

Crowding-in, Crowding-out and Over-crowding
The Interaction between Price and Quantity
Based Instruments and Intrinsic Motivation

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Abstract

We conduct a field experiment involving real purchasing decisions in a large supermarket chain to test the effect of different regulatory interventions aiming to induce a more climate-friendly diet on intrinsic motivation. Focusing on shoppers who prefer the dirty variety, we compare labeling, a subsidy, a product ban and neutrally framed versions of the latter two in their ability to induce shoppers to switch to cleaner varieties. Carbon footprint labels and bans activate intrinsic motivation of shoppers (crowding-in). Remarkably, a subsidy framed as an explicit intervention is less effective than both a label and an equivalent but neutrally framed price change. The effects of information and changes in relative prices are not only not additive (crowding-out) but combined perform worse than each individually (over-crowding). We therefore find markedly different effects of price and quantity based instruments on intrinsic motivation.

JEL classification codes

Q18, Q54, Q58, H23, H41, C93

Keywords

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1. Introduction

Intrinsic motivation to contribute to public goods is an empirically highly relevant factor driving a substantial proportion of charitable giving, volunteering, nonprofit organizations⁴ and environmentally friendly consumption. A fast growing body of literature points out that economic incentives and more generally regulatory interventions aiming to improve the provision of public goods interact with individuals' intrinsic motivation (for surveys see Bowles, 2008; Frey and Jegen, 2001).

Using actual food purchases of some nine hundred customers of a leading UK supermarket we compare the impact of price and quantity based instruments on the intrinsic motivation of consumers to contribute to climate change mitigation. Food production significantly contributes to the emission of greenhouse gases (GHG) and diet choices are therefore an important determinant of a household's carbon footprint (Carlsson-Kanyama and Gonzales, 2009; Eshel and Martin, 2006; Weber and Matthews, 2008). However, relatively little work has so far been done on how to induce consumers to switch to less GHG intensive diets. The non-point source character of most agricultural emissions make downstream regulation, *ceteris paribus*, more attractive compared e.g. to industries included in the European Union's Emission Trading System. However, when regulation directly targets consumers, the instrument chosen might interact with an individual's intrinsic motivation both positively (crowding-in) or negatively (crowding-out).

While evidence of crowding-in is sparse (Charness and Gneezy, 2009), crowding-out has been observed in many settings and for a number of different interventions. The introduction of monetary rewards for a previously unpaid task is likely to reduce effort levels (Heyman and Ariely, 2004; Ariely et al., 2009; Leuven et al., 2010) unless compensation is substantial (Gneezy and Rustichini, 2000b). Similar negative effects of introducing compensation have been found in people's willingness to accept a potentially hazardous facility in their neighborhood (Frey and Oberholzer-Gee, 1997) and for blood and charitable donations (Meier, 2007; Mellström and Johannesson, 2008). Fines (Fehr et al., 2007, Gneezy and Rustichini, 2000a), competitive tenders (Reeson and Tisdell, 2010) and restrictions of the choice set (Falk and Kosfeld, 2006) can also result in a reduction of intrinsic motivation.

⁴ See e.g. Reinikka and Svensson (2010)

A number of different theories have been put forward that seek to explain this interaction between changes in the incentive structure and the level of intrinsic motivation. One set of approaches is based on asymmetric information either between a principal and an agent (Benabou and Tirole, 2003; Sliwka, 2007; Ellingsen and Johannesson, 2008) or between peers where voluntary contribution serve as a signaling device of a person's type (Benabou and Tirole, 2006). A different approach emphasises affective rather than cognitive drivers of human behavior and the perception of who is in control (Frey, 1997).

The present paper fills a gap in this literature by studying how price and quantity based regulatory interventions interact with intrinsic motivation in food purchasing decisions and hence ultimately affect people's diets in a field experiment. The contributions are threefold:

Firstly, while there are papers that use environmentally motivated purchasing decisions for motivation and policy recommendations (e.g. Ariely et al., 2009) we are not aware of any study that actually considers motivation crowding in real purchasing decisions. This is relevant since it implies that all choices are made in a market context. Hence, crowding effects are not brought about by moving from the realm of non-market choices to market transactions. Regulatory interventions only highlight or price a certain characteristic of an already priced product.

Secondly, we compare different regulatory interventions instead of comparing one instrument with a no-intervention baseline (as e.g. in Ariely et al., 2009; Meier, 2007). Based on a differences-in-differences analysis we can therefore draw conclusions on their relative performance in terms of motivation crowding. This is an important contribution to the academic and policy debate on instrument choice and on the 'prices versus quantities' controversy in particular. The latter has so far mainly focused on uncertainty (Weitzman, 1974), enforcement (Montero, 2002) and innovation (Requate and Unold, 2003) but largely ignored interactions with intrinsic motivation. A notable exception is Goeschl and Perino (2009) who pursue closely related questions in the context of carbon offsets.

Thirdly, we are able to separate motivation crowding from non-interventionist changes in relative prices (Goeschl and Perino, 2009) and the choice set (Falk and Kosfeld, 2006). This highlights the relevance of how changes in the choice situation are perceived by those affected. It establishes a close link between the literature on motivation crowding and that on framing effects (Tversky and Kahneman 1981).

We compare three explicit regulatory interventions, a carbon footprint label, a subsidy for cleaner varieties and a ban of dirty varieties, which allow consumers to rank product varieties according to their GHG emissions. The former only conveys information while the latter two impose monetary rewards and a restriction of the choice set, respectively. To disentangle the effects of a fundamental change in the choice situation from the interventionist character of a subsidy and a ban, we also have neutrally framed versions of these instruments.

Both a label and a product ban activate intrinsic motivation. Focusing on consumers that prefer dirty varieties, labeling induces a significant share of them to switch to clean varieties. Likewise, an explicit ban results in less consumers opting-out than if subject to a neutrally framed removal of products. Both instruments therefore increase the relevance of intrinsic motivation in consumers' decision making (crowding-in).

A subsidy induces less switching to clean varieties than a label and a neutrally framed but otherwise equivalent price change. The former implies that norm activation and the response to a relative price changes are sub-additive if combined (crowding-out). The latter is an even starker - and to the best of our knowledge new - result since a subsidy that provides the relevant information to activate intrinsic motivation results in an outcome that is worse than if intrinsic motivation is absent altogether. A subsidy activates intrinsic de-motivation. Combining a monetary reward with information provision performs worse than each of them separately (over-crowding).

The remainder of the paper is structured as follows. The next section describes the experiment and provides a simple model of consumption choices in the presence of intrinsic motivation deriving testable hypotheses on the effect of different regulatory interventions. Section 3 presents results. The last section discusses the policy implications of our findings and concludes.

2. The Experimental Setup

Experimental Procedures

The experiment was conducted in seven Sainsbury's supermarket⁵ stores in the Greater London area⁶ in February and March 2010.

Shoppers were approached when they entered the supermarket. They were asked if they intend to purchase the dirty variety of any of the included product categories (see Table 1). This was done without any reference to 'dirty' but merely by a description of the variety (e.g. six-packs of Cola). If a shopper was interested in buying at least an item from one of the categories, she was invited to participate in the experiment and could opt for any combination of the four product categories. Nevertheless, participants were then presented with a range of dirty and clean varieties in each product category they selected. Those that chose a clean variety initially are excluded from the analysis. Participants were seated in front of a laptop computer and are presented with a range of varieties (both 'dirty' and 'clean') within their chosen product categories.

Table 1: Structure of the Choice Set in the Experiment

Product	Choice set
Cola (2 liters)	Cans (relatively "dirty" option): Coca Cola, Pepsi Cola, Diet Coke, Diet Pepsi, Coke Zero, and Pepsi Max; Plastic bottle (relatively "clean" option): Coca Cola, Pepsi Cola, Diet Coke, Diet Pepsi, Coke Zero, and Pepsi Max.
Milk (2-pint)	Whole milk (highest carbon footprint); semi-skimmed milk (intermediate carbon footprint); skimmed milk (lowest carbon footprint).
Meat (various weights)	Beef products (relatively "dirty" option): minced meat, casserole steak, and braising steak; Chicken products (relatively "clean" option): chicken breast, mini chicken fillet, and drumsticks.
Butter/margarine (500g)	Butter (relatively "dirty" option): Lurpak, Anchor, Countrylife, Kerrygold, Sainsbury's own brand; Margarine (relatively "clean" option); Lurpak, Anchor, Flora, Clover, Sainsbury's own brand.

⁵ This retailer chain accounts for around 27% of the total market share in the study area (Information available on <http://www.j-sainsbury.co.uk/index.asp?pageid=451>), and 16% in all the UK. Sainsbury's also has a well developed internet shopping facility that reaches 88% of the total UK population, with over £ 500 millions worth of sales in 2009 (Information available on http://www.j-sainsbury.co.uk/files/reports/ar2009_report.pdf, page 5. This value only includes food and grocery products, as the non-food area has been launched in 2010).

⁶ The stores were located Walthamstow, New Barnet, Edgware, Chiswick, Merton, and Lewisham. Each store was surveyed for 8 hours a day for 2 days, with the exception of Edgware, where the experiment lasted 4 days.

Participants saw pictures of the products and their current in-store prices. Each participant made two choices in each of the product categories chosen. The first choice constitutes their baseline. Next participants were given the possibility to obtain more information on environmental and nutritional matters associated with food labels. It explained the information provided on food labels. Participants with no interests in any of these two options were able to go directly to the second choice.

The context of the second choice differed between participants depending on which of the five treatments they were randomly assigned to. The second choice allowed them to revise their initial choice based on new information/incentives/choice sets imposed by the treatment. Participants who selected more than one product category completed the first choices for all categories before moving to the second choices and were subject to the same treatment throughout. Respondents had to complete the task independently, without the help of the experimenter.

Table 2: Sources of Carbon Footprint for the Products Included in the Experiment

Product	Source	Carbon footprint	Value of the subsidy ⁷
Cola (2 liters)	Coca Cola ⁸ (2009)	6-can packs: 1,020 g CO ₂ e. Plastic bottles: 500 g CO ₂ e.	£ 0.05 for the purchase of plastic bottles over cans.
Milk (2-pint)	Tesco ⁹	Skimmed milk: 1,400 g CO ₂ e. Semi-skimmed milk: 1,600 g CO ₂ e. Whole milk: 1,800 g CO ₂ e.	£ 0.03 for the purchase of semi-skimmed milk; £ 0.06 for the purchase of skimmed milk.
Meat (various weights)	Williams <i>et al.</i> (2006)	Chicken: 5,000 g CO ₂ e/kg. Beef: 16,000 g CO ₂ e/kg.	£ 0.21 per kilo of chicken meat
Butter/margarine (500g)	Pendos CO ₂ -Zähler ¹⁰	Butter: 11,900 g CO ₂ e. Margarine: 675 g CO ₂ e.	£ 0.43 for the purchase of 0.5 kilos of margarine.

⁷ The subsidy was calculated assuming a social cost of carbon of 70 £/tonne (DEFRA, 2002, p. 41; Pearce, 2003). The following formula converts the amount of CO₂e saved into £/kg

$$70 \frac{\text{£}}{tC} \times \frac{12}{44} \frac{tC}{tCO_2} \times 10^{-6} \frac{tCO_2}{gCO_2} \times \Delta CF \frac{gCO_2}{kg}$$

where ΔCF is the difference in carbon footprint between dirty and clean varieties. In the case of milk and cola, the resulting value was below 0.5 pennies, and was multiplied by 10 for cola, and by 9 in the case of milk.

⁸ Values refer to Coca Cola. Pepsi Cola was assumed to be similar.

⁹ Data are available on <http://www.carbon-label.com/news/17.08.2009%20-%20Tesco%20Milk%20Press%20Release.pdf>. Values refer to Tesco's milk, and Sainsbury's products were assumed to be similar.

¹⁰ German publication quoted on the online website "Time for change", <http://timeforchange.org/eat-less-meat-co2-emission-of-food>

Incentive compatibility is ensured by checking actual purchases when participants leave the shop against their stated choices in the experiment. If purchases were in line with their experimental choices they received a £5 voucher and (for the Subsidy and NeutralPriceChange treatments) a cash payment equivalent to the difference between the (unaltered) in-store price and the reduced price announced in the experiment. Participants were informed about this procedure upfront. At the end of the experiment demographic details of the respondents were collected.

A total of 898 shoppers made at least one dirty initial choice and hence were included in the sample analyzed. The number of participants and hence independent observations per treatment are 196 for Ban, 206 for Subsidy, 209 for Removal, 215 for NeutralPriceChange and 72 for Labeling.

656 participants chose only from one product category, 189 made choices in two, 45 in three and only 8 made purchases from all four categories. This resulted in a total of 1201 pairs of purchasing decisions in the sample.

