



Department for
Business & Trade

Research into Potentially Harmful Online Choice Architecture

A study of the prevalence and potential harm of defaults in online shopping

May 2024

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Executive Summary

Context and objectives

Online choice architecture (OCA) refers to how the design of e-commerce sites, including how products, options and prices are presented, can influence the experiences and decisions made by consumers shopping online. Defaults are one type of OCA practice that has been shown to impact the choices consumers make online. A default is when online retailers either preselect, mimic preselection, or enhance the prominence of certain options (e.g., different options for shipping).

Defaults can both positively and negatively impact consumer welfare. If the preselected or prominent option is beneficial to a consumer, the default may improve their online shopping experience. Equally, however, consumers may be negatively impacted if the default does not align with a consumer's best interest.

In this context, Alma Economics was commissioned by the Department for Business and Trade (DBT) to answer the following research questions:

1. What is the prevalence of defaults on e-commerce websites and apps used by UK consumers, and are certain default types or characteristics more common than others?
2. What is the impact of defaults on consumer welfare, as reflected in consumer choices, beliefs, and actions?

Methodology

This research was carried out in two phases, (i) a prevalence study and (ii) an online choice experiment, including a post-experiment survey.

The prevalence study involved a comprehensive review of consumer journeys on 558 of the most popular e-commerce websites and mobile applications in the UK to understand how common the practice is. We manually collected data on the presence and type of defaults through following the checkout process for popular products on each site. We categorised defaults across three dimensions based on our findings from a rapid review of existing research on the practice. These were:

- 'What' – i.e., the good, service, accessory, or add-on that the default relates to. Subcategories include:
 - Variants of **product characteristics**
 - Additional products as **add-ons**
 - Variants of **customer services**
 - Variants of **purchase agreements**
- 'Where' – i.e., the location where the default option is presented within the user journey.
- 'How' – i.e., the format that the default takes, in terms of the user experience. This includes the following two subcategories:
 - 'Hard defaults': options that make a selection on behalf of the user:
 - Preselected options (such as pre-ticked boxes)
 - Opt-out options (usually with negative language forcing user to opt-in by default)
 - 'Soft defaults': options that suggest a default, or encourage the user towards selecting an option:

- Ordering of options (the first or most prominent option appears as default, usually driven by algorithms and sponsors, such as Google Ads)
- Mimicking defaults (options that use visual appearance, such as formatting or placement, to mimic a preselected default)

The findings from the prevalence study were then used to carry out an online choice experiment with 5,889 participants, which enabled us to assess the impact that defaults have on consumer behaviour and welfare. The experiment mimicked a real online shopping experience and tested the impact of two common defaults identified in the prevalence study, i.e. shipping/delivery and protection plan for pre-selected and mimicking defaults. A survey was administered to participants immediately following their participation in the experiment to better understand their experiences, thoughts, and beliefs about defaults. Between the experiment and survey, this study explored whether default designs impacted consumer choice, willingness to pay, consumer surplus, or shopping time.

Key findings

Our results present a nuanced picture of the prevalence and impact that defaults have on UK consumers. We find that while defaults are commonly used, they are not deployed in a manner that leads consumers to make incorrect decisions. However, we also find that the effects of defaults can be large, and that consumers show a strong tendency to keep to the preselected option.

Prevalence study

In the prevalence study, we wanted to check how common defaults were across online retailer websites and apps in the UK, and what their characteristics were. From our review of 558 websites and apps, we derived the following insights:

1. We identified 412 instances of defaults across nearly half (49%) of the sampled websites and apps.
2. Defaults were most common in the retail sector, with 69% of retail websites and apps in our sample including at least one default option (compared to 27% of entertainment, 34% of hospitality and 46% of transport & communication websites and apps).
3. Customer services was the most common type ('what') of default with 34% of defaults relating to some kind of service. Within this category, shipping and delivery options were the most common default. This was followed by product characteristics (28%), add-ons (21%) and purchase agreements (17%).
4. Preselected options (69%) and mimicking defaults (63%) were the most prevalent format 'how' of default. Several websites and apps used "enhancers", or features that influence the impact of defaults. The most common enhancer, found in 31% of the defaults, was the addition of text messaging around the default to guide the consumer's decision-making.
5. Approximately 64% of default options in our sample directed users towards cheaper or similarly priced options, suggesting they were not attempts to mislead the consumer.

We use the findings from this study to inform a randomised controlled trial, to ensure that the features of the experiment closely align with the most common characteristics of the defaults faced by consumers online.

Online choice experiment

We used an online experiment to simulate the online shopping journey, and collected data on the behaviour of 5,889 participants using a platform that closely resembled a commonly used online shopping website. This randomised controlled trial split participants first into two experiments (to

select from either shipping options, or options linked to a protection plan for the product). They were further divided into a control group (which had to actively choose an option) and one of two treatment groups (where the more expensive option was selected, either as a preselected or a mimicking default). Following the survey, the participants were also asked to complete an online survey which included questions on their beliefs, shopping behaviours, as well as demographics.

The results from the data collected from this phase suggest the following:

1. In the case of **preselected defaults**:
 - a. Consumers were 60% more likely to choose the more expensive protection plan and 70% more likely to select the more expensive shipping option.
 - b. There was no impact of preselected defaults on consumers' self-reported willingness to pay or consumer surplus.
 - c. Overall, 12% less time was spent on the shopping journey.
2. In the case of **mimicking defaults**:
 - a. Defaults did not impact the probability of selecting the more expensive option, self-reported willingness to pay or consumer surplus.
 - b. There was a minor impact on time spent on the shopping journey for the mimicking defaults related to a protection plan but not for shipping.
3. Participant age had a significant effect on the interaction with the defaults with older people having a greater probability of selecting the more expensive default option.
4. We find differences in how people report their encounter of a default as compared to their behaviours.
 - a. Most consumers do not feel negatively about the choices they have made after being exposed to a default. However, when asked if they would make the same choice again after experiencing a preselected default, they are less likely to pick the same option.
 - b. While self-reported measures of willingness to pay were closely aligned with the given price of the product, we found that consumers who *noticed* the defaults were 31% less likely to select the expensive default option than those who did not. This suggests a behavioural difference that occurs when consumers encounter and notice the default.
5. 16% of participants reported having accidentally purchased at least one item in the past 12 months due to defaults, with 41% of these returning the item.

Conclusion and policy implications

Our research provides critical insight into how consumer decisions are influenced by the design of digital shopping environments. Overall, we found that defaults are prevalent across e-commerce sites in the UK, and they can potentially have a large impact on consumers. However, the manner in which they are currently used does not suggest that they are in general misleading consumers. This does not call for immediate policy intervention, however, given the potential for misuse, we recommend a forward-looking approach to policy to monitor their impact, while guiding retailers towards a transparent and consumer-friendly deployment of defaults. We have developed four key policy recommendations that we believe could significantly enhance consumer welfare in the digital marketplace. Each of these are outlined below:

- **Establishing standards for default settings.** Establishing guidelines, including best practice, for the use of defaults may help prevent the practice being used in a way that

causes harm to consumers. Such standards should account for the differential impact that defaults may have on groups that are more vulnerable.

- **Consumer awareness and guidance.** Certain groups may be more susceptible to the impact of defaults (e.g. older adults). These, and any other vulnerable groups may need to be targeted through consumer education and awareness initiatives.
- **Fostering consumer-centric innovation.** The resources being invested into online choice architecture by online retailers should focus on ensuring the practice benefits consumers. This could be achieved by collaborating with the government to ensure the adoption of practices that are fair and protect vulnerable users. For instance, our data suggests that guiding retailers to make defaults more noticeable to consumers can reduce their impact. Such interventions can be low-cost, easy to implement and effective.

Introduction

More UK consumers are shopping online than ever before and the e-commerce market, through online websites and mobile-based applications, is increasing annually. The UK is the third largest online market globally and is expected to have an annual growth rate of 12.6% by 2025 (US Dept of Commerce, 2023). Appealing to consumers because of its convenience and efficiency, e-commerce now makes up 27% of all retail sales made by UK consumers (ONS, 2022).¹

The experiences and decisions of consumers shopping online are often influenced by the design of e-commerce sites, including how products, options and prices are ordered, presented and bundled (Competition and Markets Authority, 2022). This environment is known as online choice architecture (OCA), because presenting choices in different ways and different contexts to consumers can impact how consumers interact with these websites, including the products they purchase. One of the most effective online choice architecture practices for influencing consumer choices is the use of defaults (Jachimowicz et al. 2019). Defaults include any situation where retailers pre-select options for customers; automatically opt-in users to certain options or settings; or use ordering or formatting of options to enhance their prominence or to mimic pre-selection.²

Defaults may improve consumers' experiences by pre-selecting beneficial options, which could save time and cognitive effort. On the other hand, default options may not align with consumers' best interests, and might limit consumer choice. This may ultimately decrease market competition with negative consequences for potential providers and consumers in the long run (Competition and Markets Authority, 2020, 2022). This suggests that defaults can both positively and negatively impact the experience of the consumer (Loewenstein et al., 2015).

To better understand the impact of defaults on consumer behaviour and contribute to the growing evidence base on the prevalence and potential harm caused by OCA, we conducted a study with two main research questions:

1. What is the prevalence of defaults on e-commerce websites and apps used by UK consumers, and are certain default types or characteristics more common than others?
2. What is the impact of defaults on consumer welfare³, as reflected in consumer choices, beliefs and actions?

To estimate the prevalence of defaults, we conducted a comprehensive review of consumer journeys on e-commerce websites and apps in the UK. This includes 558 of the most popular websites and mobile applications. For each e-commerce website or app, we selected popular products, followed the checkout process for each product and collected data on the presence and

¹ <https://www.ons.gov.uk/businessindustryandtrade/retailindustry/timeseries/j4mc/drsi>

² The impact of defaults on consumer choices has been studied across a range of contexts, with typically large effect sizes observed. A meta study of the literature reports the average size of effects as 27 percentage points, although there is large variability in effect size (Jachimowicz et al. 2019). For example, in the context of organ donations, the difference between opt-in and opt-out sign-up rates is estimated at 40 percentage points in Johnson and Goldstein (2003). In the context of pensions and social security schemes, automatic enrolment has been estimated to significantly increase participation (Chetty et al. 2014; Cribb and Emmerson 2016; Cronqvist and Thaler 2004; Rudolph 2019). In the context of household energy plans, Fowlie and co-authors (2021) find that 90 percent of households defaulted into an energy-efficient electricity plan stay enrolled in it, as opposed to 20 percent of the households who had to opt-in (a 70 percentage-point effect). In the context of online groceries, experiments have found that changing the order of defaults in online grocery baskets can lead to users choosing more organic options (Kuhn, Ihmels, and Kutzner 2021), or food that is healthier (Valenčič et al. 2024).

³ In this study, we refer to welfare to encapsulate possible impacts on the experience and wellbeing of the user. Later in the Theory of Change, we will operationalise this to include consumer surplus, the amount of time spent on the shopping journey and proxies for regret felt after the shopping experience.

nature of defaults, then combined these observations into a single database to identify the most common types of defaults.

We then used findings from the prevalence study to conduct an online choice experiment to estimate the impact of defaults on consumer behaviour and welfare. The experiment was designed to closely reflect real consumer experiences and focused on two common defaults identified in the prevalence study: shipping/delivery and protection plans (such as extended warranties). We carried out a survey immediately following the experiment, which included questions on participants' experiences, thoughts, and beliefs about defaults.

In the following sections, we provide further details on our methods, findings, and their implications. This includes (i) the prevalence study, (ii) the method and results from the online choice experiment; (iii) findings from the post-experiment survey; and (iv) using these findings to present an indicative estimation of the impact of defaults on consumer welfare.

Estimating the prevalence of defaults in online shopping

In order to understand the landscape of defaults in the e-commerce retail market, we first implement a prevalence study. A prevalence study offers insights into how the defaults are used online, and to identify the forms in which users are likely to encounter them. This is an important step as defaults in online shopping, especially in the context of the UK, have not seen detailed research. A prevalence study can characterise how retailers use defaults. In the next phase of the study, we design an online experiment that can best capture the experiences of defaults by users. The findings from this study provide useful inputs to inform the design of this experiment.

To describe the nature of defaults, we first formulate a system of categorisation of the defaults based on existing literature. Next, we create a sample list of websites and mobile applications that can cover the majority of user experiences in the UK. Following the user journey manually for each of these online retailers, we check for the presence and nature of defaults.

