69	7.69	7.33	5.59
Reference value = 7.5						

## Increase of Social Disparities

The purchasing power was improved for both groups by both policies, but inequalities increased between groups. The purchasing power of richer women was, relatively to the low incomes, improved because:

- their initial consumption pattern generated more subsidies and fewer taxes
- they better adapted the new price structure by opting for wished substitutions.

## Conclusion

Price policies had positive, expected, impacts for both group (even though the fruits and vegetables policy had some side effects for the low-income group).

However, price policies may increase the already existing social disparities. Indeed, due to higher price-elasticities and better initial food patterns, average income women benefit nutritionally and economically more from the price policies than the low-income women.

## References

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