A Model of Switching Behavior

Participants made two decisions in each product category they had indicated to be on their shopping list that day. First they chose between a dirty and a clean product based on a picture of the product and its price. As the items are everyday products and participation required that subjects intend to buy an item in that category, it seems reasonable to assume that they are familiar with the product they select. Consumption of a particular product yields utility in the form

$$U(X_i, D_j) - P_i, \quad (1)$$

where D_j are characteristics of consumer j , and X_i and P_i are product specific characteristics and the price of product i , respectively. U is measured in monetary units.

We focus on those participants that chose a dirty product initially. Hence, they meet the following condition,

$$U(X_i^d, D_j) - P_i^d \geq U(X_i^c, D_j) - P_i^c, \quad (2)$$

where the superscripts d and c indicate the dirty and clean variety, respectively.

Treatments

After participants made their choice they are then exposed to one of five treatments. In the Subsidy treatment they learned that the government has introduced a monetary reward S which reduces the price of clean products. The instructions for the Subsidy treatment (here for cola) state "*There has been a price change. Products in plastic bottles have a 5p discount due to a GOVERNMENT SUBSIDY received on account of its low carbon footprint*". The price reductions for clean varieties in each product category are given in Table 2. Hence, consumers faced a new set of relative prices, they were able to rank products in each category according to their carbon footprint (because only the cleaner ones qualify for the reward) and they knew that the price change had an interventionist character. Hence, they switched to a clean product if and only if

$$U(X_i^d, D_j) - P_i^d < U(X_i^c, D_j) - P_i^c + S + m(X_i^c, D_j, \text{Subsidy}), \quad (3)$$

where $m(\bullet)$ indicates the net change in intrinsic motivation to buy the cleaner product. The reward, *ceteris paribus*, increased the attractiveness of the cleaner product. If the subsidy is able to activate intrinsic motivation ($m > 0$), then this too will make switching more likely.

Note that for the carbon footprint of a product to have an impact on the consumption choice of a consumer, she does not only need to care about the environmental public good affected (mitigation of climate change) but also has to have at least some form of intrinsic motivation to contribute to this cause. Intrinsic motivation is a necessary condition since the relevant population of the climate mitigation game is in the order of billions and hence close enough to infinity to drive the Nash contribution down to zero (Andreoni 1988).

When a change in relative prices equivalent to that of the subsidy is caused by market forces instead, it creates exactly the same monetary incentives as the subsidy scheme, but consumers are unable to rank products based on any signal of environmental performance. Moreover, the price change does not have an interventionist character. The instruction for the NeutralPriceChange treatment read "*There has been a price change. Products in plastic bottles have a 5p discount because of a change in the price of materials*". The switching condition in the NeutralPriceChange treatment is therefore

$$U(X_i^d, D_j) - P_i^d < U(X_i^c, D_j) - P_i^c + S. \quad (4)$$

Comparing switching behavior in the Subsidy and the NeutralPriceChange treatments allows isolating the effect of the subsidy on intrinsic motivation. The parameter m is the only difference between conditions (3) and (4). This gives rise to the following hypothesis:

Hypothesis 1

- (a) If a subsidy activates intrinsic motivation (crowding-in), then it induces more consumers to switch to the cleaner variety than a neutrally framed price change.
- (b) If a subsidy does not activate intrinsic motivation, then the switching behavior in both treatments are alike.
- (c) If a subsidy activates a form of de-motivation to buy the cleaner product, then it will induce fewer consumers to switch to the cleaner variety compared to a neutrally framed price change.

The quantity-based instrument used in the experiment is a product ban. This is the most drastic form of quantity control and likely to spur the strongest reactions. Theories of motivation crowding that are based on perceptions of who is in control would predict crowding out of intrinsic motivation in such a context.

The Ban treatment restricted the choice set of participants by excluding dirty products. Again, participants were told that this is due to a government intervention. The instructions state "*There has been a change in product availability. Products in cans are not available because they have been BANNED by GOVERNMENT ORDER on account of their high carbon footprint*". Consequently, the only choice left is whether to opt out or purchase a clean alternative instead. The necessary and sufficient condition for opting out is then

$$U(X_i^o, D_j) < U(X_i^c, D_j) - P_i^c + m(X_i^c, D_j, Ban), \quad (5)$$

where X_i^o represents the outside option. Opting out was the only alternative to switching to the clean good, implied that participants chose not to buy any of the products offered but still received the £5 voucher. This option was only available in the Ban and Removal treatments.

The control treatment (Removal) presented participants with exactly the same change in the choice set, but again attributed it to market forces. The switching condition becomes

$$U(X_i^o, D_j) < U(X_i^c, D_j) - P_i^c. \quad (6)$$

Whilst a ban allowed consumers to rank products by their environmental performance, in the presence of a neutrally framed product removal there was no information that would have allowed this. "*There has been a change in product availability. Products are not supplied in cans on account of the lack of availability of the necessary materials*" were the instructions used for the Removal treatment.

Hypothesis 2

- (a) If a ban activates intrinsic motivation (crowding-in), then it induces fewer consumers to opt out than a neutrally framed product removal.
- (b) If a ban does not activate intrinsic motivation, then the switching behavior in both treatments is alike.
- (c) If a ban activates a form of de-motivation to buy the cleaner product, then it will induce more consumers to opt out than a neutrally framed product removal.

In order to test whether information on carbon footprints of products (in CO₂ equivalent units, CO₂e, see Table 2) is able to activate intrinsic motivation at all, we conducted an additional treatment where we only informed participants about the carbon footprints and nutritional information of products without any change in relative prices or the choice set. The nutritional information had no significant impact on participants' choices.¹¹ The switching condition in the Labeling treatment is

$$U(X_i^d, D_j) - P_i^d > U(X_i^c, D_j) - P_i^c + m(X_i^c, D_j, Label). \quad (7)$$

Hence, intrinsic motivation was the only driver of any switches observed. The Labeling treatment also created a benchmark for the scale of intrinsic motivation in the Subsidy treatment. If the

¹¹ The labeling treatment provided nutritional information on calories, fat, protein, carbohydrate and salt content as reported on products' packages. However, only for fat and calories (which are highly correlated with each other) are there any significant differences between the content of first and second choices. For the subsamples of participants in the Labeling treatment who consume a dirty or a clean variety throughout or who switch from the clean to the dirty variety there is no significant difference between attributes in their first and second choice. The only group where such a difference exists is the one switching from dirty to clean, which indicates that the effect is driven by the correlation between the carbon footprint and calories/fat content for some products. This test exploits the fact that nutritional characteristics vary within dirty and clean choices (e.g. 'normal' and diet cola is available both in bottles and cans).

The irrelevance of nutritional information is intuitive as it is available on product labels and hence participants that care about these attributes already take them into account in their baseline choice. Moreover, it was presented in a less salient way (in a table) rather than as a graphical label like the carbon footprint.

effect of both interventions on intrinsic motivation is the same, then we expect to observe more switching in the Subsidy than in the Labeling treatment.

Hypothesis 3

- (a) If the combined effect of a change in relative prices and intrinsic motivation in the Subsidy treatment is not less than intrinsic motivation in the Labeling treatment, then at least as many consumers switch under a subsidy than under a label.
- (b) Only if the effect of intrinsic motivation in the Labeling treatment dominates the combined effect of the change in relative prices and intrinsic motivation in the Subsidy treatment, will we observe less switching under a subsidy than under a label.

The Econometric model

To define the econometric structure of our model, we start from the same utility function introduced in equation (1). Since our sample only includes participants who initially chose the dirty variety and hence satisfy condition (2), conditions (3) – (7) are necessary and sufficient switching conditions. For each product category i and each consumer j we can define the propensity to switch to the clean variety in that product category as the latent variable E_{ij}^* . Actual switching is observable and links as follows to the latent propensity

$$E_{ij} = \begin{cases} 1 & \text{if } E_{ij}^* > 0 \\ 0 & \text{if } E_{ij}^* \leq 0 \end{cases}, \quad (8)$$

where $E_{ij} = 1$ indicates switching. Assuming that the effects of personal characteristics are additively separable and linearly affect marginal utility, the equation to be estimated can be written as

$$E_{ij} = \alpha_0 + \alpha_1 D_j + \alpha_2 X_i + \delta T_j + \varepsilon_{ij}, \quad (9)$$

where ε_{ij} is assumed to be i.i.d. distributed.

Since the switching conditions for a product ban and a neutrally framed removal (conditions (6) and (7)) differ from the other switching conditions not only due to the incentives/information associated with the treatment itself but also due to the outside option, we will create two subsamples for the empirical analysis. The first comprises participants in the treatments covering labeling, a subsidy and a neutrally framed price change and the second those subject to either a

ban or a neutrally framed removal. The coefficient δ of the treatment dummy T_j hence captures the difference in the propensity to switch between the treatment represented by the dummy and the one used as the baseline. Some variants of equation (9) used below will allow for interaction terms between personal characteristics and treatment dummies.

3. Results

This section presents the evidence for the different effects of price and quantity based instruments on intrinsic motivation. After a brief description of the switching pattern, we start with comparing the subsidy to the neutrally framed price change and the pure information treatment. Next the ban is contrasted with the corresponding neutrally framed control treatment.

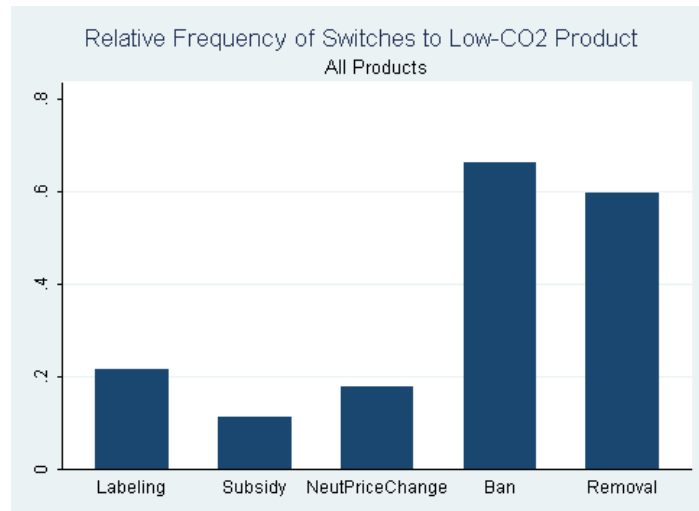


Figure 1: Relative Frequency of Switches for all Product Categories

Table 3: Relative frequency of switching by product category.

	Labeling	Subsidy	NeutralPriceChange	Ban	Removal
Cola	36.4%	27.3%	58.7%	81.6%	75.6%
Butter/Margarine	61.5%	16.1%	20.0%	70.0%	78.6%
Meat	21.1%	12.0%	14.8%	69.1%	71.4%
Milk	8.0%	5.0%	6.4%	60.3%	47.0%
All products	21.5%	11.3%	17.9%	66.4%	59.8%

The switching behavior for each treatment is presented in Figure 1 and Table 3. The Subsidy treatment induces fewer switches in all product categories than both the NeutralPriceChange and Labeling the treatments while the ranking between Ban and Removal is ambiguous on first inspection.

Table 4: Subsidy vs. NeutralPriceChange (clustered at participant level, 493 indep. observations)

	(1) No Interaction Terms	(2) No Interaction Terms – selected control variables	(3) Interaction Terms	(4) Interaction Terms – selected control variables
Multchanges	1.092** (0.011)	1.248*** (0.002)	1.040** (0.015)	1.157*** (0.003)
Subsidy	-0.534* (0.051)	-0.654** (0.011)	2.464* (0.055)	2.728** (0.018)
Sub_Ininc			-0.925** (0.020)	-1.002*** (0.006)
Labeling	0.438 (0.180)		-1.153 (0.517)	
Label_Ininc			0.497 (0.346)	0.162* (0.078)
milk	-2.635*** (0.000)	-2.662*** (0.000)	-2.687*** (0.000)	-2.718*** (0.000)
meat	-1.569*** (0.000)	-1.541*** (0.000)	-1.600*** (0.000)	-1.594*** (0.000)
butter	-0.997*** (0.005)	-1.012*** (0.003)	-1.108*** (0.002)	-1.127*** (0.001)
L.Walthamstow	0.509 (0.222)	0.608* (0.081)	0.623 (0.140)	0.708** (0.044)
hh_children	-0.265** (0.029)	-0.164* (0.078)	-0.230* (0.064)	
Ininc	0.201 (0.283)		0.487** (0.047)	0.462** (0.016)
Observations	666	666	666	666
Pseudo R^2	0.198	0.180	0.210	0.194
chi ²	90.76***	80.84***	102.9***	85.86***

The following control variables are insignificant in regressions (1) and (3) and are not reported: L.NewBarnet, L.Edgware, L.Chiswick, L.Merton, envinfo, nutrinfo, age, hh_size, male, student, unemployed, retired, edu1, ncsec. Constant included but is not reported.