Categorisation of defaults

As a first step, we created a system to categorise the defaults. We did this through a rapid review of the existing literature examining current practices around defaults, and then based on our findings, we created an intuitive categorisation that can characterise the defaults options commonly found online.

We followed a thematic approach to the review of literature, checking for the impact of defaults presented in online settings across sectors such as pensions ([Chetty et al. 2014](#); [Cribb and Emmerson 2016](#); [Cronqvist and Thaler 2004](#); [Rudolph 2019](#)), medicine ([Johnson and Goldstein 2003](#)) and online shopping ([Kuhn, Ihmels, and Kutzner 2021](#), [Valenčič et al. 2024](#)). From these studies, we identified the details of how the defaults were being presented to the users. Consumers face options on what goods, add-ons and variants to buy online. They are presented with these options on different pages throughout their user journeys. Finally, each of these defaults can be presented in different formats. Hence, we characterise the defaults along three dimensions – ‘What’, ‘Where’ and ‘How’. These capture the details of the products related to the default, the location in the user journey, and the format or style in which the default is presented, respectively. The sub-categories within each of these dimensions are described as follows:

- **‘What’** – or, the good, service, accessory, or add-on that the default relates to. Sub-categories include:
 - Variants of product characteristics (e.g., memory size; style; model; default size/quantity; quality)
 - Additional products as add-ons (accessories, warranty)
 - Variants of customer services (e.g., more expensive but faster delivery speed)
 - Variants of purchase agreement (e.g., subscription or one-off)
- **‘Where’** – or, the location where the default option is presented within the user journey. Sub-categories include:
 - The home page of the e-commerce site
 - The product search page
 - The product page

- The cart/basket
- The checkout page
- Multi-screen options, where a default is presented first and viewing additional options requires navigating to another screen or page, such as cookie consent requests
- **‘How’** – or, the format that the default takes, in terms of the user experience. This includes the following two sub-categories:
 - **‘Hard defaults’**: options that make a selection on behalf of the user:
 - Preselected options (such as pre-ticked boxes)
 - Opt-out options (usually with negative language forcing user to opt-in by default)
 - **‘Soft defaults’**: options that suggest a default, or encourage the user towards selecting an option:
 - Ordering of options (the first or most prominent option appears as default, usually driven by algorithms and sponsors, such as Google Ads)
 - Mimicking defaults (options that use visual appearance, such as formatting or placement, to mimic a preselected default)

To estimate the prevalence and characteristics of defaults in the e-commerce sector, we applied this categorisation framework to a comprehensive sample of online retailers popular with UK consumers (described in more detail in the following section).

Sampling

To assess the prevalence of defaults we created a sample of 558 representative websites and apps that we could examine. These 558 were selected based on our sampling approach to capture typical consumer experiences on e-commerce websites and apps based on data on UK household expenditures.

We focus our attention on four sectors - retail, hospitality, entertainment, and transport and communication. The reason for this is that, taken together, these sectors account for 61 percent of average UK household expenditures ([ONS 2022](#)) and goods and services in these sectors are frequently purchased online across a wide range of websites and apps. A majority of user experiences in e-commerce are likely to be from among these sectors. These were also the sectors used for our previous review of the literature and primary analysis on drip pricing and fake reviews ([Alma Economics 2023](#), [Alma Economics 2023b](#), [Friedman 2019](#)).

Based on the product classification system used by ONS, we selected 12 sub-categories across the four sectors. These sub-categories provide a more granular view of the goods and services being purchased within each of the four broad categories. The majority of e-commerce websites and apps only focus on one type of product or service (those that sell clothing and footwear rarely sell transport goods, for example).

Table 1: Sectors and sub-sectors sampled for the prevalence study

Category	Sub-Category
Retail	Food & drinks (goods)

Category	Sub-Category
Retail	Clothing & Footwear
Retail	Household goods
Retail	Health services
Retail	Health and beauty goods
Retail	Transport goods
Retail	Recreation & culture goods
Transport & Communication	Transport services
Transport & Communication	Communication services
Entertainment	Recreation & culture services
Hospitality	Restaurants & hotels

This sampling approach means that we exclude the following expenditure categories from the ONS Living Costs and Food Survey, which account for 39 percent of household expenditures:

- Alcoholic drinks, tobacco, and narcotics
- House, fuel, and power
- Health
- Education
- Others, including personal care goods, social protection, insurance, etc.

These categories were not included in our sample as they are not generally purchased online by UK consumers and are less likely to involve “comparison shopping” across different websites and apps.

From within each of the included 12 sub-categories, we identified relevant websites and apps based on the following criteria, to determine the online shopping journeys most frequently completed by UK consumers:

- (i) Market share data (from the business database Endole)
- (ii) Data on the most frequently visited websites and apps by UK consumers using SimilarWeb and Google Play Store
- (iii) Results from the first 10 pages of Google search using relevant keywords (e.g., “hotel stay” and “food delivery” were used as keywords within hospitality).

Using this approach, we identified 558 representative websites and apps for the prevalence study. For each of the 12 sub-categories, we were able to identify, on average, 46.5 websites and apps that are used in the UK. This includes 41 mobile apps and 517 websites. For most of the websites which had a mobile-based alternative, the user journeys and default options used were the same

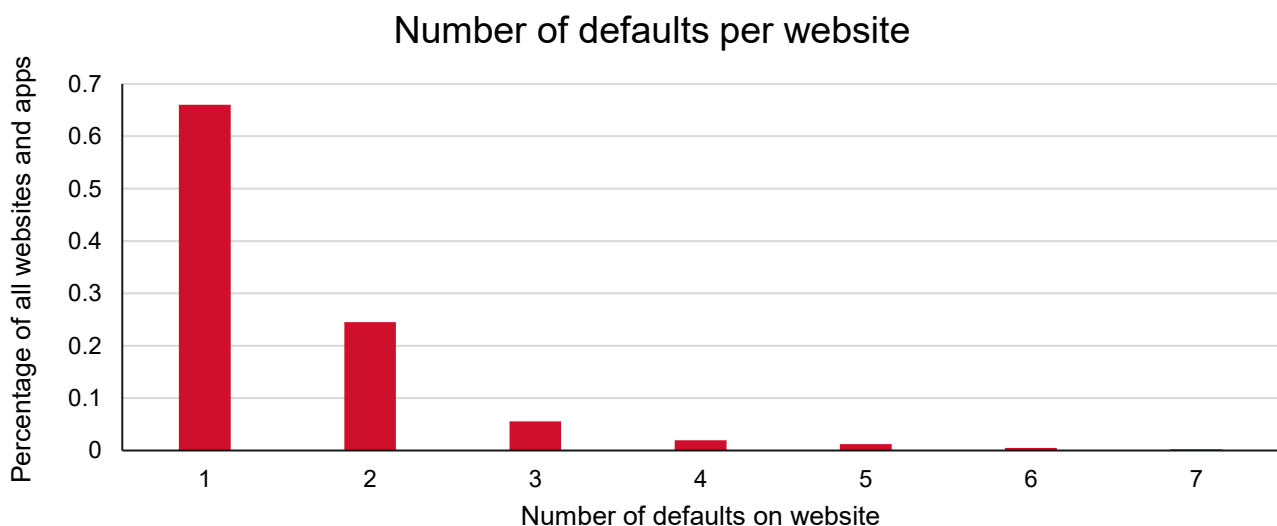
on both versions. Across the four sectors, the greatest number of websites were in the retail sector (202) followed by transport and communications (147), hospitality (116) and entertainment (93).

Combining the above strategies has a few advantages. First, we capture any important websites and apps that might be missed by a single sampling strategy. Second, the resulting 558 websites and apps represent retailers that are both popular within the UK in terms of site visits and market share data, but also the most encountered through Google search results, giving us a sample that is reflective of UK online shopping behaviour. Notably, we include 9 of the top 12 e-commerce brands as identified by the [Statista E-Commerce Insights Survey \(2023\)](#).⁴ Third, this approach identifies websites and apps that potentially span multiple categories from a prevalence or popularity-first search (e.g., it captures that Argos is the most popular provider for household goods and for retail).

For each provider, we manually mirrored a typical customer’s journey starting with a single item or service. This was done by proceeding through each step of the shopping experience up until the checkout page. For each sub-category, we selected the first or most salient product visible in the list of product options. The number of steps varied by provider, and for each item we recorded the defaults presented at each stage between selection of the product and the checkout page. In cases where products/services needed to be searched for and where there was no obvious popularity metric (e.g. specific flight journeys), we searched for services that we were familiar with (through personal experience). For instance, within Household goods, Argos was identified as a popular provider. A dishwasher was ‘purchased’ within Household goods within Argos. Argos was also identified as a popular provider within Retail. A laptop was ‘purchased’ within Retail within Argos.

For each website or application, we collected data on up to seven defaults encountered during the user journey. We do not expect this to create any issues with data collection since most websites that we reviewed had fewer than two defaults.

Figure 1: Number of defaults per website



We recorded each of the defaults encountered, along with other details related to the transaction in line with the variables listed in Appendix 1. To address the question of “*what*”, “*where*”, and “*how*” the defaults appear in data, the defaults found on the websites and apps were classified according to their type, location and format. We also examined their pricing and the use of additional features that could impact the effectiveness of the defaults. Screenshots were taken where possible and

⁴ Those not included are Asda, Sainsbury’s and Tesco.

saved for each step of the user journey as part of data collection. This ensured the customer journeys we followed were documented and enabled a second researcher, as part of our quality assurance process, to verify that the default options had been correctly identified. The following section summarises the findings from this study.

Findings

Prevalence of defaults

The comprehensive review of default practices found on UK e-commerce websites and apps covered 558 websites and apps, including websites and mobile applications. Of these, 49 percent, or 273 were found to have defaults, and there were 412 total defaults found across these websites and apps.

Figure 2: Incidence of Defaults, Source: Prevalence Study Data

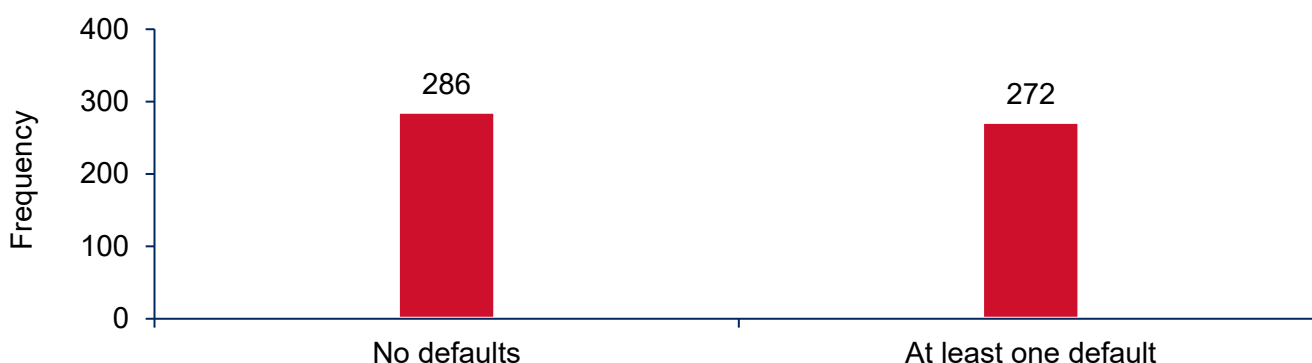


Table 2: Incidence of defaults by sector

Presence	Entertainment	Hospitality	Retail	Transport and Communications	Total
No defaults	68 (73%)	76 (66%)	63 (31%)	79 (54%)	286
One or more defaults	25 (27%)	40 (34%)	139 (69%)	68 (46%)	272

Characteristics of defaults

We now present our findings on the various characteristics of defaults found, including details on the “*what*”, “*where*”, and “*how*” the defaults appear in data, their pricing and the use of additional enhancers.