Variable descriptions and summary statistics are reported in Tables 7 and 8 in the appendix, respectively.

p -values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Subsidies and Intrinsic (De-) Motivation

A direct comparison of the number of switches in the Subsidy and the NeutralPriceChange treatments using a Mann-Whitney test rejects the null hypothesis ($p = 0.0259$) that the propensity to switch is the same under Subsidy and NeutralPriceChange. This confirms Hypothesis 1(c) and indicates that an explicit price intervention activates a form of intrinsic de-motivation. Participants become less sensitive to a change in relative prices than in a situation that does not allow interactions with intrinsic factors. Note that this effect is not driven by participants that initially bought clean products and changed their mind because of the intervention. The sample only includes participants that initially chose dirty products.

To further test for the robustness of this effect, we run a logit regression on the propensity to switch with the NeutralPriceChange treatment as a baseline. Table 4 reports results of four regressions. The regressions in columns (1) and (2) include treatment dummies and different numbers of controls. Both confirm that the propensity to switch is lower in the Subsidy than in the NeutralPriceChange treatment. In order to control for the fact that some of the observations are generated by the same participant, we cluster at the participant level (there are 493 independent observations) and include the control variable Multchanges. The latter is a dummy that takes the value 1 if and only if a participant switched in at least one other product category. It therefore captures the fact that a participant who switches in one product category is more likely to switch in other categories as well.

Regressions (3) and (4) in Table 4 include interaction terms between treatments and log of income. While the propensity to switch increases in income in the Labeling and NeutralPriceChange treatments this is reversed for the Subsidy treatment. The negative effect of the subsidy-income interaction term dominates the positive subsidy effect for the average participant (the mean of *lninc* in this sample is 3.25, min: 2.01 and max: 4.38). Hence, participants with average and above average income are less likely to switch to clean products under a Subsidy than if subject to a neutrally framed price change. The effect of income on crowding is intuitive since poorer consumers face a tougher trade-off between money and their desire to resist government intervention.

Result 1

A subsidy induces fewer consumers to switch to clean products than a neutrally framed price change. This indicates that the price intervention activates a form of intrinsic de-motivation (overcrowding).

Table 5: Subsidy vs. Labeling (clustered at participant level, 493 independent observations)

	(1) No Interaction Terms	(2) No Interaction Terms – selected control variables	(3) Interaction Terms	(4) Interaction Terms – selected control variables
Multchanges	1.092** (0.011)	1.248*** (0.002)	1.013** (0.018)	1.157*** (0.003)
Subsidy	-0.972*** (0.007)	-0.654** (0.011)	3.620* (0.054)	2.728** (0.018)
Sub_Ininc			-1.420** (0.013)	-1.164*** (0.002)
NeutralPriceChange	-0.438 (0.180)		1.256 (0.468)	
Neutral_Ininc			-0.522 (0.309)	-0.162* (0.078)
Milk	-2.635*** (0.000)	-2.662*** (0.000)	-2.664*** (0.000)	-2.718*** (0.000)
Meat	-1.569*** (0.000)	-1.541*** (0.000)	-1.572*** (0.000)	-1.594*** (0.000)
Butter	-0.997*** (0.005)	-1.012*** (0.003)	-1.080*** (0.003)	-1.127*** (0.001)
L.Walthamstow	0.509 (0.222)	0.608* (0.081)	0.593 (0.156)	0.708** (0.044)
hh_children	-0.265** (0.029)	-0.164* (0.078)	-0.220* (0.084)	
Lninc	0.201 (0.283)		0.961** (0.044)	0.624*** (0.003)
Observations	666	666	666	666
Pseudo R^2	0.198	0.180	0.209	0.194
chi ²	90.76***	80.84***	102.7***	85.86***

The following control variables are insignificant in regressions (1) and (3) and are not reported: L.NewBarnet, L.Edgware, L.Chiswick, L.Merton, envinfo, nutrinfo, age, hh_size, male, student, unemployed, retired, edu1, ncsec. Variable descriptions and summary statistics are reported in Tables 7 and 8 in the appendix, respectively.

Constant included but is not reported.

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

One explanation of Result 1 is that consumers consider a high carbon footprint as something positive (e.g. because they are not familiar with the concept). To rule out this possibility and to test the interaction of a carbon footprint with intrinsic motivation in consumers we conducted the

Labeling treatment. This treatment relies exclusively upon the carbon footprint of a product without any monetary incentives.

The Labeling treatment induces a significant share of participants to switch (a Wilcoxon signed rank test rejects the null that there is no switching, $p = 0.000$). Hence, the information about carbon footprints was able to activate intrinsic motivation to contribute to climate change mitigation. Comparing the frequency of switching in the Subsidy and the Labeling treatments rejects the null hypothesis that consumers are equally likely to switch to clean products in the Labeling and the Subsidy treatments (Mann-Whitney test: $p = 0.0143$). Intrinsic motivation alone is able to induce more consumers to switch in the Labeling treatment than the combined effects of a change in relative prices and information on the relative ranking of products according to their carbon footprint in the Subsidy treatment. This indicates crowding-out of intrinsic motivation by the combination of a monetary reward compared to the provision of information alone.

This is further confirmed by a series of logit regressions presented in Table 5. Again, columns (3) and (4) show that the crowding-out effect is stronger among higher income groups.

Product bans and motivation crowding

Now we turn to the impact of a product ban on intrinsic motivation. Again, except for the framing, the Ban and the Removal treatments are identical with one exception. In contrast to the Removal treatment, the Ban treatment does convey information about the relative environmental performance of varieties. Note, however, that the dirty varieties are no longer available once this information becomes available. Participants now have to compare the clean variety against an unobservable¹² outside option. The dependent variable is now the propensity of a participant to opt out (which is the opposite of switching).

Opt out frequencies are not significantly different (Mann-Whitney test: $p = 0.1130$) across treatments. The miss is however close enough to justify some further investigation using logit regressions.

¹² To the experimenter.

Controlling for a set of consumer specific characteristics makes the treatment dummies in regression (1) and (2) of Table 6 significant. Hence, fewer consumers opt-out under a product ban than when the same change in the choice set is attributed to market forces. Regression (4) indicates that again income is driving this result. The treatment dummy is highly insignificant (and hence omitted from regression (4)) if the interaction term with log of income is included.

Table 6: Ban vs. Removal (clustered at participant level, 405 independent observations)

	(1) No Interaction Terms	(2) No Interaction Terms – selected control variables	(3) Interaction Terms	(4) Interaction Terms – selected control variables
Multioptout	0.860*** (0.006)	0.881*** (0.004)	0.835*** (0.009)	0.870*** (0.005)
Ban	-0.341* (0.076)	-0.369** (0.049)	0.497 (0.595)	
Ban_Ininc			-0.259 (0.359)	-0.121** (0.031)
milk	1.434*** (0.000)	1.349*** (0.000)	1.439*** (0.000)	1.349*** (0.000)
meat	0.639 (0.101)	0.545* (0.080)	0.637 (0.102)	0.545* (0.080)
butter	0.199 (0.631)		0.203 (0.626)	
L.Merton	-0.742** (0.012)	-0.588*** (0.005)	-0.732** (0.013)	-0.593*** (0.005)
unemploy	-1.047** (0.016)	-0.972** (0.017)	-1.035** (0.016)	-0.967** (0.016)
retired	-1.411 (0.125)	-1.441* (0.092)	-1.432 (0.125)	-1.437* (0.094)
lninc	0.271 (0.102)	0.189 (0.186)	0.404* (0.069)	0.250* (0.086)
Observations	535	535	535	535
Pseudo R^2	0.095	0.086	0.096	0.087
chi2	58.51***	50.91***	59.03***	51.22***

The following control variables are insignificant in regressions (1) and (3) and are not reported: L.Walthamstow, L.NewBarnet, L.Edgware, L.Chiswick, envinfo, nutrinfo, age, hh_children, hh_size, male, student, edu1, ncsec. Variable descriptions and summary statistics are reported in Tables 7 and 8 in the appendix, respectively.

Constant included but is not reported.

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Result 2

A product ban activates intrinsic motivation. Consumers are less likely to opt-out if a product is banned than if it becomes unavailable for other reasons.

Combining Results 1 and 2 we find substantially different effects of price and quantity based instruments on intrinsic motivation. While a subsidy crowds out intrinsic motivation and can even turn it into de-motivation, there is (somewhat weaker) evidence of crowding-in for a ban. This is in line with the general predictions of Frey (1992) but contrasts with some previous findings in the literature (e.g. Falk and Kosfeld, 2006). However, the latter does not consider a public good setting and does not provide a comparison between a price and a quantity instrument but focuses on the latter exclusively.

4. Conclusions

Our findings provide the first direct comparison of price and quantity instruments in a field experiment based on real consumer purchasing decisions. We find marked differences between the two types of instruments in the way they interact with intrinsic motivation. A subsidy crowds-out (and even ‘over-crowds’) intrinsic motivation while a ban (weakly) crowds-in.

To summarize the key results, information provision through labeling is able to induce shoppers to switch to more climate friendly product varieties due to their intrinsic motivation to contribute to climate change mitigation. However, combining information on the relative environmental performance of products with a monetary reward for switching is less effective than information alone (crowding-out). Moreover, using a subsidy as an explicit regulatory intervention performs worse than an equivalent but neutrally framed price change where no intrinsic motivation is present (over-crowding). This indicates that the framing of otherwise equivalent changes in the incentive structure matter for intrinsic motivation. Goeschl and Perino (2009) observe crowding out of pre-existing intrinsic motivation by an environmental tax compared to a neutrally framed price change. Hence, they find evidence that motivation is reduced, but not that it becomes ‘negative’.

The policy implications of our results are as follows. We are investigating the ability of various instruments to channel intrinsic motivation toward the supply of public goods. What works?

Our initial finding is that Labeling can be an effective element in the utilization of the intrinsic motivation of consumers to change their diets to become less carbon intensive. It is interesting to note that approximately twenty per cent of the consumers require only this “nudge” to give effect to their own motivation.

Our second finding is that a change in relative prices also has a clear positive impact but the scale of that impact depends upon consumers’ perception of the origin of that price effect; specifically, governments perceived to be acting through the price mechanism generate negative interaction effects with the affected public. Hence, a governmental intervention that is highly visible to consumers might be less effective than a ‘hidden’ tax or subsidy that is applied further upstream and does not appear as such on the price of products. Explicit governmental nudges conveyed through the price mechanism generated negative responses.

Finally, the use of the instrument of an outright ban is of course most effective in inducing consumers to switch to a cleaner variety; however, the switching rates are still clearly below one hundred percent. Depending on the characteristics of the outside options consumers choose to buy instead, the impact on GHG emissions is not obvious. Clearly, though, the quantity-based instrument does not generate the negative response amongst consumers as does the price-based instrument.

Taken together, the results from this experiment suggest that a government working in an area imbued with intrinsic motivations should proceed carefully in its selection of instruments. Unlike the suggestions of basic theory, not all instruments give effect to intrinsic motivation in the same way. Price-based instruments can interact negatively with intrinsic motivations and quantity-based instruments can interact less so (and even weakly positively).

The upshot of this experiment is that the way information is conveyed to the public matters when attempting to nudge it in a given direction. When the public is imbued with intrinsic motivations to go with the nudge, then a simple nudge (basic information) provides an effective instrument for moving many of those involved. A nudge conveyed explicitly through the price mechanism has a pronouncedly negative impact on the consuming public; they do not wish to be nudged in this

fashion. The fact that the price instrument is less effective than labeling information alone indicates that this sort of information transmission is unwelcome. This is especially so amongst the high income groups – who demonstrate that they are willing to supply public goods voluntarily more readily than by reason of income-based coercion. Finally, a quantity-based restriction appears to overcome much of this reticence, perhaps by creating the perception that the burden of provision is more equitably shared.

A number of caveats are in order. Firstly, the experiment can by its design only capture short term effects. The willingness to switch might be substantially different in the long-run. Hence, the absolute levels of switches should be treated with caution. The focus is on the relative performance of instruments and on the interactions with intrinsic motivation. Secondly, the credibility of the framings can be questioned on the grounds that participants were fully aware that they are participating in an experiment and that any subsidy, price change, ban and product removal would not be permanent and that any government involvement might be purely hypothetical. However, if participants would indeed have found the framing unconvincing, we should not have found any significant effects between the Subsidy and the NeutralPriceChange or the Ban and the Removal treatments. The fact that we did, indicates that the setup did work as intended.

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References

- Andreoni, J. 1988. "Why free ride? Strategies and learning in public goods experiments." *Journal of Public Economics* 37(3):291-304.
- Ariely, D., A. Bracha, and S. Meier. 2009. "Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially." *American Economic Review* 99(1):544-55.

- Becker, G. S., K. M. Murphy, and M. Grossman. 2006 "The Market for Illegal Goods: The Case of Drugs." *Journal of Political Economy* 114(1):38-60.
- Benabou, R., and J. Tirole. 2003. "Intrinsic and extrinsic motivation." *Review of Economic Studies* 70:489-520.
- Benabou, R., and J. Tirole. 2006. "Incentives and prosocial behavior." *American Economic Review* 96(5):1652-1678.
- Bowles, S. 2008. "Policies designed for self-interested citizens may undermine "the moral sentiments": evidence from economic experiments." *Science* 320:1605-1609.
- Carlsson-Kanyama, A. and A. D. González. 2009. Potential contribution of food consumption patterns to climate change, *American Journal of Clinical Nutrition* 89(5): 1704-1709.
- Charness, G., and U. Gneezy. 2009. "Incentives to exercise." *Econometrica* 77(3):909-931.
- Cooter, R. (1985) "Prices and Sanctions." *Columbia Law Review*, 84(6):1523-1560.
- Ellingsen, T., and M. Johannesson. 2008. "Pride and prejudice: The human side of incentive theory." *American Economic Review* 98(3):990-1008.
- Eshel, G. and P.A. Martin: (2006) Diet, Energy, and Global Warming. *Earth Interactions*, 10: 1-17.
- Falk, A. and M. Kosfeld: 2006. "The hidden costs of control." *American Economic Review* 96(5):1611-1630.
- Fehr, E., Klein, A. and Schmidt, K. M.: 2007, Fairness and contract design, *Econometrica* 75(1), 121-154.
- Frey, B. S., and F. Oberholzer-Gee. 1997. "The cost of price incentives: An empirical analysis of motivational crowding-out." *American Economic Review* 87(4):746-755.
- Frey, B. S.: 1992, Pricing and regulating affect environmental ethics, *Environmental and Resource Economics* 2, 399-414.
- Frey, B. S. 1997. *Not Just for the Money: An Economic Theory of Personal Motivation*. Cheltenham, UK, Edward Elgar Publishing.
- Gneezy, U., and A. Rustichini. 2000a. "A fine is a price." *Journal of Legal Studies* 29(1):1-17.
- Gneezy, U., and A. Rustichini, 2000b. "Pay enough or don't pay at all." *Quarterly Journal of Economics* 115(2):791-810.
- Goeschl, T., and G. Perino. 2009. "Instrument Choice and Motivation: Evidence from a Climate Change Experiment." Unpublished, CBESS Discussion Paper 09-05, University of East Anglia.
- Hair, J. F., W.C. Black, B. J. Babin, and R. E. Anderson. 2006. *Multivariate Data Analysis*. 6th ed. Upper Saddle River, New Jersey: Pearson Prentice Hall.

- Leuven, E., H. Oosterbeek and B. van der Klaauw. 2010. "The Effect of Financial Rewards on Students' Achievement: Evidence From A Randomized Experiment" *Journal of the European Economic Association* 8(6):1243-1265.
- Meier, S. 2007. "Do subsidies increase charitable giving in the long run? Matching donations in a field experiment" *Journal of the European Economic Association* 5(6):1203-1222.
- Mellström, C. and M. Johannesson. 2008. "Crowding Out in Blood Donation: Was Titmuss Right?" *Journal of the European Economic Association* 6(4):845-863.
- Montero, J.-P. 2002. Prices versus quantities with incomplete enforcement, *Journal of Public Economics* 85:435-454.
- UK Office for National Statistics. 2005. *Socio-economic Classification - User Manual*. Basingstoke, UK, Palgrave Macmillan.
- Reeson, A. F., and J. G. Tisdell. 2010. "The market instinct: The demise of social preferences for self-interest." *Environmental and Resource Economics* 47(3):439-453.
- Reinikka, R. and J. Svensson. 2010. "Working for God? Evidence from a Change in Financing of Nonprofit Health Care Providers in Uganda," *Journal of the European Economic Association*, 8(6):1159-1178.
- Requate, T. and Unold, W. 2003. Environmental policy incentives to adopt advanced abatement technology: Will the true ranking please stand up?, *European Economic Review* 47, 125-146.
- Ryan, R. M., and E. L. Deci (2000) "Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions." *Contemporary Educational Psychology*, 25:54–67
- Sliwka, D. 2007. "Trust as a signal of a social norm and the hidden costs of incentive schemes." *American Economic Review* 97(3):999-1012.
- Tversky, A., and D. Kahneman. 1981. "The framing of decisions and the psychology of choice." *Science* 185(4157):1124-1131.
- Weber, C. L. Matthews, H. S. 2008 Food-Miles and the Relative Climate Impacts of Food Choices in the United States. *Environmental Science and Technology* , 42 (10): 3508-3513
- Weitzman, M. 1974. Prices vs. Quantities, *Review of Economic Studies* 41(4), 477-491.

Appendix

Table 7: Variable Descriptions

Variable	Description
Multiple switch dummies	
Multchanges	Dummy: 1 if participant switched in at least one of the other product categories, 0 otherwise
Multoptout	Dummy: 1 if participant opted out in at least one of the other product categories, 0 otherwise
Treatment dummies	
Labeling	Dummy: 1 if participant was subject to Labeling treatment, 0 otherwise
Subsidy	Dummy: 1 if participant was subject to Subsidy treatment, 0 otherwise
NeutralPriceChange	Dummy: 1 if participant was subject to NeutralPriceChange treatment, 0 otherwise
Ban	Dummy: 1 if participant was subject to Ban treatment, 0 otherwise
Product dummies	
milk	Dummy: 1 for milk, 0 otherwise
meat	Dummy: 1 for meat, 0 otherwise
butter	Dummy: 1 for butter/margarine, 0 otherwise
Location dummies	
L.NewBarnet	Dummy: 1 if observation is from store in New Barnet, 0 otherwise.
L.Edgware	Dummy: 1 if observation is from store in Edgware, 0 otherwise.
L.Chiswick	Dummy: 1 if observation is from store in Chsiwick, 0 otherwise.
L.Merton	Dummy: 1 if observation is from store in Merton, 0 otherwise.
L.Walthamstow	Dummy: 1 if observation is from store in Walthamstow, 0 otherwise.
Socio-demographic variables	
envinfo	Dummy: 1 if participant opts to read the environmental information sketching the problem of climate change and the meaning of a carbon label, 0 otherwise.
nutrinfo	Dummy: 1 if participant opts to read the nutritional information sketching the health impact of energy, proteins, carbohydrates, fat and salt referred to on food labels, 0 otherwise.
hh_children	Number of children (below 12 years old) in the household
hh_size	Number of persons living in a household
male	Dummy: 1 if participant is male, 0 otherwise.
student	Dummy: 1 if participant is a student, 0 otherwise.
ncsec	Socio-economic class, based on participants' occupation in accordance with UK Office for National Statistics 2005 guidelines.
Unemployed	Dummy: 1 if participant is unemployed, 0 otherwise.
Edu1	Dummy: 1 if participant does not have any university-level education, 0 otherwise.
Lninc	Log of income
Interaction terms	
Label_Lninc	Labeling x Lninc
Sub_Lninc	Subsidy x Lninc
Neutral_Lninc	NeutralPriceChange x Lninc
Ban_Lninc	Ban x Lninc

Table 8: Summary Statistics

Variable	Mean	Std. Dev.
Multchanges	0.20	0.40
Multoptout	0.08	0.27
Labeling	0.08	0.27
Subsidy	0.22	0.42
NeutralPriceChange	0.26	0.44
Ban	0.22	0.41
milk	0.53	0.50
meat	0.18	0.39
butter	0.14	0.35
L.NewBarnet	0.07	0.25
L.Edgware	0.17	0.38
L.Chiswick	0.20	0.40
L.Merton	0.29	0.45
L.Walthamstow	0.10	0.30
envinfo	0.38	0.48
nutrinfo	0.57	0.49
hh_children	0.63	1.01
hh_size	2.97	1.61
male	0.38	0.49
student	0.07	0.26
ncsec	8.43	4.21
Unemployed	0.05	0.22
Edu1	0.39	0.49
Income (in '000)	31.1	18.50

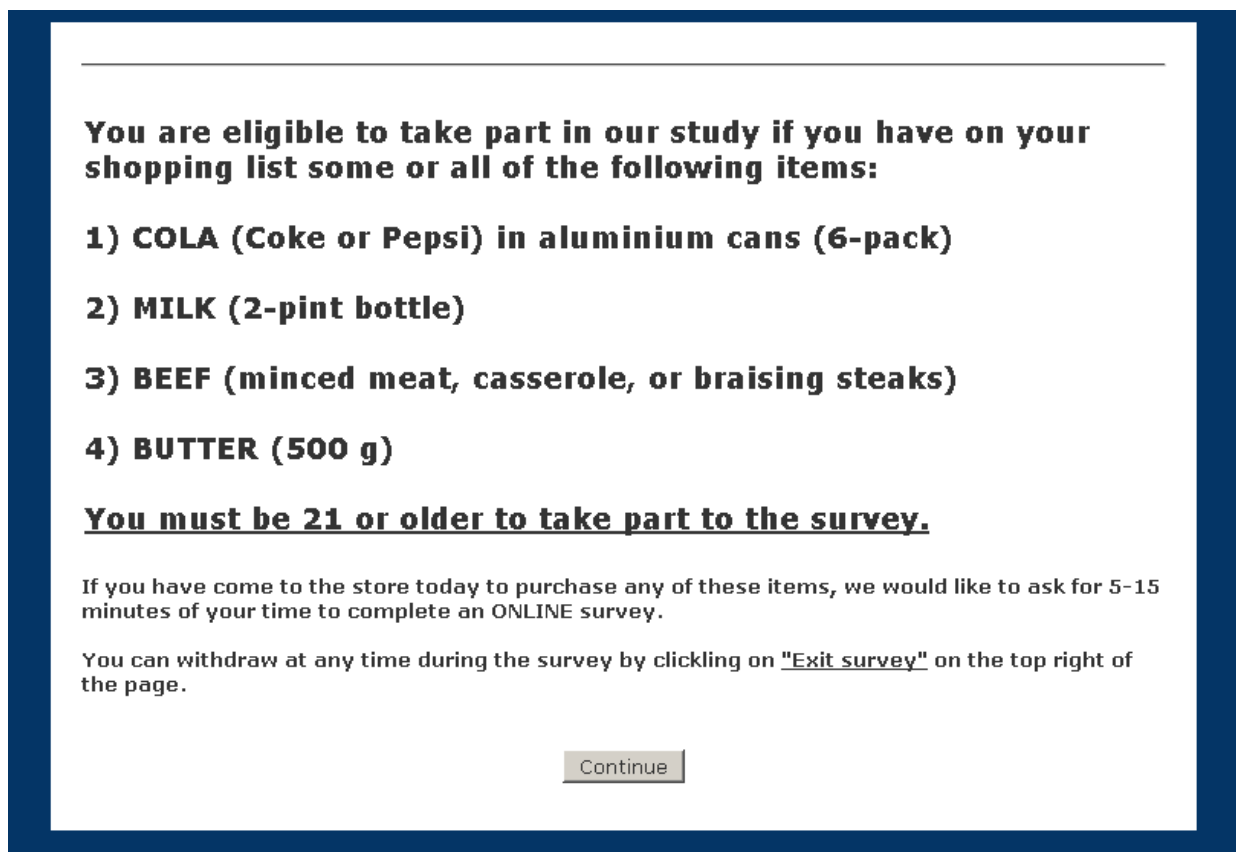
Experimental Instructions

Title:

Crowding-in, Crowding-out and Over-crowding: The Interaction between Price and Quantity Based Instruments and Intrinsic Motivation

The experiment was powered by the online survey provider "Questionpro" (www.questionpro.com).

The initial screen was used to capture the attention of potential participants and to summarise the general conditions for participation.



You are eligible to take part in our study if you have on your shopping list some or all of the following items:

- 1) COLA (Coke or Pepsi) in aluminium cans (6-pack)**
- 2) MILK (2-pint bottle)**
- 3) BEEF (minced meat, casserole, or braising steaks)**
- 4) BUTTER (500 g)**

You must be 21 or older to take part to the survey.

If you have come to the store today to purchase any of these items, we would like to ask for 5-15 minutes of your time to complete an ONLINE survey.

You can withdraw at any time during the survey by clicking on "[Exit survey](#)" on the top right of the page.

[Continue](#)

Ethical clearance: the following screen reports the point required for obtaining the ethical clearance on this experimental work. The experiment would start only upon the acceptance of terms and conditions. Note: Respondents were allowed to leave the experiment at any point, clicking the "Exit survey" option provided on the top right corner of every page of the survey. The last screen in the case of self quitting is reported in appendix 1.

In this survey, we invite you to consider the purchase of a couple of items in our virtual marketplace. This will take you about 5-10 minutes, and we are going to ask you questions about your shopping choices and some information about your household and personal characteristics. In return for your time, if you complete the study and purchase the items you choose, we will give you a £ 5 voucher.

The survey is designed to investigate how people make choices between comparable items while they are shopping. In particular we are curious to know how choices are impacted by information about products, and their availability.

All the information you provide is going to be anonymous and strictly confidential.

In compliance with the DATA PROTECTION ACT, all the information gathered is going to be stored indefinitely on a safe computer, where no third party has access. Should you want any information, do not hesitate to contact us at anytime at the e-mail addresses denise.leung@ucl.ac.uk or I.panzone@ucl.ac.uk.