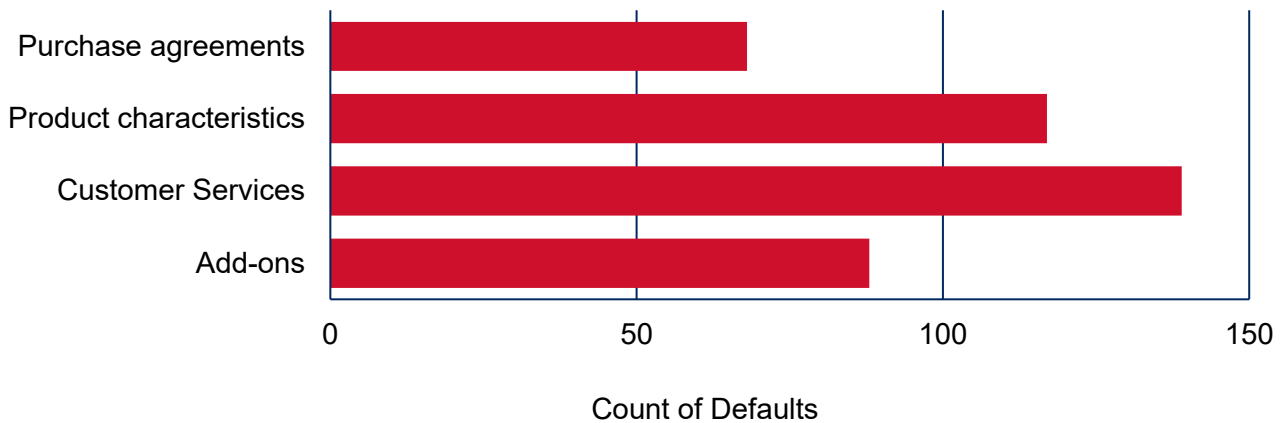
‘What’: Type of default

We check how the defaults were classified into one of four types, between add-ons, customer services, product characteristics and purchase agreements. We found that customer services were the most common type of default, with 34% of defaults related to some kind of service. The most common default option within this category is delivery or shipping, suggesting that retailers use defaults to allow faster selection of delivery options. The second most common type is product characteristics (28% of defaults). Add-ons and purchase agreements account for 21% and 17% percent of the defaults, respectively.

Table 3: Prevalence of Defaults by Type

Default Type	Count	Proportion
Add-ons	87	21%
Customer services	137	33%
Product characteristics	116	28%
Purchase agreements	72	17%

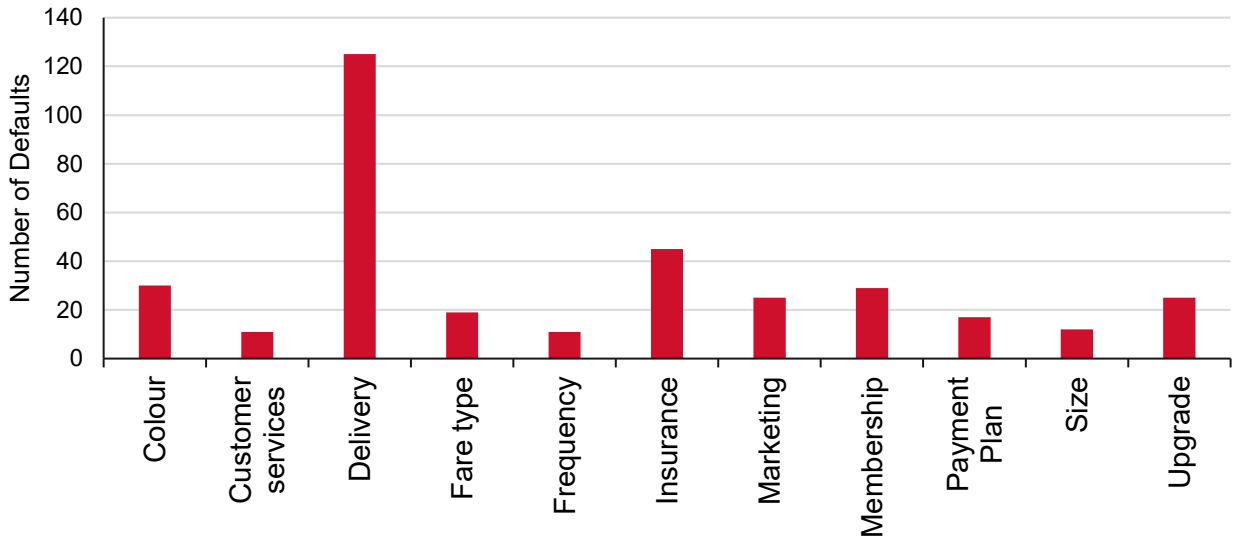
Figure 3: Prevalence of Defaults by Type



Within these larger categories, we also collected data on the sub-category of product or service offered within each of the four types. The largest portion of defaults, both for customer services and across all types of defaults, relates to delivery or shipping options. The most common sub-category for the add-on type relates to insurance, including product warranties. Insurance is also the second most common default option across all default types. The most common product characteristic used for defaults is the colour of the product, while retail memberships, offering some benefits for those who opt-in, are the most frequently used form of default for purchase agreements.

Across all the categories, the most common kind of default found was for delivery services, usually related to delivery method. This was also the most common default found under the Customer Services type. The second-most common default found in the prevalence study was related to Insurance, or related to a protection plan for the products being purchased, within the Add-on category. Defaults related to Product Characteristics were spread out relatively evenly, with “colour” (of the product) being the most prominent. For Customer Services, on the other hand, the most common defaults were related to either membership or marketing, encouraging consumers to form a longer-term association with the retailer. The following figure shows the frequency of the top ten defaults observed in the data.

Figure 4: Top 10 default types across all types

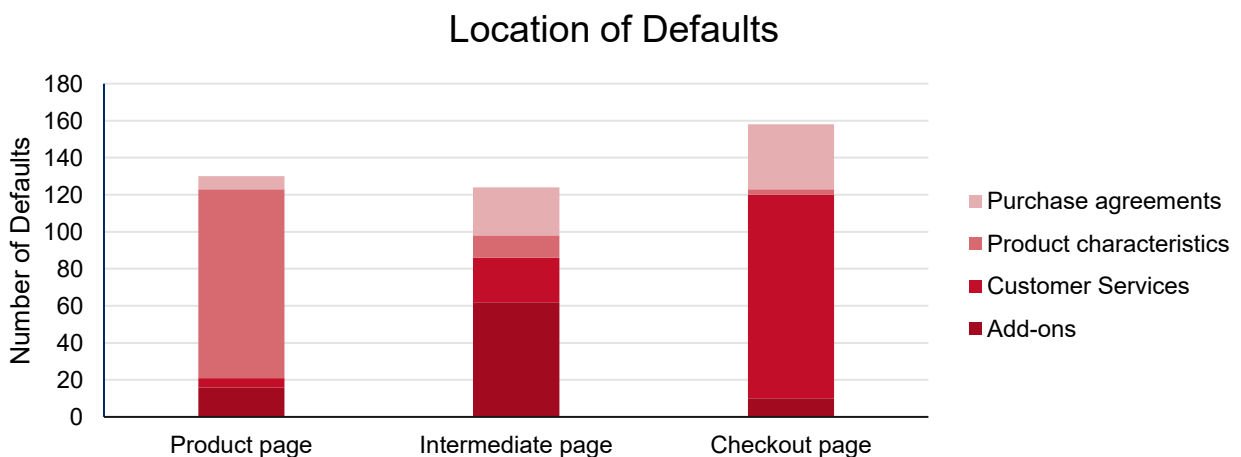


‘Where’: Location of Defaults

The defaults can be classified by their location in the user journey. As previously mentioned, we examine three possible locations for the default: the product page, the checkout page, and any intermediate page in between the first two. An example of the latter is the page that offers the selection of seats during the purchase of an airline ticket.

Our analysis shows that the largest proportion of defaults are found on the checkout page. This is driven by the prevalence of defaults in delivery and shipping options. The product page typically includes defaults related to product characteristics, where the user is presented with options to choose from. The intermediate page is primarily used to present add-on services by retailers.

Figure 5: Distribution of location of defaults in sample



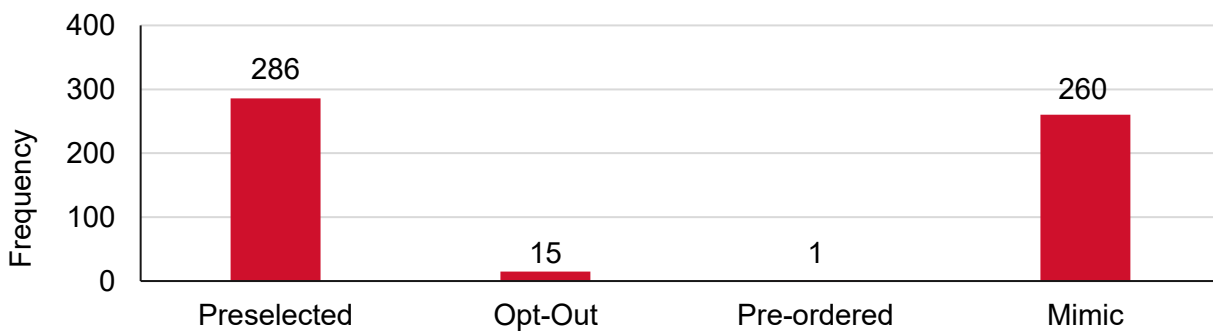
We also examined whether the defaults are presented over a single screen, or over multiple screens, where additional options are only available upon navigation to a different screen or window. The latter can often nudge users to select the option displayed on the first screen, thereby presenting an option as a default. There is an overlap here with another online choice architecture tool used by retailers. Options that are over multiple pages are also linked to the practice of *dripped pricing*, which presents consumers with pricing options over multiple pages. These have been explored in detail in a [previous report](#).

However, strictly looking at the practice of defaults, we find that 96% of defaults presented are over a single screen. This suggests a very low prevalence of multi-screen defaults.

‘How’: Format of defaults

To examine how defaults are presented to the user in terms of format, we examined each of the 412 defaults and identified if they were “hard” defaults (preselected options, opt-out options) or “soft” defaults (pre-ordering of choices or options that mimic a default in appearance). Note that a single default could have one or more of these four formats. As shown in Figure 6, the most common format of default (69% of defaults) is the “hard” default of preselected options, where the user encounters a radio button or checkbox which has been given a value before the user makes a choice. Mimicking defaults (63% of defaults) are the second most common format of defaults. 139 defaults in our sample had both preselection along with a mimicking aesthetic. The other two categories had a much smaller presence. Opt-out defaults were found in only 15 defaults, while there was only 1 pre-ordered default found in the data.

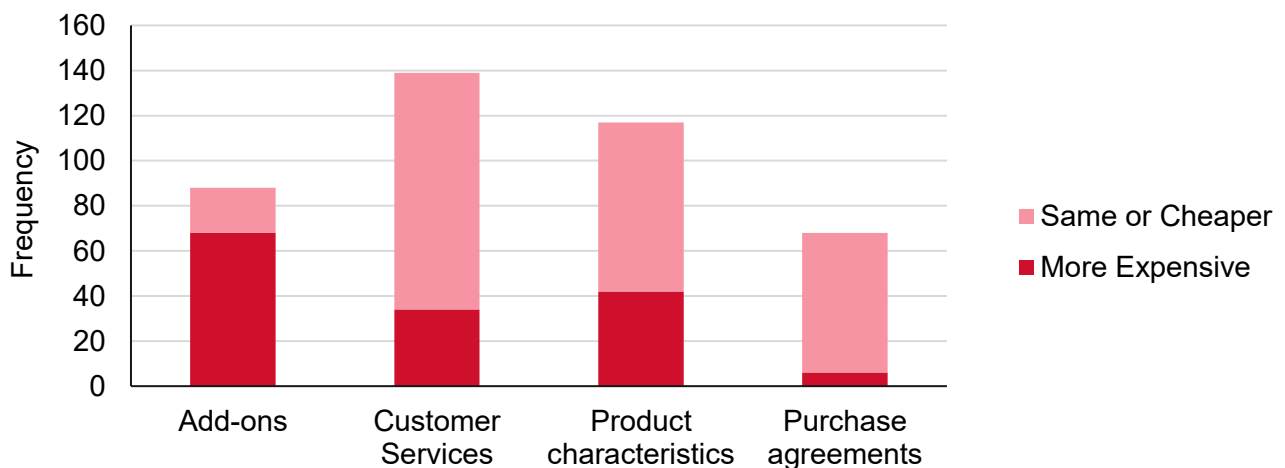
Figure 6: Distribution of defaults by format



Pricing

The study also collected data on the prices of the defaults, including the prices of the non-default options. 262 defaults in the sample (64% of all defaults) were priced at the same or a cheaper price as the non-default options. Looking at how pricing differed by type of defaults, Figure 7 shows that add-on defaults were more likely to be priced at a higher price than the alternatives. This is to be expected, as add-ons are a venue for retailers to sell additional goods. However, the defaults for the other three categories (customer services, product characteristics and purchase agreements) were likely to be priced the same or cheaper as the other options. These are categories where the pricing would be related to the same product, and the results suggest that a majority of retailers set the default to the cheaper option.