Please continue with the survey only if you understand and voluntarily accept all of the conditions under which it is being undertaken.

Do you accept these terms?

- ☐ I ACCEPT THE TERMS - START SURVEY
☐ I DO NOT ACCEPT THE TERMS - LEAVE THE SURVEY

Continue

At this point, respondents would effectively start the experiment. The next page would give a summary of the survey to participant, in order to make them aware of the steps they were to expect. If not accepting, the survey would be terminated. The screen respondents would find in this case is reported in appendix 1.

[Exit Survey »](#)

Thank you for participating. The survey consists in 3 quick steps:

STEP 1: Select the grocery products you have come to purchase at the store today (from a list given below).

STEP 2: Select any information (environmental, nutritional, or none of the two) you would like before finalising your choices.

STEP 3: Finalise your product selection.

When complete, you will then be asked to:

- a) Supply some household survey information;
- b) Purchase the selected product(s) in store on this shopping trip;
- c) Collect your voucher after the shopping trip.

Continue

Once started, respondents could choose one or more aisles where they would shop on the day of the experiment.

The screenshot shows a survey interface with a dark blue background. At the top right, there is a link "Exit Survey »". Below it, a red instruction reads "Questions marked with a * are required". The main question is "What are you planning to purchase today on your shopping trip? (you can choose as many categories as you like)". Below the question is a red asterisk. The list of options includes: "COLA (Coke or Pepsi) in aluminium cans (6-pack)", "MILK (2-pint bottle)", "BEEF (minced meat, casserole, or braising steaks)", "BUTTER (500 g)", and "None of the above". Each option has a checkbox, with the first four being checked. A "Continue" button is at the bottom.

Exit Survey »

Questions marked with a * are required

What are you planning to purchase today on your shopping trip? (you can choose as many categories as you like)

*

- ☒ COLA (Coke or Pepsi) in aluminium cans (6-pack)
- ☒ MILK (2-pint bottle)
- ☒ BEEF (minced meat, casserole, or braising steaks)
- ☒ BUTTER (500 g)
- ☐ None of the above

Continue

The choice of the "None of the above option" alone would automatically finish the experiment, and the respondent would not be entitled to the voucher. The screen informing respondents in this case is reported in appendix 1.













Respondents could choose to shop in any aisle, choosing one up to all four options. Having chosen the aisle, people would now be able to indicate the product they wanted to purchase. Note: only products in the aisle chosen by the respondent would be shown to him, while all other aisles would remain hidden (the same applies to the second choice set).

Questions marked with a * are required

STEP 1: IN THE STORE**Aisle 1: Cola soft drinks**

Please select the item you came here to purchase today, irrespective of the number of units (tick only one product). Prices are actual store prices.




*

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Coca Cola, <u>6-cans</u> - £ 2.69 | <input type="radio"/>  Coca Cola, <u>2 lt Bottle</u> - £ 1.56 |
| <input type="radio"/>  Coca Cola Diet, <u>6-cans</u> - £ 2.69 | <input type="radio"/>  Coca Cola Diet, <u>2 lt Bottle</u> - £ 1.56 |
| <input type="radio"/>  Coca Cola Zero, <u>6-cans</u> - £ 2.69 | <input type="radio"/>  Coca Cola Zero, <u>2 lt Bottle</u> - £ 1.56 |
| <input type="radio"/>  Pepsi Regular, <u>6-cans</u> - £ 2.63 | <input type="radio"/>  Pepsi Regular, <u>2 lt Bottle</u> - £ 1.59 |
| <input type="radio"/>  Pepsi Diet, <u>6-cans</u> - £ 2.63 | <input type="radio"/>  Pepsi Diet, <u>2 lt Bottle</u> - £ 1.59 |
| <input type="radio"/>  Pepsi Max, <u>6-cans</u> - £ 2.63 | <input type="radio"/>  Pepsi Max, <u>2 lt Bottle</u> - £ 1.59 |

Aisle 2: Fresh milk

Please select the item you came here to purchase today, irrespective of the number of units (tick only one product). Prices are actual store prices.

*

- | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Sainsbury's Whole milk, <u>2-pint plastic bottle</u> - £ 0.86 |
| <input type="radio"/>  Sainsbury's Semi-skimmed milk, <u>2-pint plastic bottle</u> - £ 0.86 |
| <input type="radio"/>  Sainsbury's Skimmed milk, <u>2-pint plastic bottle</u> - £ 0.86 |

Aisle 3 - Meat

Please select the item you came here to purchase today, irrespective of the number of units (tick only one product). Prices are actual store prices.

*

- ☐  Sainsbury's Beef Braising Steak (440g) - £ 3.49
- ☐  Sainsbury's Beef Mince (500g) - £ 2.20
- ☐  Sainsbury's Diced Casserole Steak, Basics (440g) - £ 2.50
- ☐  Sainsbury's Basics Chicken Breast (300g) - £ 2.39
- ☐  Sainsbury's Mini Chicken Fillet (238g) - £ 2.18
- ☐  Sainsbury's Fresh Chicken Drumsticks (700g) - £ 2.37

Aisle 4: Butter

Please select the item you came here to purchase today, irrespective of the number of units (tick only one product). Prices are actual store prices.

*

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Lurpak butter, 500 g - £ 2.76 | <input type="radio"/>  Lurpak Spread, 500 g - £ 2.00 |
| <input type="radio"/>  Anchor butter, 500 g - £ 2.38 | <input type="radio"/>  Flora Original spread, 500 g - £ 1.28 |
| <input type="radio"/>  Country life butter, 500 g - £ 2.40 | <input type="radio"/>  Anchor Spreadable, 500 g - £ 2.38 |
| <input type="radio"/>  Kerrygold butter, 500 g - £ 2.36 | <input type="radio"/>  Clover, 500 g - £ 1.49 |
| <input type="radio"/>  Sainsbury's Basics butter, 500 g - £ 1.70 | <input type="radio"/>  Sainsbury's Butterlicious spread, 500 g - £ 1.00 |

Continue

Once respondents made their first choice, they were offered the possibility to have information on nutritional and environmental characteristics of food, which could read.

[Exit Survey »](#)

Questions marked with a * are required

STEP 2: CHOICE OF INFORMATION

BEFORE YOU PROCEED, you may be interested in obtaining some general information that you might find helpful in order to make your choices.

The general information available concerns the environmental and nutritional impacts of the products you have selected.

Please choose the type of information you would like before you proceed (you can tick as many options as you like)

*

- ☐ Environmental information
- ☐ Nutritional information
- ☐ None of the above

[Continue](#)

The choice of the "None of the above" option alone would direct participants directly to Step 3. Participants could choose one or both information. The order of appearance was as shown.

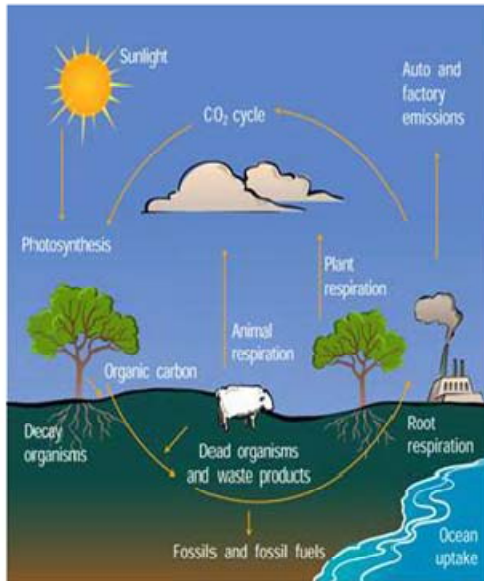
Environmental information supplied information on the meaning of "Climate change" and showed the features of a carbon label. Nutritional information regarded the importance of nutrition in choosing food, and showed how to read a nutritional label.

ENVIRONMENTAL INFORMATION

CLIMATE CHANGE (also called **GLOBAL WARMING**) is a phenomenon that is slowly changing our planet. It will increase the temperature of the planet, causing several negative effects: for example, it will change the weather, making droughts and floods more frequent. Among other impacts, this will have damaging effects on the agricultural production, it will reduce wetlands, and will lead some animal species to extinction. Furthermore, it is expected to be a threat to human health, because it will cause food shortages, heat waves, and contribute to the spread of tropical diseases such as malaria. The damage will to a large extent be borne by future generations, more heavily in developing and least developed countries.

THE CARBON CYCLE

The main cause of climate change is an increase of a gas called "Carbon dioxide" (also known as CO₂) in the atmosphere. As you can see in the picture below, independently of which sector (agriculture, industry, or houses) produces it, CO₂ will spread in the air, increasing the greenhouse effect.



THE CARBON FOOTPRINT: it is a measure of the impact people's activities have on climate change. This value tells us how much CO₂ is produced in order to manufacture one unit of a product. Consequently, if a product has a high carbon footprint it contributes more to climate change (its production pollutes more) than a product with a low carbon footprint, as in the example below.



Continue

NUTRITIONAL INFORMATION

A healthy life depends also on healthy food choices: the composition of the food we eat plays a very important role in defining our future health status. Food is made of a series of components called "NUTRIENTS". Important nutrients are:

- **CARBOHYDRATES**: an important source of energy, found in breads, pastas, beans, potatoes, bran, rice, and cereals, as well as sugar.
- **PROTEIN**: important in the building of muscles and human tissues, they are easily found in meats, eggs, nuts, legumes, and dairy products.
- **FATS**: an essential source of energy, but diets rich in fat increase the risk of diseases (e.g heart problems and cancers). Products rich in fat are butter, margarine, certain meat products, and vegetable oils.
- **SALT**: a mineral important for human life, but overconsumption increases blood pressure, causing heart problems.

Consuming food produces energy. The amount of energy every food releases is measured in "**CALORIES**" (or **KCAL**). If not used doing physical activity, energy is stored as fat in the body, so foods with higher calories content have a higher fattening potential.

The amount of each of these nutrients people should eat daily are summarised in the table below.

	Guideline Daily Amount	
	Women	Men
Energy (Kcal)	2000	2500
Protein (g)	45	55
Carbohydrate (g)	230	300
Fat (g)	70	95
Salt (g)	6	6

Food products generally report their nutritional content on their packaging, and this information is commonly conveyed in a table similar to the one below.

Spinach & ricotta pizza						
Nutrition Information				Guideline daily amounts		
Typical values (rounded as per instructions)	Per 100g	Per 1/2 pizza	% based on 100 kcal for 100g	Women	Men	Children (5-10 years)
Energy	1001 kJ 238 kcal	1977 kJ 472 kcal	23.5%	2000 kcal	2500 kcal	1800 kcal
Protein	9.3g	18.4g	40.9%	45g	55g	24g
Carbohydrate	28.7g	56.7g	24.7%	230g	300g	220g
of which sugars	2.7g	5.3g	5.9%	90g	120g	85g
of which starch	25.9g	51.2g	-	-	-	-
Fat	9.6g	19.0g	27.1%	70g	95g	70g
of which saturates	3.7g	7.3g	36.5%	20g	30g	20g
mono-unsaturates	4.0g	7.9g	-	-	-	-
polyunsaturates	1.6g	3.2g	-	-	-	-
Fibre	2.3g	4.5g	18.8%	24g	24g	15g
Salt	1.0g	2.0g	33.3%	6g	6g	4g
of which sodium	0.40g	0.79g	32.9%	2.4g	2.4g	1.4g

You may want to keep an eye on your **salt** intake as too much may increase your blood pressure.

It's important to watch your **calorie** intake, as without regular exercise too many may lead to weight gain.

A diet low in **fat**, particularly **saturated fat**, could help to maintain a healthy weight and a healthy heart.

To maintain a healthy lifestyle, we recommend aiming for at least 30 minutes of moderate exercise each day, such as brisk walking.

Continue

At this point, participants would finalise their choice, reporting the item they were going to purchase. Participants were randomly allocated to the different treatments shown below. Participants were now informed that the choice they were about to make would have been binding, and they would be requested to provide evidence of the purchase in order to receive the voucher.

On the next page, we will then give you the opportunity to reconsider your choices, and revise them if you find it appropriate.

Compared to the products we presented you earlier, there may be changes in information, price and availability.

PLEASE NOTE: the products you are going to choose now are those you will have to purchase in order to have the £ 5 voucher.

STEP 3: FINALISE YOUR PRODUCT SELECTION

Continue

Labeling treatment

Questions marked with a * are required

NUTRITIONAL INFORMATION

	Coke per 100 ml	Diet Coke per 100 ml	Coke Zero per 100 ml	Pepsi per 100 ml	Pepsi Max per 100 ml	Diet Pepsi per 100 ml
Energy (kCal)	42	0.5	0.5	42	0.3	0.4
Protein (g)	0.0	0.0	0.0	0.0	0.1	0.0
Carbohydrate (g)	10.6	0.0	0.0	11.0	0.0	0.0
Fat (g)	0.0	0.0	0.0	0.0	0.0	0.0
Salt (g)	0.0	0.0	0.0	0.0	0.0	0.0

CARBON FOOTPRINT INFORMATION



Drink in Plastic bottles















Drink in cans

Aisle 1: Cola soft drinks

Please choose the item you want to buy from the list (tick only one product)

*

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Coca Cola, <u>2 Lt Bottle</u> - £ 1.69 | <input type="radio"/>  Coca Cola, <u>6-cans</u> - £ 2.85 |
| <input type="radio"/>  Coca Cola Diet, <u>2 Lt Bottle</u> - £ 1.69 | <input type="radio"/>  Coca Cola Diet, <u>6-cans</u> - £ 2.85 |
| <input type="radio"/>  Coca Cola Zero, <u>2 Lt Bottle</u> - £ 1.69 | <input type="radio"/>  Coca Cola Zero, <u>6-cans</u> - £ 2.85 |
| <input type="radio"/>  Pepsi Regular, <u>2 Lt Bottle</u> - £ 1 | <input type="radio"/>  Pepsi Regular, <u>6-cans</u> - £ 2.75 |
| <input type="radio"/>  Pepsi Diet, <u>2 Lt Bottle</u> - £ 1 | <input type="radio"/>  Pepsi Diet, <u>6-cans</u> - £ 2.75 |
| <input type="radio"/>  Pepsi Max, <u>2 Lt Bottle</u> - £ 1 | <input type="radio"/>  Pepsi Max, <u>6-cans</u> - £ 2.75 |

NUTRITIONAL INFORMATION

	Whole milk		Semiskimmed milk		Skimmed milk	
	Per 200ml serving	% based on GDA for adult	Per 200ml serving	% based on GDA	Per 200ml serving	% based on GDA for adult
Energy (kCal)	128	6.40%	98	4.90%	69	3.50%
Protein (g)	6.40	14.20%	6.80	15.10%	6.80	15.10%
Carbohydrate (g)	9.40	4.10%	10.00	4.30%	10.00	4.30%
Fat (g)	7.20	10.30%	3.40	4.90%	0.20	0.30%
Salt (g)	0.28	4.70%	0.28	4.70%	0.28	4.70%

CARBON FOOTPRINT INFORMATION



Whole milk



Semi-skimmed milk



Skimmed milk

Aisle 2: Fresh milk

Please choose the item you want to buy from the list (tick only one product) *



Sainsbury's Whole milk, 2-pint plastic bottle - £ 0.86



Sainsbury's Semi-skimmed milk, 2-pint plastic bottle - £ 0.86



Sainsbury's Skimmed milk, 2-pint plastic bottle - £ 0.86

NUTRITIONAL INFORMATION

	Beef Braising Steak		Beef Mince		Casserole steak	
	per 100g	% based on GDA for adult	Per 100g	% based on GDA for adult	Per 100g	% based on GDA for adult
Energy (kCal)	160	8.04%	219	11.00%	160	8.04%
Protein (g)	20.65	45.88%	20.30	45.10%	35.00	82.31%
Carbohydrate (g)	0.00	-	0.00	-	1.00	0.43%
Fat (g)	8.60	12.31%	15.30	21.90%	2.00	3.06%
Salt (g)	0.20	3.36%	0.25	4.20%	0.28	4.70%

	Chicken Breast		Chicken Fillet		Chicken Thighs & Drumsticks	
	Per 100g	% based on GDA for adult	Per 100g	% based on GDA for adult	Per 100g	% based on GDA for adult
Energy (kCal)	148	7.83%	138	7.30%	165	12.00%
Protein (g)	32.00	75.26%	30.70	72.20%	25.80	74.40%
Carbohydrate (g)	0.10	-	0.00	-	0.00	-
Fat (g)	2.20	3.36%	1.70	2.60%	9.10	16.90%
Salt (g)	0.10	1.69%	0.13	2.20%	0.30	6.70%

CARBON FOOTPRINT INFORMATION









Beef



Chicken

Aisle 3 - Chicken and beef

Please choose the item you want to buy from the list (tick only one product) *

- ☐  Sainsbury's Beef Braising Steak (440g) - £ 3.49
- ☒  Sainsbury's Beef Mince (500g) - £ 2.20
- ☐  Sainsbury's Diced Casserole Steak, Basics (440g) - £ 2.50
- ☐  Sainsbury's Basics Chicken Breast (300g) - £ 2.39
- ☐  Sainsbury's Mini Chicken Fillet (238g) - £ 2.18
- ☐  Sainsbury's Fresh Chicken Drumsticks (700g) - £ 2.37

NUTRITIONAL INFORMATION

	Anchor butter per 100 g	Lurpak butter per 100 g	Countrylife butter per 100 g	Kerrygold butter per 100 g	Sainsbury's butter per 100 g
Energy (Kcal)	750	742	737	720	735
Protein (g)	0.60	1.00	0.50	0.40	0.50
Carbohydrate (g)	0.60	1.00	0.00	0.00	0.70
Total fat (g)	82.80	81.50	81.70	80.00	81.10
Salt (g)	2.13	2.13	1.33	1.25	2.00

	Anchor spreadable per 100 g	Lurpak spread per 100 g	Clover per 100 g	Flora per 100 g	Sainsbury's spread per 100 g
Energy (Kcal)	722	728	681	531	539
Protein (g)	0.30	1.00	0.60	0.00	0.80
Carbohydrate (g)	0.30	1.00	0.80	0.00	1.20
Total fat (g)	80.00	80.00	75.00	59.00	59.00
Salt (g)	1.33	0.93	1.87	1.60	1.71

CARBON FOOTPRINT INFORMATION













Butter



Margarine

Aisle 4: Butter and margarine

Please choose the item you want to buy from the list (tick only one product) *

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Lurpak butter, 500 g - £ 2.76 | <input type="radio"/>  Lurpak Spread, 500 g - £ 2.00 |
| <input type="radio"/>  Anchor butter, 500 g - £ 2.38 | <input type="radio"/>  Flora Original spread, 500 g - £ 1.28 |
| <input type="radio"/>  Country life butter, 500 g - £ 2.40 | <input type="radio"/>  Anchor Spreadable, 500 g - £ 2.38 |
| <input type="radio"/>  Kerrygold butter, 500 g - £ 2.36 | <input type="radio"/>  Clover, 500 g - £ 1.49 |
| <input type="radio"/>  Sainsbury's Basics butter, 500 g - £ 1.70 | <input type="radio"/>  Sainsbury's Butterlicious spread, 500 g - £ 1.00 |

Continue

Subsidy treatment

[Exit Survey »](#)

Questions marked with a * are required













Aisle 1: Cola soft drinks

Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Products in plastic bottles have a 5p discount due to a GOVERNMENT SUBSIDY received on account of its low carbon footprint.

*

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Coca Cola, <u>2 Lt Bottle</u> - £ 1.51 | <input type="radio"/>  Coca Cola, <u>6-cans</u> - £ 2.69 |
| <input type="radio"/>  Coca Cola Diet, <u>2 Lt Bottle</u> - £ 1.51 | <input type="radio"/>  Coca Cola Diet, <u>6-cans</u> - £ 2.69 |
| <input type="radio"/>  Coca Cola Zero, <u>2 Lt Bottle</u> - £ 1.51 | <input type="radio"/>  Coca Cola Zero, <u>6-cans</u> - £ 2.69 |
| <input type="radio"/>  Pepsi Regular, <u>2 Lt Bottle</u> - £ 1.54 | <input type="radio"/>  Pepsi Regular, <u>6-cans</u> - £ 2.63 |
| <input type="radio"/>  Pepsi Diet, <u>2 Lt Bottle</u> - £ 1.54 | <input type="radio"/>  Pepsi Diet, <u>6-cans</u> - £ 2.63 |
| <input type="radio"/>  Pepsi Max, <u>2 Lt Bottle</u> - £ 1.54 | <input type="radio"/>  Pepsi Max, <u>6-cans</u> - £ 2.63 |

Aisle 2: Fresh milk



Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Skimmed milk has a 6p discount due to a GOVERNMENT SUBSIDY received on account of its low carbon footprint.

Semi-skimmed milk has a 3p discount due to a GOVERNMENT SUBSIDY received on account of its low carbon footprint.

*

- | | |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <input type="radio"/>  | Sainsbury's Whole milk, <u>2-pint plastic bottle</u> - £ 0.86 |
| <input type="radio"/>  | Sainsbury's Semi-skimmed milk, <u>2-pint plastic bottle</u> - £ 0.83 |
| <input type="radio"/>  | Sainsbury's Skimmed milk, <u>2-pint plastic bottle</u> - £ 0.80 |

Aisle 3 - Chicken and beef

Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Chicken has a 21p per kilo discount due to a GOVERNMENT SUBSIDY received on account of its low carbon footprint.

*

- ☐  Sainsbury's Beef Braising Steak (440g) - £ 3.49
- ☐  Sainsbury's Beef Mince (500g) - £ 2.20
- ☐  Sainsbury's Diced Casserole Steak, Basics (440g) - £ 2.50
- ☐  Sainsbury's Basics Chicken Breast (300g) - £ 2.33 (6 p off)
- ☐  Sainsbury's Mini Chicken Fillet (238g) - £ 2.13 (5 p off)
- ☐  Sainsbury's Fresh Chicken Drumsticks (700g) - £ 2.22 (15 p off)











Aisle 4: Butter and margarine

Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Margarine has a 43p discount due to a GOVERNMENT SUBSIDY received on account of its low carbon footprint.

*

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Lurpak butter, 500 g - £ 2.76 | <input type="radio"/>  Lurpak Spread, 500 g - £ 1.57 |
| <input type="radio"/>  Anchor butter, 500 g - £ 2.38 | <input type="radio"/>  Flora Original spread, 500 g - £ 0.85 |
| <input type="radio"/>  Country life butter, 500 g - £ 2.40 | <input type="radio"/>  Anchor Spreadable, 500 g - £ 1.95 |
| <input type="radio"/>  Kerrygold butter, 500 g - £ 2.36 | <input type="radio"/>  Clover, 500 g - £ 1.06 |
| <input type="radio"/>  Sainsbury's Basics butter, 500 g - £ 1.70 | <input type="radio"/>  Sainsbury's Butterlicious spread, 500 g - £ 0.57 |

Continue

NeutralPriceChange treatment

[Exit Survey »](#)

Questions marked with a * are required













Aisle 1: Cola soft drinks

Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Products in plastic bottles have a 5p discount because of a change in the price of materials.

*

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Coca Cola, <u>2 Lt Bottle</u> - £ 1.51 | <input type="radio"/>  Coca Cola, <u>6-cans</u> - £ 2.69 |
| <input type="radio"/>  Coca Cola Diet, <u>2 Lt Bottle</u> - £ 1.51 | <input type="radio"/>  Coca Cola Diet, <u>6-cans</u> - £ 2.69 |
| <input type="radio"/>  Coca Cola Zero, <u>2 Lt Bottle</u> - £ 1.51 | <input type="radio"/>  Coca Cola Zero, <u>6-cans</u> - £ 2.69 |
| <input type="radio"/>  Pepsi Regular, <u>2 Lt Bottle</u> - £ 1.54 | <input type="radio"/>  Pepsi Regular, <u>6-cans</u> - £ 2.63 |
| <input type="radio"/>  Pepsi Diet, <u>2 Lt Bottle</u> - £ 1.54 | <input type="radio"/>  Pepsi Diet, <u>6-cans</u> - £ 2.63 |
| <input type="radio"/>  Pepsi Max, <u>2 Lt Bottle</u> - £ 1.54 | <input type="radio"/>  Pepsi Max, <u>6-cans</u> - £ 2.63 |

Aisle 2: Fresh milk

Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Skimmed milk has a 6p discount because of a change in the price of materials.

Semi-skimmed milk has a 3p discount because of a change in the price of materials.

*

- | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/>  Sainsbury's Whole milk, <u>2-pint plastic bottle</u> - £ 0.86 |
| <input type="radio"/>  Sainsbury's Semi-skimmed milk, <u>2-pint plastic bottle</u> - £ 0.83 |
| <input type="radio"/>  Sainsbury's Skimmed milk, <u>2-pint plastic bottle</u> - £ 0.80 |

Aisle 3 - Chicken and beef

Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Chicken has a 21p per kilo discount because of a change in the price of materials.

*

- ☐ Sainsbury's Beef Braising Steak (440g) - £ 3.49
- ☐ Sainsbury's Beef Mince (500g) - £ 2.20
- ☐ Sainsbury's Diced Casserole Steak, Basics (440g) - £ 2.50
- ☐ Sainsbury's Basics Chicken Breast (300g) - £ 2.33 (6 p off)
- ☐ Sainsbury's Mini Chicken Fillet (238g) - £ 2.13 (5 p off)
- ☐ Sainsbury's Fresh Chicken Drumsticks (700g) - £ 2.22 (15 p off)

Aisle 4: Butter and margarine

Please choose the item you want to buy from the list (tick only one product)

There has been a price change.