Figure 7: Pricing of defaults in sample by type



This is an important observation that suggests that the manner in which most defaults are deployed does not direct users to more expensive options. While pricing is a simplified way of checking the impact of the default on consumers, qualitatively, the data suggests that a majority of websites used defaults to direct users towards a quicker checkout. For instance, for options in Customer Services, which was the most common category, the defaults tended to favour delivery over click-and-collect, which might be preferred by users for convenience, even if it is more expensive. Amongst the default formats, mimicking defaults had the highest proportion of options which were more expensive, with around 44% of the options priced higher than the alternatives (detailed numbers are presented in Appendix 4).

Default Enhancers

We also examined the incidence of default enhancers, which are online design features that can impact the effectiveness of defaults. Approximately 38 percent of the defaults had one or more of these enhancers. We look at five potential enhancers:

1. **Messaging:** where there is text around the default, providing additional information to the user to encourage them to make a certain selection. This is a common practice, with 126 defaults (31% of all defaults) in the sample being presented with some kind of additional information that makes it more likely for the user to select the default. This could include, for instance, details about the product characteristics, or its popularity, or suitability for the user. While the details about the exact nature of messaging options are outside the scope of this study, from the literature we reviewed earlier, we note that these messages can also create a sense of time urgency, or scarcity, and add pressure to the user to complete the purchase.
2. **Salience of unit pricing:** where the retailer emphasises a measure of price over others. For instance, a website can make the price salient for an annual membership while reducing the salience of other membership tenures. 43 examples (10% of all defaults) of salience were found in our sample.
3. **Asymmetric Options:** where the default is presented in a manner that is unbalanced in options or information provided. For example, offering the options "Yes" and "Learn More" instead of "Yes" and "No" puts the burden on the customer to take extra steps to decline. This can subtly influence customer behaviour. In our sample, 35 defaults (8% of all defaults) were classified as having some measure of asymmetry.
4. **Reminders:** where the website or app provides reminders to the user to select an option, even after the user has explicitly made a non-default selection. These are usually simple messages that confirm the choice the user has made, often on succeeding pages or in intermediate pop-up windows. They serve to nudge the user to change their mind and select the default presented. In the sample, we found that 28 (7% of all defaults) nudged users using one or more reminders.
5. **Bundling:** where the default occurs in association with a sales strategy on the e-commerce websites or app to group multiple products as a single unit. For instance, on websites for airlines, services such as queue-jumps and luggage are often bundled together. In the sample, 19 defaults (5% of all defaults) were presented together with a bundle.
6. **Decoys:** where one of the options is a better choice across all measures when compared to the other options presented. This creates a false sense of choice while directing the consumer to select the "default" chosen by the retailer. The prevalence of this enhancer is low in our sample, with 4 decoys (less than 1% of defaults).

Table 5: Prevalence of default enhancers in sample

Default Enhancer	Incidence
Messaging	126
Unit price salience	43
Asymmetric options	35
Reminders	28
Bundling	19
Decoys	4

Estimating the impact of defaults on consumers through an online choice experiment

Theory of Change

A Theory of Change (ToC) is a strategic framework that outlines the causal relationships between a set of events or activities, short-term and intermediate outcomes, and its long-term impacts. The Theory provides a map for the logical links between exposure to defaults and possible long-term outcomes for consumers. This is an important step in the design of the online choice experiment and the variables that are tracked. It provides a template to structure our analysis of experiment data, including assessment of key mediating variables, as well as the construction of welfare measures.

Based on the literature review, a Theory of Change was developed to describe the potential pathways from defaults to consumer harm, in a manner that traces the user's journey through a default. The Theory of Change, was built based on the categorisation of defaults described above, and is summarised in Figure and described in further detail below.

It starts with the types of defaults in the first column, followed by the formats of defaults in the next. These two columns reflect the way in which the user experiences the default. When visiting e-commerce websites and apps, consumers can be presented with defaults in different stages of the user journey. These defaults can include the choice of product characteristics, additional or add-on products, customer services or purchase agreements. Each of these four types of defaults can be presented in one of two formats ("*How*") - either as a hard default, where the retailer makes a selection for the user (including preselection, and options where the user has to opt-out of the selection), or as a soft default, where the websites or app uses visual appearance to suggest a preferred option for the user.

The manner and extent to which defaults can have an impact is influenced by the presence of *default enhancers*, which are listed in the following column in the ToC. We identify two types of enhancers. First, enhancers can rely on messaging and information – including messages about scarcity, time, demand, prompts and reminders. Second, enhancers can rely on presentation and salience – including asymmetry of options, differences in how prices are displayed, "decoys" (options where the non-defaulted options are dominated by the default) or bundling of multiple products together.

The next step in the Theory of Change looks at mediators, which can influence how individuals respond to and engage with defaults. Mediators can relate to products (such as product price or characteristics) or consumers (such as previous experience shopping online, familiarity with the product or socio-economic characteristics, including income and education).

There are three ways through which defaults have an impact:

1. **Anchoring and loss aversion**, where the consumer treats the default option as an "anchor"⁵. and then avoid "losses" by not switching away from it ([Cronqvist and Thaler 2004](#), [Park et al. 2000](#)).
2. **Consumer information or beliefs**, where the consumer (correctly or incorrectly) believes that the default contains information about the choice, such as its popularity or benefit ([Brown and Krishna 2005](#), [McKenzie et al. 2006](#)).

⁵Anchoring is a cognitive bias where initial information disproportionately influences our subsequent judgments and decisions ([Tversky and Kahneman, 1974](#))

3. **Inertia or costly attention**, if the consumer does not want to expend effort to change the selection and it is easier for them to stick to the default ([Johnson et al. 2013](#)).

The final two steps in the Theory of Change address the short-term impacts and outputs, and the long-term outcomes that are created by the experience of defaults. Based on our review of the literature, the short-term impacts that we identify include the following:

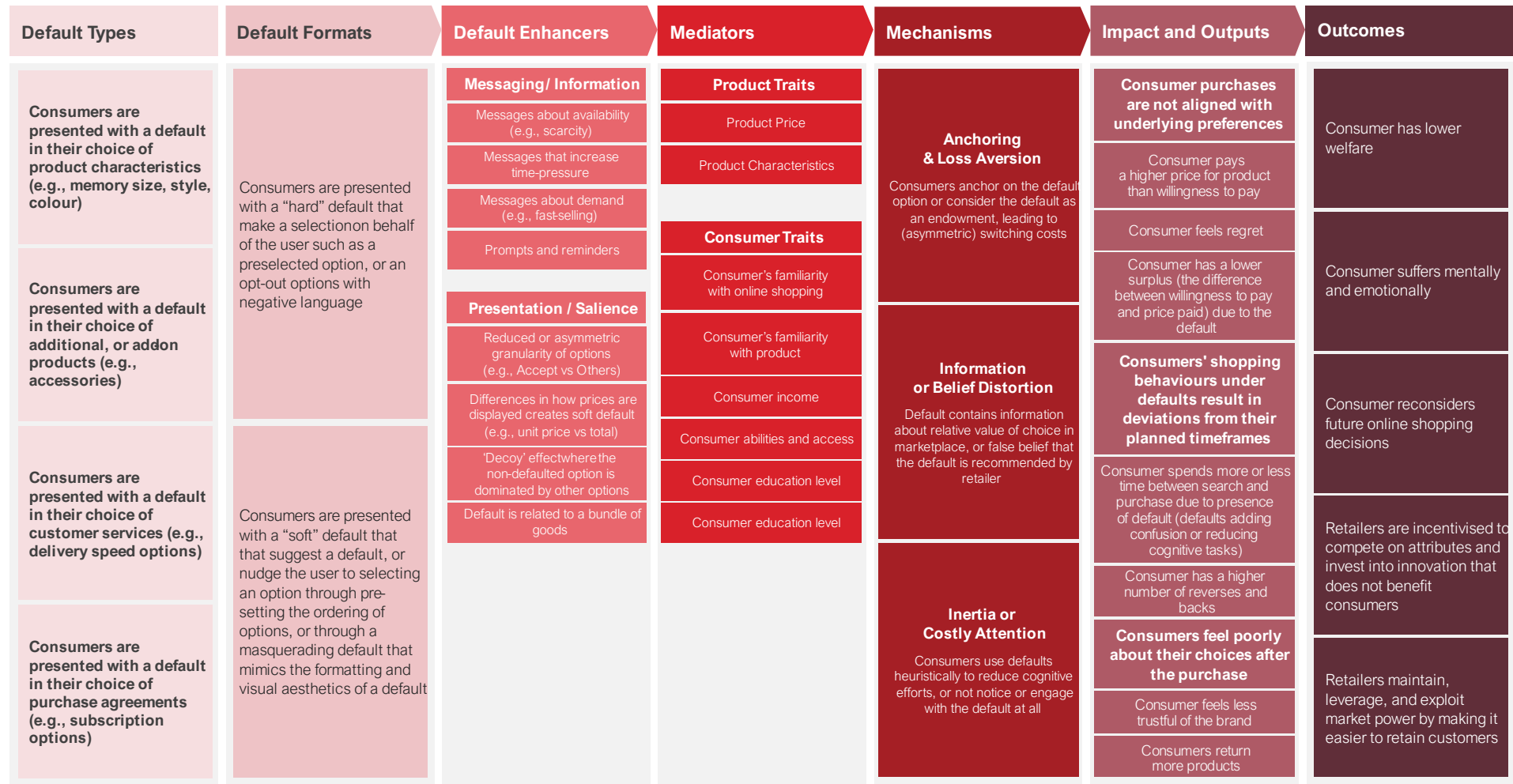
1. Deviations from the consumer's preferences: This could mean that the consumer pays a higher price for a product than they were originally willing to, creating a lower "surplus"⁶ and the purchase causes regret.
2. Deviations from the consumer's planned timeframes: Because of the presence of defaults, the consumer can end up spending more time on the shopping journey than planned due to possible confusion, or due to extra cognitive work on the options available. They could also spend less time than planned, as the defaults can lead to spending less time on decisions. The consumer could also have a higher number of backs or reverses in the shopping journey due to the defaults.
3. Consumers feeling poorly about their decisions: This could include feeling less trustful of the retailer and returning a higher number of products.

These short-term impacts can lead to systemic changes in the long run. These long-run outcomes we identify include consumers having lower welfare, negative emotional or mental impacts, and a change in preferences for online shopping. The use of defaults can also incentivise retailers to invest in features that focus on user attention rather than product innovation that can benefit consumers, potentially leading to greater market power.

⁶ An economic surplus is the difference between the price paid for a product and the willingness to pay for it

Theory of Change summary diagram

Figure 8: Theory of Change summary diagram



Experiment design

We conducted an online choice experiment to estimate the impact of default practices on consumer harm. Online RCT experiments are a powerful way to measure how an intervention can have an impact, through the use of random assignment to split participants into treatment or control groups to measure the causal impact of an intervention. Using a very intuitive platform created for this experiment, we were able to test the choices made by users to different types of defaults. The rationale behind an online choice experiment included:

- An online choice experiment can be constructed to closely mimic a real online shopping experience for consumers, arguably leading to participants making realistic choices and improving the external validity of the findings.
- An online choice experiment, through random assignment, allows the estimation of the impact of defaults on consumer choices and estimates of consumer surplus, in isolation from users' product and shopping preferences, familiarity with online websites and apps, income and other potential confounders.
- An online choice experiment allows the creation of a controlled environment where factors such as prices, products and visual appearance are fixed, and the impact of defaults can be estimated while holding these factors constant.
- Detailed metrics on consumers' interactions with the experiment platform (e.g., time spent on specific product pages and number of times consumers clicked the Back button) can be tracked and included in our analysis.
- Participants can be selected from a population of individuals who shop online and are residents of the UK, which means that our findings reflect the impact of defaults on UK consumers.

Based on the Theory of Change described above, the online choice platform was created to collect data which maps to each component of the Theory of Change. The full set of metrics is provided in Appendix 1.

Control and treatment arms

We designed each arm of the experiment based on the findings of the prevalence study. This meant the study reflected the most prevalent default practices on popular UK e-commerce websites and apps across the "what" and "how" categories of defaults. From the prevalence study, we selected the most common default type (shipping or delivery options) and third most common default type (insurance, including warranties and aftercare). In the experiment, the insurance default was displayed to users as a "Protection Plan" offering aftercare and warranty for the product being purchased, a common option identified across websites and apps in the prevalence study.

The second most common default practice was around the colour of the product. However, this was not considered relevant for the purpose of the online choice experiment for two reasons. Firstly, the default colour option typically depends on the keywords used by the consumer to search for the product. This means it is based on the ranking infrastructure of the online platform rather than a specific option defined by the website or app. Secondly, products that are identical except for the colour tend to be priced the same, limiting our ability to study key trade-offs in the use of defaults on e-commerce sites.

The prevalence study also indicated that, for "How" defaults are presented, the most common format of defaults was the preselected default, where a checkbox or a radio button is checked by default. The second-most common default format is the "Mimic" default, where the default is visually prominent, and made to mimic a default or preselected option. Two examples are shown in

Figure 9 below, where the “Switch to Regular” option and the “Select seats now” option stand out visually and are made to appear like the default choice.

Figure 9: Examples of mimicking defaults

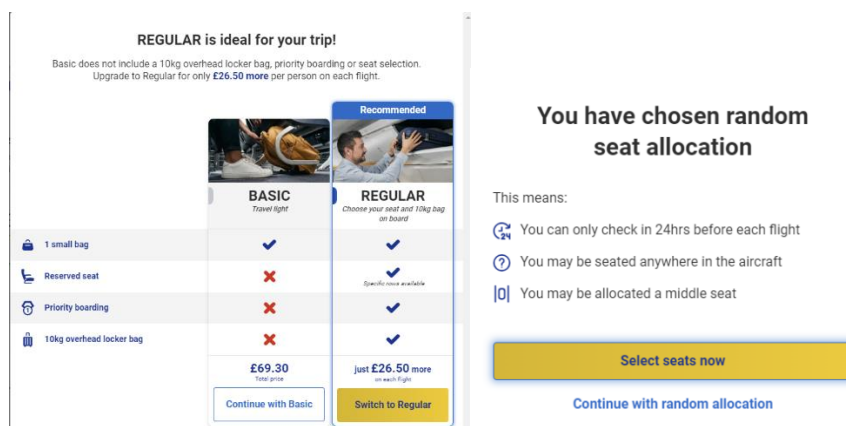


Table 6 sets out the full experiment design, which incorporates key findings from the prevalence study to ensure that the experiment assesses the impact of the most common default practices:⁷

Table 6: Online choice experiment cell structure

Cell	Sample allocated ⁸
<u>Sub experiment 1</u>	
C1: Active choice for shipping/delivery	1,000
T1: Pre-selection for shipping/delivery: the fastest and most expensive option is preselected as the consumer enters the product page	1,000
T2: Visual prominence for shipping/delivery: the fastest and most expensive option is made visually prominent (not preselected) as the consumer enters the product page	1,000
<u>Sub experiment 2</u>	
C2: Active choice for ‘protection plan’	1,000
T3: Pre-selection for ‘protection plan’: the most comprehensive and most expensive option is preselected as the consumer enters the product page	1,000
T4: Visual prominence for ‘protection plan’: the most comprehensive and most expensive option is made visually prominent (not preselected) as the consumer enters the product page	1,000

⁷ Sample screenshots of the experiment platform are provided in Appendix VI.

⁸ The samples for each cell were pre-determined based on power calculations to ensure each two-cell comparison achieved a level of statistical power of 80% with a 95% confidence level. The minimum detectable effect size used for the power calculations was a five percentage point increase in the probability of purchase (from a baseline of 0.25).

The experiment was designed to answer the following research questions through comparing metrics for different sets of cells (described in Table 6). We list the research questions we aim to answer through this experiment here:

- Research Question 1: To what extent do the presence of defaults impact consumer choices?
- Research Question 2: To what extent do the presence of defaults impact consumer welfare?
- Research Question 3: To what extent do the presence of defaults impact time spent shopping?

Product categories and products used for the experiment

Based on our previous work with e-commerce websites and apps ([Alma Economics, 2023a](#); [Alma Economics, 2023b](#)), we chose 11 product types within three product categories for the experiment.

The three product categories are:

1. Home and Kitchen
2. Electronic Accessories
3. Health and Cosmetics

These categories were identified because they are commonly purchased online, commonly sold on e-commerce websites, physical and non-perishable, gender-balanced, and intended for use by adults. Within each category, we selected common product types across a range of price points to ensure that participants were presented with at least one product that they were more familiar with and interested in, ensuring that the choices they made during the experiment were more likely to reflect their real-world choices. By including these different product categories and types, we ensure that any significant findings were driven by experiment design. For instance, if we limited the design to a single product, it would be hard to assess if the choice made by users was driven by the defaults or by the product itself. By including multiple products, we can make sure that any product-specific characteristics are not driving the results, and that our results are applicable to a wide range of commonly purchased goods.

Table 7: Products included in the online choice experiment

Product category	Product type
Home and kitchen	Kettle, Iron, Vacuum, Desk Chair
Electronic accessories	Bluetooth headphones, Keyboard, Power bank, Smart Speaker
Health and cosmetics	Heart rate monitor, Hair styling appliances, Weighing machine

Product pricing on the online choice experiment

Product pricing: For each of the products, we chose, at random, three options that are currently available on Amazon⁹. To make sure there were no price differences within the same product, we set the price of each product to be equal to the median current price on Amazon. This ensured that the results of the experiment were independent of any price effects, conditional on the product type selected.

Protection plan pricing: This is the equivalent of the “insurance” or “warranty” add-on in the prevalence study. We provided two options: no warranty (priced at zero) and a 1-year warranty (priced at 5% of the item value).

Delivery pricing: For the delivery option, we provided two options: zero price for “regular” delivery (in 5-7 business days) and £3.00 for “express” delivery (1-2 business days).

The data from the prevalence study showed that the median number of options for default types was two. Hence, for both delivery and protection plan products, we decided to keep the number of options at two. This helps the user to feel like the platform offers offer a typical shopping experience.

Post-experiment survey

Participants were asked to fill out a survey following their completion of the experiment. The survey included questions that can provide us with greater detail on the users’ experience of defaults. It was comprised of three main sections, had willingness to pay (WTP), comprehension and attention questions embedded within, and included an attention check. We describe these sections in detail here:

- The **first section** contained questions regarding the purchase that participants had made in the experiment (e.g., were you able to choose from multiple [shipping] options for the product you purchased?). It was designed to gain insight into the awareness and decision-making process around the default as well as why participants purchased the option that they did.
- The **second section** included a debrief about defaults, followed by questions regarding participants’ previous experience with them. The debrief introduced the concept and provided examples of what the preselected and visually prominent options might look like. The questions that followed aimed to assess (i) the extent to which participants were familiar with the concept before the experiment, (ii) whether they have been adversely affected by the practice in the past, (iii) how their behaviour would be impacted if they noticed that an option was preselected or visually more prominent, and (iv) their general beliefs about why certain options have been preselected/visually prominent.
- The **final section** asked for participants’ demographics as well as their experience with purchasing items online. These questions were included to gain further insight into the make-up and background of the participants and whether the impact of the experiment differed based on this. In terms of demographics, we specifically asked for information regarding location, disability, income, education, age, sex, and ethnicity¹⁰.
- The survey included questions to assess participants’ WTP for the product and default that they chose to purchase. They were directly asked how much they would be willing to purchase the product and accompanying default for in real life (e.g., what is the total amount that you

⁹ We use Amazon as it is the most commonly used e-commerce platform and would be familiar to a majority of the participants. In our sample 97% of the participants reported having used Amazon.

¹⁰ All demographic questions included ‘Prefer not to say’ as a response option

would be willing to pay for a new laptop that will be delivered within 1-2 days of your order being placed?).

- One comprehension and one attention check were embedded within the survey to ensure the responses were valid¹¹.

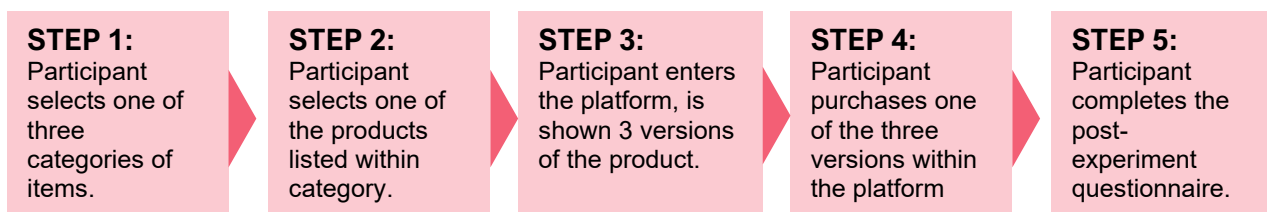
Procedure

Prior to joining the experiment, participants were presented with an information sheet and a privacy notice. These documents set out their rights as a participant, and our obligations when handling their data. Upon reading these documents, participants were asked to fill out an online consent form. Once participants had given their informed consent, they were given the instructions for the first part of the experiment.

To improve participant engagement and mimic relevant real-life conditions, participants were offered a choice between one of the three categories of products (e.g. Health and Cosmetics), followed by options for specific products (e.g. Heart rate monitor). Participants were then led to the shopping platform and instructed to consider selecting one of three products (e.g. three different types of heart rate monitors with similar features). The platform provided an immersive website experience with a choice of three products for the user to examine with no time limit, and select one for purchase.

Participants then completed the experiment and answered the post-experiment questionnaire. Once completed, participants were thanked for their participation, provided with debriefing information, and redirected back to Prolific. The experiment was expected to take approximately 10 minutes to complete. Figure 10 below shows how participants proceeded through the experiment.

Figure 10: Diagram of main experimental procedure



Outcome variables, research questions and cell comparisons

To identify the impacts that defaults had on experiment participants, we focused on four key variables: willingness to pay, surplus, probability of choosing the expensive option and shopping time. The first two variables were based on participant responses to the post-experiment survey, while the latter two variables measured the actions of the participant in the experiment itself.

- **Willingness to pay (WTP):** Willingness to Pay is defined as the maximum price a consumer is ready to pay in exchange for a product or service ([Gall-Ely 2009](#)). While this is difficult to measure, we attempt to create a proxy measure in our survey. We do this by asking them about the price they would be willing to pay for the same item bundle (with the protection or shipping option, as assigned), immediately after the experiment. The participants' responses were captured using a slider scale, and should elicit a reasonable estimation of their true WTP.

¹¹The comprehension check was designed to ensure that participants understood the experiment instructions. The response options were multiple-choice and participants were not able to proceed until they had selected the correct answer. The attention check was a question that instructed participants to pick specific answers, enabling us to determine that participants were paying attention during the experiment.

- **Surplus:** To check for the impact of consumer welfare and possible harm, we created a measure of *surplus* by subtracting the actual expenditure made by the participant in the experiment from the WTP measured above. This measured how much participants deviated from their stated WTP during the online shopping experiment. The idea of “surplus” is commonly used in economics to study welfare implications for consumers. While it is difficult to create an exact measure at the individual level, this measure should provide a reasonable approximation. We carry out additional analysis later in the report to check through alternative measures of surplus.
- **Probability of choosing the expensive option:** For each of the control and treatment groups, participants always had two options available – a zero-price option and a more expensive option. The control group had no defaults, while in the treatment groups the more expensive option was either preselected or mimics a default. This measure checks the actual choice made by the participant.
- **Shopping time:** This measures the time that the participant spent on the purchase process, between home and checkout screens, and is one of the main impacts discussed in the Theory of Change. Defaults can have the impact of decreasing the time spent, as they are designed to speed consumer journeys towards purchasing the item, but the provision of a default can also increase the time spent if it requires additional cognitive effort for the consumer.

We compare these variables for the treatment and control groups for both types of “What” defaults (shipping/delivery and protection plan) and “How” defaults (preselected and mimicking). In addition, to understand the potential drivers behind the impacts of defaults on the above metrics, we conduct mediator analysis across consumer and product characteristics including product base price and demographics.