Margarine has a 43p discount because of a change in the price of materials. *

- | | |
|-----------------------------------------------------------------|------------------------------------------------------------------------|
| <input type="radio"/> Lurpak butter, 500 g - £ 2.76 | <input type="radio"/> Lurpak Spread, 500 g - £ 1.57 |
| <input type="radio"/> Anchor butter, 500 g - £ 2.38 | <input type="radio"/> Flora Original spread, 500 g - £ 0.85 |
| <input type="radio"/> Country life butter, 500 g - £ 2.40 | <input type="radio"/> Anchor Spreadable, 500 g - £ 1.95 |
| <input type="radio"/> Kerrygold butter, 500 g - £ 2.36 | <input type="radio"/> Clover, 500 g - £ 1.06 |
| <input type="radio"/> Sainsbury's Basics butter, 500 g - £ 1.70 | <input type="radio"/> Sainsbury's Butterlicious spread, 500 g - £ 0.57 |

Continue

Ban treatment

[Exit Survey »](#)

Questions marked with a * are required







Aisle 1: Cola soft drinks

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability.

Products in can are not available because they have been BANNED by GOVERNMENT ORDER on account of their high carbon footprint.

*

- ☐  Coca Cola, 2 Lt Bottle - £ 1.56
- ☐  Coca Cola Diet, 2 Lt Bottle - £ 1.56
- ☐  Coca Cola Zero, 2 Lt Bottle - £ 1.56
- ☐  Pepsi Regular, 2 Lt Bottle - £ 1.59
- ☐  Pepsi Diet, 2 Lt Bottle - £ 1.59
- ☐  Pepsi Max, 2 Lt Bottle - £ 1.59
- ☐ None of the above


Aisle 2: Fresh milk

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability.

Whole and semiskimmed milk are not available because they have been BANNED by GOVERNMENT ORDER on account of their high carbon footprint.

*

- ☐  Sainsbury's Skimmed milk, 2-pint plastic bottle - £ 0.86
- ☐ None of the above

Aisle 3 - Chicken and beef

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability.

Beef is not available because it has been BANNED by GOVERNMENT ORDER on account of its high carbon footprint.

*

- ☐  Sainsbury's Basics Chicken Breast (300g) - £ 2.39
- ☐  Sainsbury's Mini Chicken Fillet (238g) - £ 2.18
- ☐  Sainsbury's Fresh Chicken Drumsticks (700g) - £ 2.37
- ☐ None of the above

Aisle 4: Butter and margarine

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability.

Butter is not available because it has been BANNED by GOVERNMENT ORDER on account of its high carbon footprint.

*

- ☐  Lurpak Spread, 500 g - £ 2.00
- ☐  Flora Original spread, 500 g - £ 1.28
- ☐  Anchor Spreadable, 500 g - £ 2.38
- ☐  Clover, 500 g - £ 1.49
- ☐  Sainsbury's Butterlicious spread, 500 g - £ 1.00
- ☐ None of the above

Continue

Removal treatment

[Exit Survey »](#)

Questions marked with a * are required







Aisle 1: Cola soft drinks

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability.

Products are not supplied in cans on account of the lack of availability of the necessary materials.

*

- ☐  Coca Cola, 2 Lt Bottle - £ 1.56
- ☐  Coca Cola Diet, 2 Lt Bottle - £ 1.56
- ☐  Coca Cola Zero, 2 Lt Bottle - £ 1.56
- ☐  Pepsi Regular, 2 Lt Bottle - £ 1.59
- ☐  Pepsi Diet, 2 Lt Bottle - £ 1.59
- ☐  Pepsi Max, 2 Lt Bottle - £ 1.59
- ☐ None of the above

Aisle 2: Fresh milk

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability. Whole milk and semi-skimmed milk are not supplied anymore on account of the lack of availability of the necessary materials.

*

- ☐  Sainsbury's Skimmed milk, 2-pint plastic bottle - £ 0.86
- ☐ None of the above

Aisle 3 - Chicken and beef

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability.

Beef is not supplied anymore on account of the lack of availability of the necessary materials.

*

- ☐  Sainsbury's Basics Chicken Breast (300g) - £ 2.39
- ☐  Sainsbury's Mini Chicken Fillet (238g) - £ 2.18
- ☐  Sainsbury's Fresh Chicken Drumsticks (700g) - £ 2.37
- ☐ None of the above






Aisle 4: Butter and margarine

Please choose the item you want to buy from the list (tick only one product)

There has been a change in product availability.

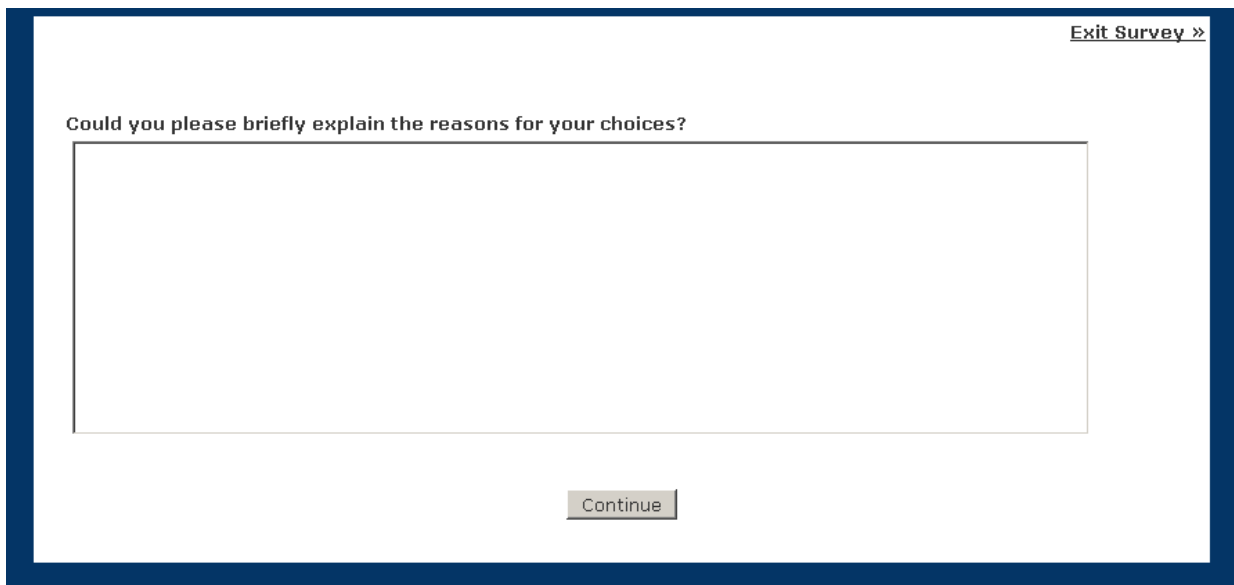
Butter is not supplied anymore on account of the lack of availability of the necessary materials.

*

- ☐  Lurpak Spread, 500 g - £ 2.00
- ☐  Flora Original spread, 500 g - £ 1.28
- ☐  Anchor Spreadable, 500 g - £ 2.38
- ☐  Clover, 500 g - £ 1.49
- ☐  Sainsbury's Butterlicious spread, 500 g - £ 1.00
- ☐ None of the above

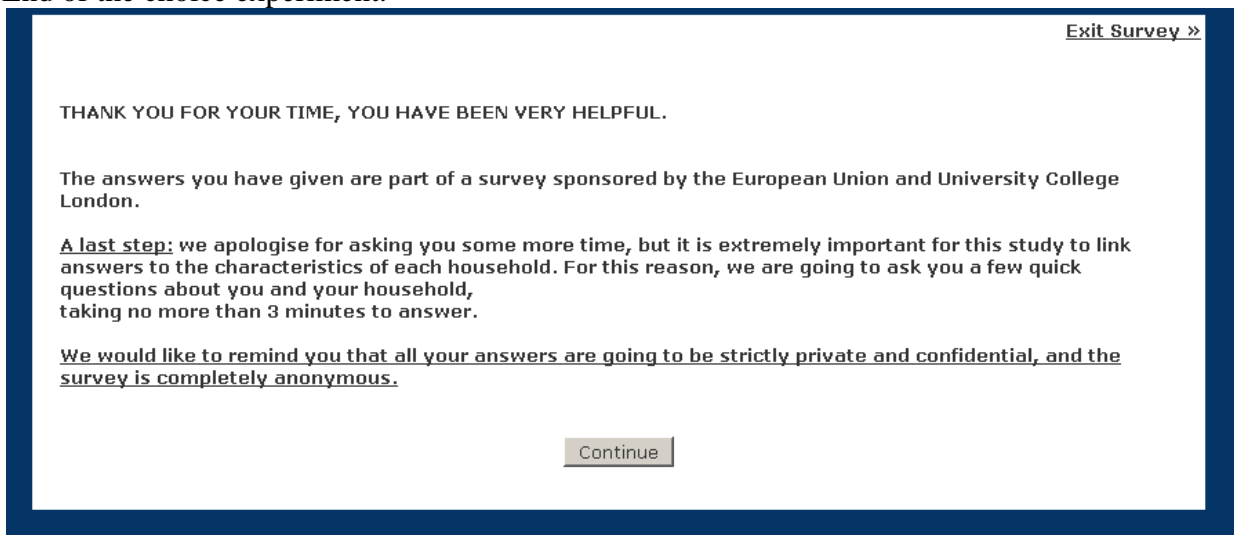
Continue

After their choice, participants were asked to explain the rationale behind their choice. The question was not compulsory.



The screenshot shows a survey interface with a dark blue border. In the top right corner, there is a link labeled "Exit Survey »". The main text asks, "Could you please briefly explain the reasons for your choices?". Below this text is a large, empty rectangular box for input. At the bottom center, there is a grey button labeled "Continue".

End of the choice experiment.



The screenshot shows a survey interface with a dark blue border. In the top right corner, there is a link labeled "Exit Survey »". The main text reads: "THANK YOU FOR YOUR TIME, YOU HAVE BEEN VERY HELPFUL." followed by "The answers you have given are part of a survey sponsored by the European Union and University College London." Below this, it says: "A last step: we apologise for asking you some more time, but it is extremely important for this study to link answers to the characteristics of each household. For this reason, we are going to ask you a few quick questions about you and your household, taking no more than 3 minutes to answer." The final line states: "We would like to remind you that all your answers are going to be strictly private and confidential, and the survey is completely anonymous." At the bottom center, there is a grey button labeled "Continue".

The final step regarded the collection of personal information of participants, along with their opinion on environmental matters.

Demographic information

[Exit Survey »](#)

Questions marked with a * are required

YOUR INFORMATION

How old are you? *

How many people are in the household for which you are shopping?

Please, do not include flatmates if you do not shop for them regularly. Include 0 when appropriate.

Adults *

Young adults (18-21 years old) *

Adolescents (12-18 years old) *

Children (below 12 years old) *

Please indicate your UK place of residence (localities are classified by their post code)

*

Which of these best describes how you occupy your accommodation? *

- ☐ Owned outright
- ☐ Owned with an outstanding mortgage
- ☐ Rented
- ☐ Other - please specify:

Are you: *

- ☐ Male
- ☐ Female

What is your occupation? *

What is your household income (before taxes) in a year? *

- ☐ Below £ 15,000 (Including students, and categories with no income)
- ☐ Between £ 15,000 - £ 25,000
- ☐ Between £ 25,001 - £ 35,000
- ☐ Between £ 35,001 - £ 45,000
- ☐ Between £ 45,001 - £ 55,000
- ☐ Between £ 55,001 - £ 65,000
- ☐ Between £ 65,001 - £ 75,000
- ☐ Above £ 75,000
- ☐ I prefer not to say

What country are you from? *

-- Select --

How would you describe your ethnicity? *

- ☐ White
- ☐ Mixed
- ☐ Asian or Asian British
- ☐ Black or Black British
- ☐ Chinese (and other Far Eastern Asians, e.g. Korean, Japanese)
- ☐ Other - please specify:

What is your religion? *

- ☐ Christian
- ☐ Muslim
- ☐ Hindu
- ☐ Sikh
- ☐ Jewish
- ☐ Buddhist
- ☐ None
- ☐ Other - please specify:

What is the highest level of education you have attained? *

- ☐ Non-university education or equivalent
- ☐ Graduate level (including current undergraduate students)
- ☐ Postgraduate level (including current postgraduate students)
- ☐ Other - please specify:

What is your marital status? *

- ☐ Single
- ☐ Married
- ☐ Other - please specify:

Are you a member of an environmental group or association? (for example "Friends of the Earth", RSPB, WWF, the "Green Party") *

- ☐ No
- ☐ Yes - please specify:

Which one of the following daily newspapers do you read most often? *

-- Select --

Continue

The list of options for scroll down questions are reported in appendix 2.

Opinions on climate change matters

[Exit Survey »](#)

Questions marked with a * are required

YOUR OPINION

How important are the following factors in determining your grocery shopping choices?