Participants and sampling strategy

A total of 5,889 participants were recruited through the online recruitment platform Prolific (a breakdown of participants’ demographic characteristics is provided in the appendix table A5.3). A convenience sampling technique was utilised whereby participants took part in the experiment on a first come, first serve basis and the only restriction we placed via the platform was for the gender distribution to be balanced¹². Our sample was representative of the UK adult population by ethnicity and gender, but not by other characteristics such as age.¹³ Table A.5.1 reports the number of respondents for each of the category groups in the experiment.

Participants were able to complete the experiment using mobile devices, tablets, or desktops, and they were paid £0.9 in return for their participation. Participants did not receive the product that they chose in the experiment or any payment that depended on the decisions that they made in the experiment.¹⁴

A small pilot study with 300 participants was launched prior to the full experiment, which confirmed that there were no technical difficulties that needed to be resolved. In view of the high quality of data in the pilot, these responses were included in the main dataset.

We performed balance checks on the data. We found that the sample was largely representative of UK online users with no evidence for non-random distribution across groups. A total of 19

¹² The condition for gender balance was added based on the results of the pilot which saw a disproportionately high participation from women.

¹³ Our sample had a greater distribution of young and middle-aged adults than the UK population as a whole. However, evidence suggests that young and middle-aged people are disproportionately more likely to shop online than other age groups, and thus are more appropriate as the target audience for the experiment.

¹⁴ While this can create a difference in user behaviour in online versus real-world situations, we believe this is mitigated by our efforts to create a platform that closely emulates the real-life shopping experience.

individuals who incorrectly answered the “attention check” question (see Materials for more details) were excluded and did not receive their payment.

For comparison with the wider population of Internet users in the UK, we compared our sample with the general Internet user population in the country. The similarity between the proportion of demographic groups in our sample and that in the wider population provides us with increased confidence that the results from the experiment can be extrapolated to the general Internet user population in the country.

Key findings

For this part of the study, we used regression analysis¹⁵ to test the differences between treatments and the effect of mediators based on the data gathered from the experiment.¹⁶ Our primary variables of interest were the four we identified previously – willingness to pay, surplus, shopping time, and probability of selecting an expensive option.

The results from a regression model reflect the degree to which changes in each of the four variables observed are explained by the default treatment they received. This is known as the Average Treatment Effect (ATE)¹⁷. For example, for the “probability of selecting expensive option” variable, a coefficient of 0.60 on the preselection group explanatory variable means that participants in this treatment were 60% more likely to select the more expensive default option relative to the control group.

We conducted the analyses separately for each of the two experiments, with 2,916 observations for the “protection plan” experiment and 2,973 observations for the “shipping” experiment. For some regression specifications, we included product-level fixed effects.¹⁸ By controlling for product fixed effects, the regression “absorbs” any variations in our variables of interest that can be explained purely by the choice of product.

We also carried out two different robustness checks and tested a range of different controls for individual-level characteristics, and our regression estimates were consistent in sign and magnitude across all specifications.

Technical results from the primary and alternative specifications, as well as robustness checks are reported in Appendix 3.

Impact on consumer choice

To answer our first research question “To what extent does the presence of defaults impact consumer choices?”, we run our regression framework using willingness to pay and the probability of selecting the expensive option¹⁹ as the dependent variables.

¹⁵ A regression analysis is a statistical method that allows you to examine the relationship between two or more variables of interest.

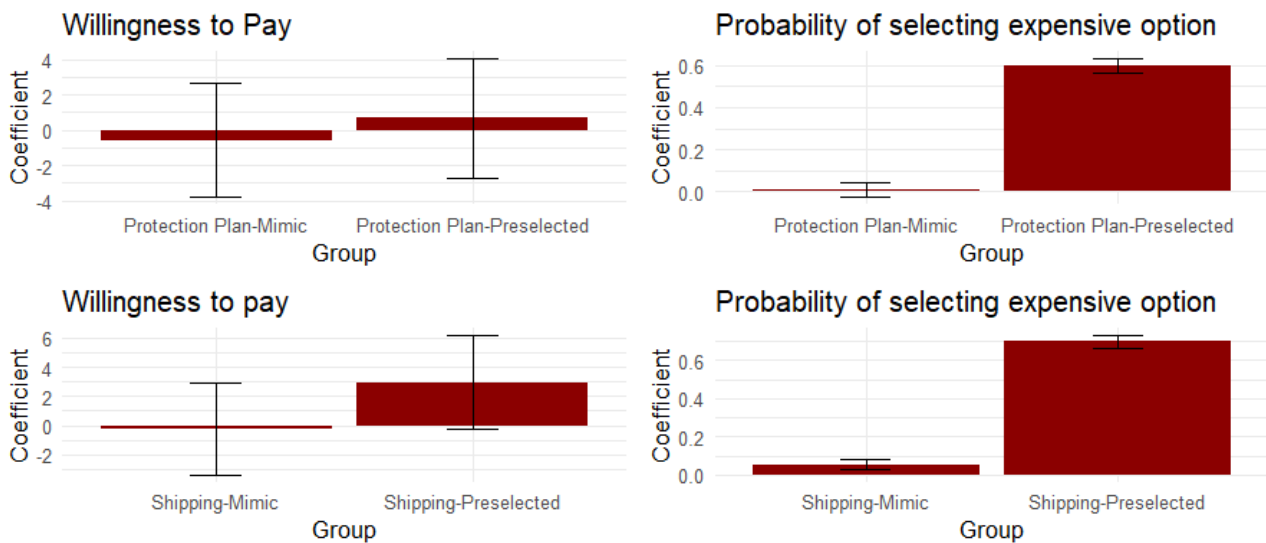
¹⁶ For all regressions, we used heteroskedasticity-robust standard errors that account for any systematic differences in the variances in the dataset.

¹⁷ The ATE represents the observed impact that the treatment had on decision-making relative to the control group.

¹⁸ Adding fixed effects for a variable in a regression has the effect of accounting for any variation that might be occurring due to that variable. They control for the unchanging characteristics to isolate the true effects of the other variables.

¹⁹ For each participant, the variable indicating selection of the expensive option takes the value 1 if the consumer selected the more expensive option and 0 if the consumer selected the zero-price option.

Figure 11: Results for regression analysis of consumer choice variables²⁰



We find that for both the protection plan and shipping defaults, the average impact on willingness to pay is not statistically distinguishable from zero. This implies that neither preselected nor mimicking defaults impact how much consumers are willing to pay for a product. The willingness to pay for products was found to be unchanging during the experiment. Participants were likely to report the price they paid for the product as their willingness to pay, even after a debrief over the role played by defaults. Given that the list of products and their prices were unknown to the consumers prior to the experiment, this is indicative of “anchoring effects” as discussed in the Theory of Change. Users were likely to form a judgement on the price based on the number they saw, and then did not deviate from it.

However, if consumers are exposed to preselected defaults, they are 60% more likely to select the more expensive protection plan and 70% more likely to select the more expensive shipping option. While these are strikingly large increases, they align with academic literature that has suggested large effects of defaults.

On the other hand, the results for the mimicking default are less clear. The impact of the mimicking default on the probability of selecting the more expensive protection plan option is statistically indistinguishable from zero. This suggests that consumers don't typically treat an option that is visually prominent as their automatic choice, when looking at protection plans.

However, for shipping options, we find that participants are 5% more likely to select the shipping option that is more expensive and visually prominent compared to the control group. This difference between the two experiments could possibly be because the protection plan comes with detailed text about the plan, which might make the default more salient.

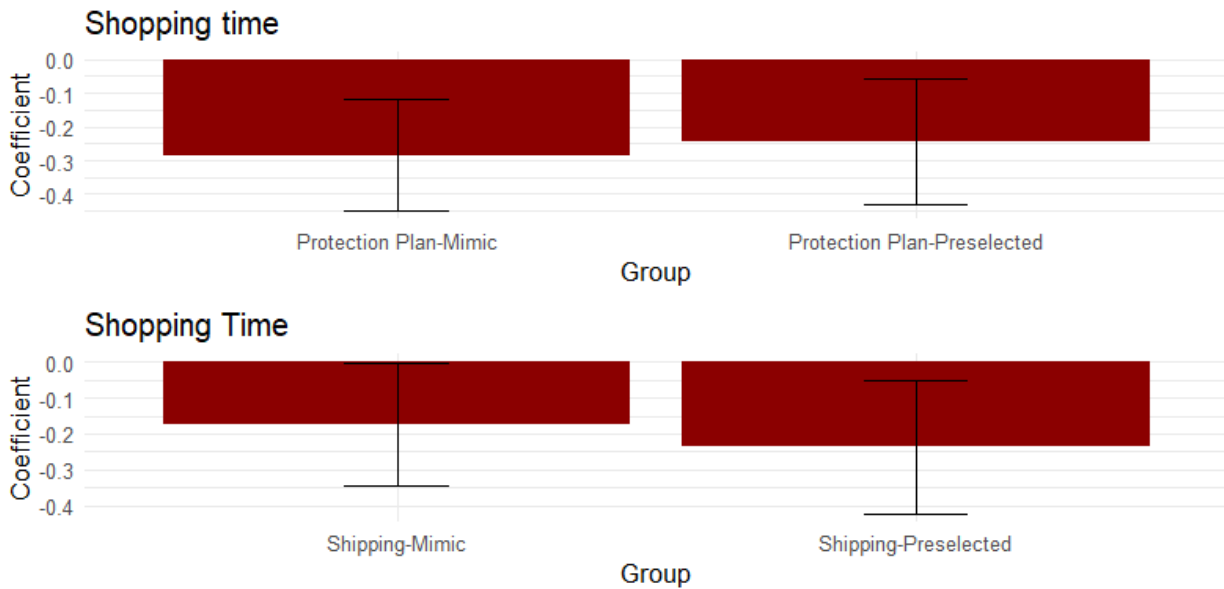
Impact on shopping time

The next research question we address looks at the links between the presence of defaults and the time spent shopping: default options may impact the time consumers require to make decisions about the type of product they want to purchase. We check how shopping time, measured as the amount of time taken by the user to get from the home page to the checkout page, differs between groups. The results show that participants spend less time on the shopping journey if default options are shown compared to the control group. The presence of both shipping and protection

²⁰ The bar graphs correspond to the magnitude of the regression coefficient as compared to the treatment group. The regression coefficients depicted are based on the regression model which includes product-level fixed effects. The whiskers, in black, show the 95 percent confidence interval. If the whiskers include the zero coefficient level, then statistically the coefficient cannot be said to be distinguishable from zero.

plan preselected defaults reduces participant shopping time by 14 seconds (0.24 minutes), 12% less than the average shopping time of 116 seconds across all participants.

Figure 12: Results for regression analysis of shopping time²¹



For the mimicking default treatment, participant shopping time is 16 seconds faster (0.28 minutes) with a protection plan default compared to the control group and 11 seconds faster (0.18 minutes) for the delivery default. This suggests that on seeing a default, users are likely to spend less time thinking about the choice they have to make. Conversely, users in the control group, who need to actively select an option, spend more time picking out the appropriate option.

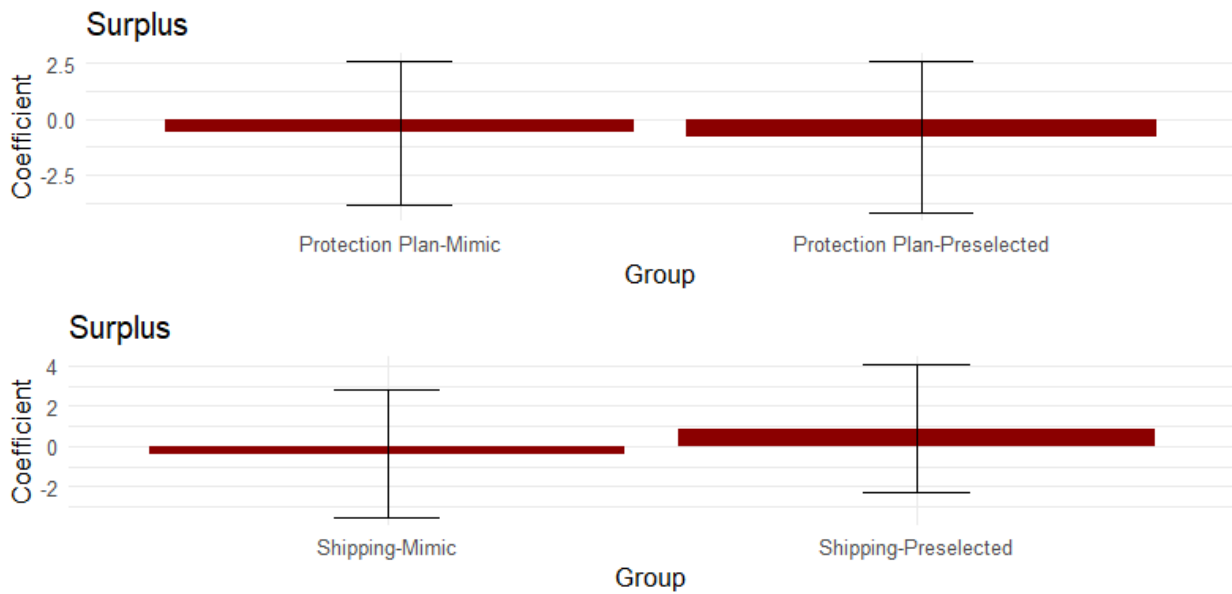
As discussed earlier in the Theory of Change, a default can impact the amount of time the user spends on the shopping journey. The direction of change, however, is ambiguous. It might be an increase, if the user spends more time processing the default, or it can decrease, if the default encourages the user to speed through the shopping process. The latter option would be preferred by retailers as it might be linked to a higher probability of completing the purchase. These results suggest that it is this latter path that prevails. The overall shopping time drops with the use of defaults, for both shipping and protection plans, as well as for preselected and mimic defaults.

Impact on consumer surplus

The final research question explores the links between the presence of defaults and the impact on consumer welfare. As described earlier, our primary measure of welfare is consumer surplus. This measure of surplus is derived from participant's self-assessment of their willingness to pay for the product following the experiment. We find that the impact of both protection plan and shipping defaults are not distinguishable from zero (in other words, participant willingness to pay was not significantly different from the actual product price displayed in the experiment).

²¹ See note 20.

Figure 13: Results for regression analysis of consumer surplus²²



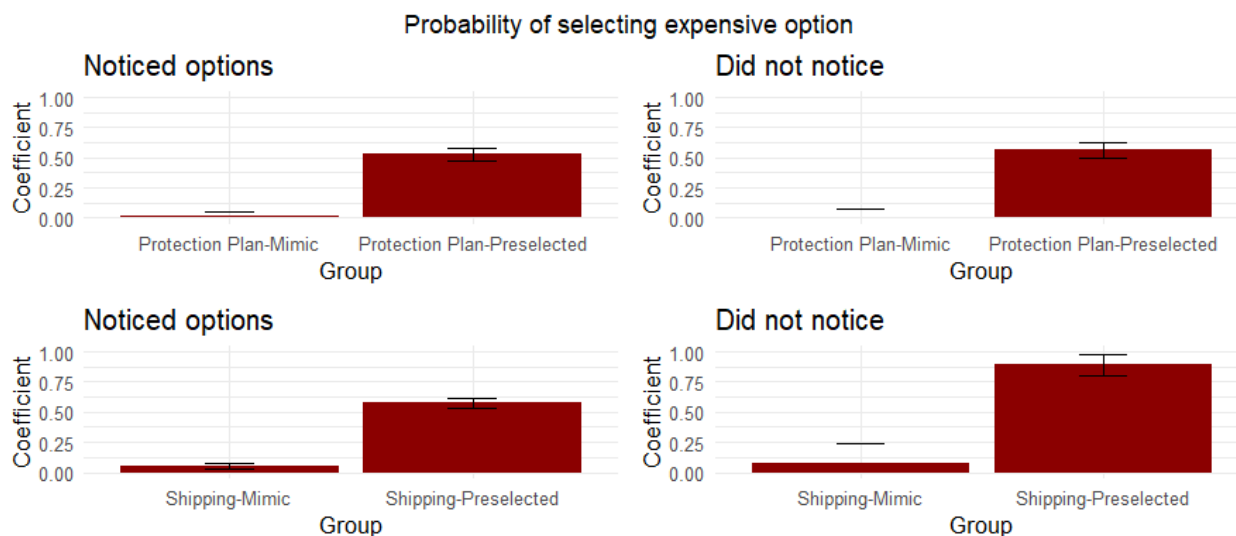
This measure of welfare relies on the subjective assessment of the survey participant for their “willingness to pay”, which, as discussed, might be biased due to priming or anchoring. It is also hard to assess whether seeing the default creates a change in the consumer’s preferences (e.g., they want faster shipping after seeing the option), or if they have been misled (e.g., they wanted cheaper shipping but the default “tricked” them into going for the more expensive, faster option). To overcome these, we examine another, more objective outcome from the data.

In the survey, we find that there are consumers who did not notice the presence of multiple options. The users who did not notice the presence of defaults are unlikely to have considered the options and changed their preferences. To use this, we propose an additional method to check the impact that the default has on the choice of users. Of the total of 5889, 4441 (75.4%) participants reported *noticing* the options, while the remaining 24.5% either said “no” or were not sure. First, we note that this result offers support for the *Inertia or Costly Attention* mechanism discussed in the Theory of Change. Almost a quarter of users did not notice or engage with the options, possibly to reduce cognitive effort. Second, looking at the impacts again, a comparison of the choices made by the two groups of users can provide additional insight into how the default can affect welfare.

We repeat the regressions on the probability of selecting the more expensive option. For the protection plan experiment, we see very similar results as before, with selection into the preselected treatment increasing the probability of selecting the expensive option by 53 and 56 percent for the groups that noticed and did not notice the defaults, respectively.

²² See note 20

Figure 14: Results for alternate analysis of consumer welfare²³



The results for the shipping experiment, however, are quite different. For those who noticed the options, selection into the preselected treatment group increased the probability of selecting the more expensive option by 58 percent. For those who did not notice, the increase was significantly larger at 89 percent.

This means that when people notice the default option, they are 31% less likely to choose the more expensive option automatically set by the system. This is different from the results in our self-reported measure of willingness to pay, which suggested no effects. This difference between the self-reported measure, and this measure of actual behaviour suggests that defaults do have an impact on how consumers behave, but there is a shift in the way they think about the options, which makes it difficult to judge if this is harmful.

What is clear, however, is that making people aware of the default choice lowers its selection. This effect is seen with shipping options but not with protection plans, likely because the extra text around the protection plans makes them more noticeable to people.

For shipping defaults, the impact of the default is 31 percentage points lower for those that did notice the default. This suggests that a low-cost policy intervention that requires retailers to clearly signpost the presence of any pre-selected option would help to significantly reduce accidental choices.

Consumer beliefs

The post-experiment survey collected data on participant beliefs regarding the practice of defaults online. After de-briefing the participants on the idea of defaults, the survey asked questions about their wider online experience of defaults in the real world. We can extrapolate these to provide suggestions on the impact and outputs of defaults as outlined in the Theory of Change.

First, we asked whether participants would choose the same options if the shopping process was repeated. This can help us assess if the practice of defaults, after being debriefed about it, leads to the users feeling poorly about their choices, described as the third short-term impact in the Theory of Change.

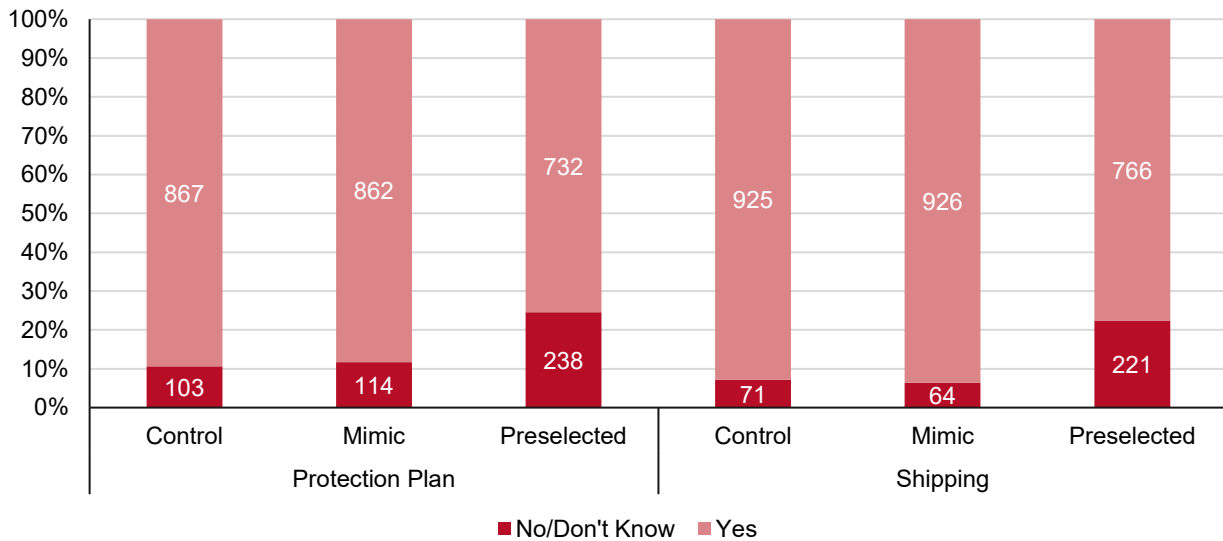
The data shows that most participants answered “Yes”, implying that they would make the same choices again (see following figure). However, participants assigned to preselected defaults were more likely to say no or were unsure (25% for protection plan, 22% for shipping) compared to the

²³ See note 20.

control groups (11% and 7%, respectively). This means that while most consumers do not feel poorly about their choices after the experience of defaults, they are more likely to avoid repeating the same choice after having experienced a preselected default. This is similar to the results we find for willingness to pay, where the measure for how the consumer feels differs from how the consumer behaves in the case of defaults.

Mimicking defaults do not have the same effect, with the responses being very similar to those in the control group.

Figure 15: Proportion of users who would choose same option by group



To check if the practice of defaults leads to consumers returning more products after having purchased them online, we asked the participants if they have unintentionally bought products because of defaults in the last year. Approximately 16% of participants reported doing so. Out of these participants, 41% indicated that they returned an item they accidentally purchased in the past year. This can have welfare impacts, as we discuss later.

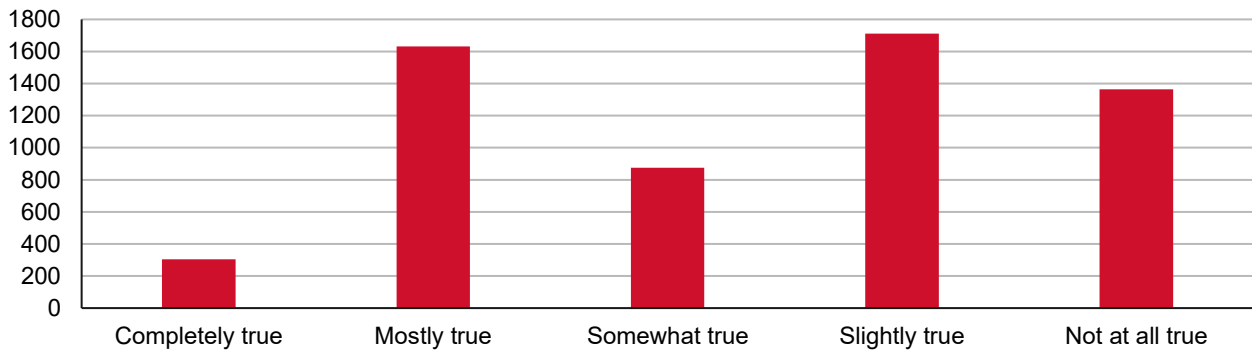
Informational Content in Defaults

One of the possible mechanisms through which defaults can have an impact on users is through “*Information, or Belief Distortion*”. This is where users assume that the default contains some information about the value of the choice itself.

To test whether participants thought the default option had any informational content, we asked about their beliefs on whether the default was recommended by the retailer, the most common choice made by other users or the most profitable option for the seller. Figures 16 to 18 below report the responses.