	Unimportant (zero importance)	Not that important	Somewhat important	More important than most things	Very important (essential)
Low Salt content *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recognisable brands *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Country of origin *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fair Trade certification *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal taste *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Animal welfare standards (e.g. free range labels) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seasonality (e.g. winter vegetables bought in winter) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organic food standards *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Religious teachings (e.g. kosher, halal labels) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low Price *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Locally produced food *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low time of preparation *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vegetarian/vegan options *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A fair price to protect farming *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special dietary information (e.g. allergy-free labels) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High fiber content (e.g. wholemeal food) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recyclable packaging *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low Fat content (e.g. "Light" labels) *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you agree or disagree with the following statements?

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
The effects of climate change worry me, even if their impact is far in the future. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Humans are responsible for climate change. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Britain should keep trying to combat climate change, even if other countries do not do so and sometimes cancel out what we do. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's worth me doing things to help the environment even if others don't do the same. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is worth being environmentally friendly even if this does not save you money. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Care for the environment has a high priority compared to other things in my life. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe my everyday behaviour and lifestyle can contribute to climate change. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climate change is a dangerous global threat *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People have a duty to recycle. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The government will take the correct action to support climate change mitigation, if there is adequate information to support that policy. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government intervention is the most effective option to combat social problems such as climate change. *	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

[Continue](#)

The final page reported a last summary of the product chosen by the participant. These options needed to be purchased in order to receive the voucher. At this stage, the experimenter could take note of the

choice of each person on a piece of paper. The voucher was then given to consumers upon presentation of this items recorded on the note. Only chosen options would appear here, given the specific treatment. As an example, respondents would see:

Exit Survey »

Thank you very much for you help

PLEASE NOTIFY THE SURVEYOR THAT YOU HAVE FINISHED BEFORE YOU PROCEED.

Remember to buy the items listed below. After your shopping, show us that you have purchased these products and collect your £ 5 voucher.

Coca Cola, 2 lt Bottle

Coca Cola, 6-cans (2 lt)

In the case of Subsidy/NeutralPriceChange, also the discount was reported, allowing the experimenter to pay back those people who were entitled to the discount.

Coca Cola, 2 lt Bottle
(We owe you 5 pennies)

Participants of Ban/Removal treatment who opted out had no product listed here. The full list of alternatives is reported in appendix 3.

The last slide would finally thank participants.

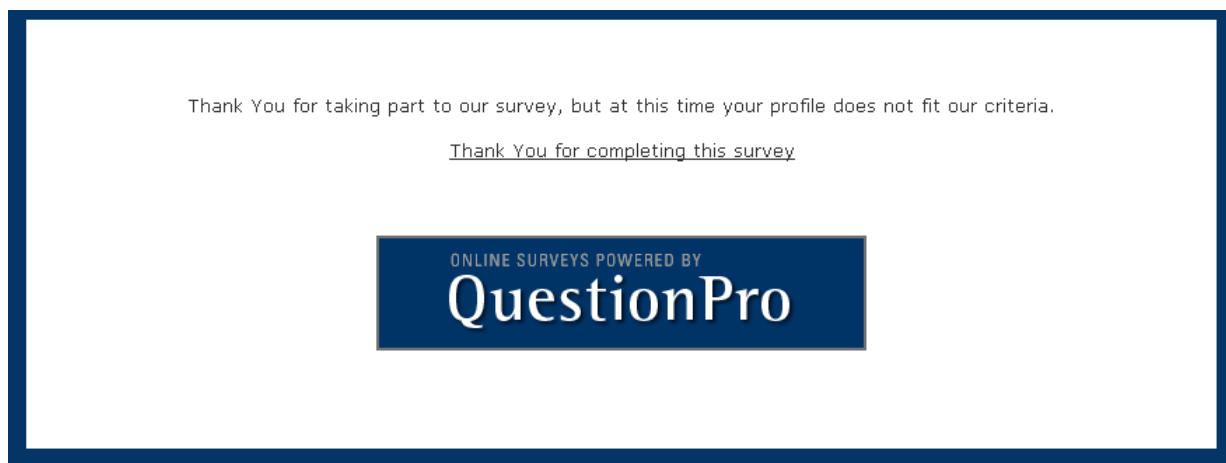
Thank you very much for you help You can now collect your voucher. We would like to remind you that this voucher will be valid only if you will purchase the items you have selected in this survey. We would like to wish you a pleasant shopping trip.

[Thank You for completing this survey](#)

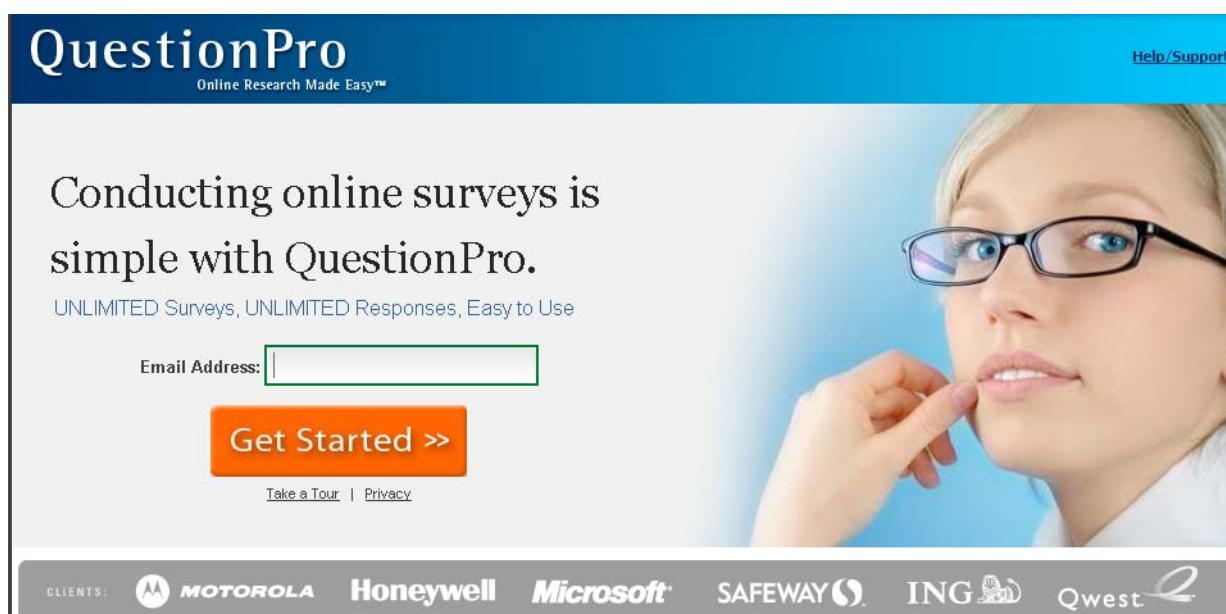
ONLINE SURVEYS POWERED BY
QuestionPro

APPENDIX 1: Exit screens

Exit screen when required quitting (i.e. participant does not accept terms and conditions; respondent chooses the "none of the above" option when choosing the aisle)



Exit screen from voluntary quitting (i.e. clicking on the "Exit Survey" option)



APPENDIX 2: List of options available to scroll down questions

1) Localities options

*

-- Select --

-- Select --

E1 - Head district, Eastern London
 E2 - Bethnal Green, Eastern London
 E3 - Bow, Eastern London
 E4 - Chingford, Eastern London
 E5 - Clapton, Eastern London
 E6 - East Ham, Eastern London
 E7 - Forest Gate, Eastern London
 E8 - Hackney, Eastern London
 E9 - Homerton, Eastern London
 E10 - Leyton, Eastern London
 E11 - Leytonstone, Eastern London
 E12 - Manor Park, Eastern London
 E13 - Plaistow, Eastern London
 E14 - Poplar, Eastern London
 E15 - Stratford, Eastern London
 E16 - Victoria Docks, Eastern London
 E17 - Walthamstow, Eastern London
 E18 - South Woodford, Eastern London
 EC1 - Head district, Eastern Central London

accommodation? *

EC2 - Bishopsgate, Eastern Central London
 EC3 - Fenchurch Street, Eastern Central London
 EC4 - Fleet Street, Eastern Central London
 N1 - Head district, North London
 N2 - East Finchley, North London
 N3 - Finchley, North London
 N4 - Finsbury Park, North London
 N5 - Highbury, North London
 N6 - Highgate, North London
 N7 - Holloway, North London
 N8 - Hornsey, North London
 N9 - Lower Edmonton, North London
 N10 - Muswell Hill, North London
 N11 - New Southgate, North London
 N12 - North Finchley, North London
 N13 - Palmers Green, North London
 N14 - Southgate, North London
 N15 - South Tottenham, North London
 N16 - Stoke Newington, North London
 N17 - Tottenham, North London

-- Select --

N18 - Upper Edmonton, North London
 N19 - Upper Holloway, North London
 N20 - Whetstone, North London
 N21 - Winchmore Hill, North London
 N22 - Wood Green, North London
 NW1 - Head district, North West London,
 NW2 - Cricklewood, North West London
 NW3 - Hampstead, North West London
 NW4 - Hendon, North West London
 NW5 - Kentish Town, North West London
 NW6 - Kilburn, North West London
 NW7 - Mill Hill, North West London
 NW8 - St John's Wood, North West London
 NW9 - The Hyde, North West London
 NW10 - Willesden, North West London
 NW11 - Golders Green, North West London
 SE1 - Head district, South East London
 SE2 - Abbey Wood, South East London
 SE3 - Blackheath, South East London
 SE4 - Brockley, South East London

SE5 - Camberwell, South East London
SE6 - Catford, South East London
SE7 - Charlton, South East London
SE8 - Deptford, South East London
SE9 - Eltham, South East London
SE10 - Greenwich, South East London
SE11 - Kennington, South East London
SE12 - Lee, South East London
SE13 - Lewisham, South East London
SE14 - New Cross, South East London
SE15 - Peckham, South East London
SE16 - Rotherhithe, South East London
SE17 - Walworth, South East London
SE18 - Woolwich, South East London
SE19 - Upper Norwood, South East London
SE20 - Anerley, South East London
SE21 - Dulwich, South East London
SE22 - East Dulwich, South East London
SE23 - Forest Hill, South East London
SE24 - Herne Hill, South East London
-- Select --
SE25 - South Norwood, South East London
SE26 - Sydenham, South East London
SE27 - West Norwood, South East London
SE28 - Thamesmead, South East London
SW1 - Head district, South West London
SW2 - Brixton, South West London
SW3 - Chelsea, South West London
SW4 - Clapham, South West London
SW5 - Earls Court, South West London
SW6 - Fulham, South West London
SW7 - South Kensington, South West London
SW8 - South Lambeth, South West London
SW9 - Stockwell, South West London
SW10 - West Brompton, South West London
SW11 - Battersea Head district, South West London
SW12 - Balham, South West London
SW13 - Barnes, South West London
SW14 - Mortlake, South West London
SW15 - Putney, South West London
SW16 - Streatham, South West London
SW17 - Tooting, South West London
SW18 - Wandsworth, South West London
SW19 - Wimbledon, South West London
SW20 - West Wimbledon, South West London
W1 - Head district, West London
W2 - Paddington Head district, West London
W3 - Acton, West London
W4 - Chiswick, West London
W5 - Ealing, West London
W6 - Hammersmith, West London
W7 - Hanwell, West London
W8 - Kensington, West London
W9 - Maida Vale, West London
W10 - North Kensington, West London
W11 - Notting Hill, West London
W12 - Shepherds Bush, West London
W13 - West Ealing, West London
W14 - West Kensington, West London
WC1 - Head district, Western Central London
WC2 - Strand, Western Central London
Other - from East Midlands
Other - from East of England
Other - from North East England
Other - from North West England
Other - from South East England
Other - from South West England
Other - from West Midlands
Other - from Yorkshire and the Humber
Other - from Wales
Other - from Scotland
Other - from Northern Ireland

2) Country of origin

What country are you from? *

-- Select --

-- Select --

England

Ireland

Scotland

Wales

Australia

Bangladesh

Barbados

Brazil

Bulgaria

Canada

China, People's Republic of

Cyprus

France

Germany

Ghana

Greece

India

Italy

Jamaica

Japan

Kenya

Lithuania

Nepal

Netherlands

New Zealand

Nigeria

Philippines

Poland

Russia

South Africa

Spain

Sri Lanka

Thailand

Turkey

Uganda

United States of America

Zimbabwe

Other - please specify:

What ethnicity? *

Eastern Asians, e.g. Korean, Japanese)

What country are you from? *

Other - please specify:

3) Newspapers

-- Select --

Daily Express

Daily Mail

Daily Mirror

Daily Star

Daily Telegraph

Financial Times

The Guardian

The Independent

The Sun

The Times

Metro

Regional/local daily paper

Other free daily newspaper

Other paid daily newspaper

None of the above

-- Select --

Environmental group or association? (for example "Friends of the Earth", RSPB, WWF,

Which daily newspapers do you read most often? *