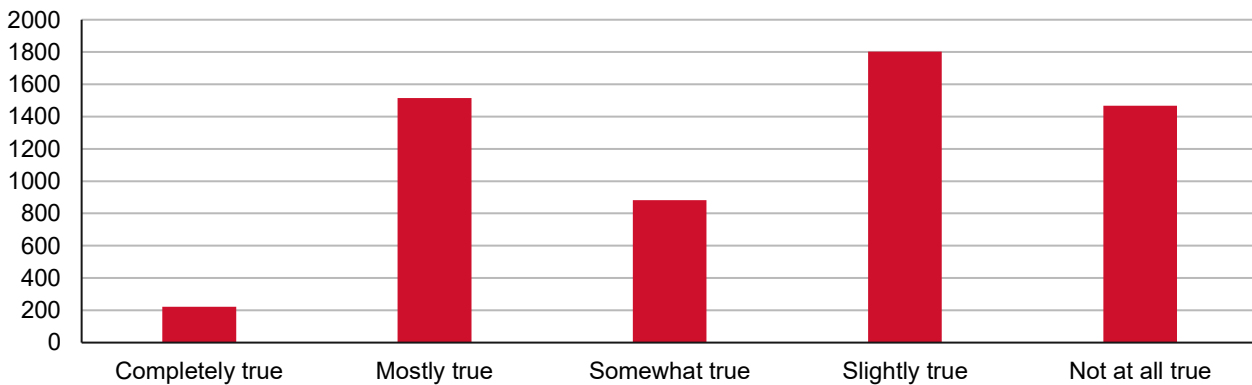
When asked if the default was recommended by the retailer, the distribution of responses is distributed between “Mostly true”, “Slightly true” and “Not at all true”. This indicates that most users believe, to varying extents, that the default comes recommended by the retailer, though there is also a significant minority who strongly disagrees with this notion.

Figure 16: Distribution of survey responses for question on belief that default is recommended option



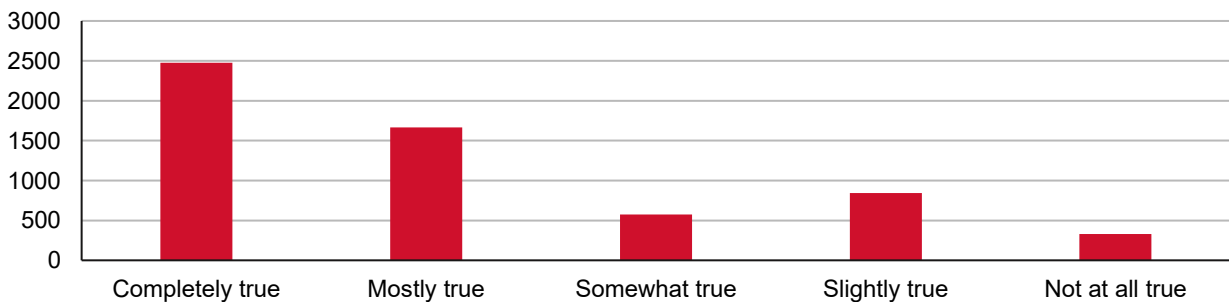
Next, we asked if the default was the choice made by other consumers in terms of its popularity. Again, “Slightly true” was the most popular option, though responses were relatively evenly distributed away from “Completely true”.

Figure 17: Distribution of survey responses for question on belief that default is most commonly chosen option



Finally, we asked if the default was the most profitable option to the seller, most respondents chose “Completely true”. This was relatively unambiguous, indicating that most users hold a firm belief that the practice of defaults was related to the maximisation of profits for the retailer. This is also suggestive of a fall in the trust associated with the retailer, which we had conceived as a short-term impact in the Theory of Change.

Figure 18: Distribution of survey responses for question on belief that default is most profitable for the retailer



Mediators

In this section, we examine the role played by mediator variables (identified in the Theory of Change) on how defaults impact the behaviour of consumers. Mediators in the Theory of Change are classified into two main categories. The first category includes product traits, such as differences in product characteristics which can impact the experience of defaults. The second category includes participant traits (demographic and socioeconomic variables) that potentially influence the consumers' actions and judgement. For each of the mediators, we ran a similar regression analysis to the one used for the primary analysis, but with the inclusion of interaction terms.²⁴ The interaction terms provide an indication of how the mediator influences the treatment corresponding to each of the two defaults. We carry out the analysis for each of the four key dependent variables we have previously discussed: willingness to pay, surplus, probability of selecting the expensive option, and shopping time.

Product Traits: We examine the influence of traits specific to the product through three checks. To check for differences in "Product Characteristics", we examine how consumer behaviour differs across (i) "Product Type", for the 10 specific products offered ("Bluetooth headphones" were the baseline comparison), (ii) "Product Category", to capture any differences that might exist between the three categories of products, and (iii) the base price of the product, before the inclusion of any add-ons, to examine its role in the experience of defaults.

The results don't suggest any systematic differences in the results. This implies that our primary results aren't driven by any characteristics linked to the product itself.

Consumer Traits: We check if participant demographic characteristics (income, education, age and gender) and previous experiences (with the product and online shopping generally) impact how they respond to defaults.

Looking first at demographic features, our results suggest that income and education have no influence on the impact of defaults on consumers. Gender has some influence. The results suggest that for the shipping experiment with preselected defaults, men are less likely to select the more expensive option.

The age of the consumer has a notable influence on the response to defaults. The analysis shows that:

- i) Age is positively correlated with shopping time. People in higher age brackets spend at least 21 seconds longer (0.35 minutes) in the shopping task.
- ii) Second, for the protection plan, older persons are less likely to select the expensive default by 3%. This could be because of general distrust of protection plans, as mentioned in the free-text comments by users.
- iii) Preselected defaults have a greater impact on older persons, with results suggesting a strong interaction effect of 5% for the protection plan experiment and 4% for shipping experiment.
- iv) Mimicking defaults have mixed effects. A higher age level decreases the probability of selecting the more expensive shipping option by 3%, with no effect on the protection plan option.

²⁴ Interaction terms in regressions show how the effect of one explanatory variable on the dependent variable is influenced by the value of another independent variable. They allow for the examination of the combined effects of the two explanatory variables together: for example, we can examine how the impact of a shipping default for desk chairs differs from the impact of a shipping default on kettles.

Taken together, these indicate that older persons tend to spend more time going through the website and the options provided. But this still leaves them more likely to select the more expensive preselected default.

Consumer familiarity: The next set of mediators we examine is the level of familiarity that participants have with online shopping, the Amazon platform and with the product itself. Consumers' previous experiences can potentially influence their behaviour and choices when faced with defaults. The analysis of the data shows that all three quantities do not have any systematic and meaningful impact on how consumers respond to defaults.

Detailed results from these regressions are provided in the appendix.

Estimates of Welfare

With the results from the online experiment, it is possible for us to get an estimate of impact defaults have on welfare. Specifically, we focus on consumer welfare, as the data we have does not provide us insights into how producers are impacted.

Assumptions

1. Throughout the results, we have seen that the effects of default are significant only for preselected defaults. For this reason, and for simplicity, we focus our analysis only on preselected defaults.
2. We also focus on results from the shipping experiment, as data shows that these are larger, and the results can be seen as an upper limit on the impact that defaults can have.

While creating an aggregated model of welfare is outside the scope of this report, we can identify the key channels through which consumer welfare will be impacted. We go through each of these in detail.

1. Number of impacted consumers

In our sample of 5,889 respondents, 16% of respondents in our survey reported that they had made an accidental purchase because of defaults. With the demographic composition of our sample being roughly representative in terms of the UK internet user population, we can extend this incidence rate to get an estimate of the total number of persons who could have made an accidental purchase online. Using the latest estimates for number of internet users in the UK, with 60.31 million people²⁵. As per our sample, 99.6% of the people have shopped online at least once. This would imply that up to 9.6 million persons can be at risk of making incorrect decisions because of defaults.

2. Change in consumer surplus

We approach consumer surplus in two ways. First, we can use the self-reported value for how much the consumer was willing to pay for a product, to calculate how much surplus²⁶ is enjoyed by the consumer. However, the Average Treatment Effect (ATE) for the experiment on surplus is found to be statistically indistinguishable from zero. This would imply zero change in consumer surplus. This measure is likely to be influenced by cognitive biases that can lead the user to report values close to the one they have seen (anchoring).

Hence, we use a second approach to the analysis using an objective measure, relying on the differences in responses between consumers who noted the presence of multiple options versus those who did not to study the probability of selecting the default option. For the shipping experiment, the difference between the two groups is 31 percentage points. This implies that the probability of selecting the expensive default was 31 percent higher for those who do not realise that a default option is being offered. Assuming that the consumers are not getting any additional value or benefit from selecting the expensive option, and with the cost implication of £3 as the cost of delivery, this creates a change in consumer surplus of ($£3 \times 0.31 =$) £0.93 per user for a single shop in the experiment.

²⁵ Based on [Statista estimates \(2023\)](#)

²⁶ A reminder to the reader that we refer to the economic surplus, which is the difference between the willingness to pay and the price actually paid.

3. Time savings due to defaults

The experiment shows that for shipping defaults, shopping time reduces by 0.24 minutes, or 14.4 seconds through the use of preselected defaults as compared to the control group. However, in terms of welfare it is difficult to judge whether this is desirable or not.

The economic value of time savings can be quantified through the potential income a person can earn with that time. Given that the median annual income for full-time employees in the UK is estimated to be around £34,963²⁷, with an employment rate of 75.0%, a time savings of 0.24 minutes is equivalent to £0.05 in possible increase in income for each shop.

However, this could also lead the person to make incorrect choices by not allowing adequate time to assess and understand the options associated with the product, which could be detrimental to the person's welfare.

4. Impacts due to incorrect choices and returns

The post-experiment survey finds that 16% of the participants had purchased an item in the past 12 months due to a default-related accidental purchase. Out of these, 41% said that they returned an item they accidentally purchased in the past year.

In addition, a recent study by the DBT has suggested that British consumers facing issues with their purchases spend a median amount of £28 per problem (UK Department for Business and Trade, 2022). This includes the cost of the product itself, along with any additional costs caused by the detriment, but net of any compensation or refund received. To provide us with a sense of the possible harm, we take the £28 and combine this value with our estimates that 9.6 million persons in the UK are at risk of making incorrect purchases due to defaults. This would amount to approximately £268.8 million worth of net monetised detriment experienced by consumers from goods purchased accidentally due to defaults.

With a returns rate of 41%, this can create not just consumer detriment but also additional costs for producers: online retailers will need to bear the cost of the returns reducing their profit margins, while for consumers this can lead to time being lost in managing the returns process.²⁸ In addition, consumers can end up not returning the item, which would imply they keep items that they do not want, which can increase wastage and is not sustainable practice.

²⁷ As per [ONS employee earnings data \(2023\)](#)

²⁸ According to the DBT 2022 research, the median product value of a good or service that consumers experienced issues with was around £58. Due to these being median values, they don't relate directly to each other but should give a sense of a typical problem and the potential absolute reduction of product value due to it having been returned.

Limitations and External validity

While the study has tried to maximise its external validity through a selection of a representative panel of respondents, any study using experimental design is always subject to certain limitations. We list some of the key limitations here:

- **Limited realism:** The nature of the online shopping task in the experiment, while made to feel as close as possible to a real shopping experience, did not require participants to spend their own money. This might decrease their motivation to find the “best” or “highest quality” product.
- **Nature of participant pool:** Due to the nature of Prolific as an online platform (and its popularity on forums such as Reddit), our sample skewed younger than the UK population as a whole, although it is aligned with the population of Internet users in the UK (based on ONS data).
- **Selection of products:** The online shopping task only included products that could have reasonable and credible default options, with services excluded.
- **Duration of measured effects:** In an online experiment, we are only able to capture short-term behaviours. We try to mitigate this through our post-experiment survey which includes questions on long-term outcomes.
- **Identifying cognitive effects:** While our survey instruments are optimal for identifying the effects of defaults on consumer behaviour, it is difficult to identify outcomes related to individual cognition, which can only be extrapolated from other measurable quantities. Our measures of willingness to pay rely on the participant’s self-assessment, which can be influenced by many factors that are difficult to account for. For instance, our measure of “willingness to pay” for a product might be biased due to cognitive biases which can cause the consumer to treat the given price as a reference point.
- **Focus on single product purchases:** In our experiment, we limit the number of products that the user can purchase to 1 for the sake of simplicity. In real-world situations, however, individuals can include more than one item in their shopping basket and their decision-making process may take into account the total value of products.

However, despite these limitations, we argue that our results can be seen as externally valid for the following reasons:

- Our experimental design included an interactive online shopping platform that closely resembled real-world shopping experiences (with the same information presented to users). This encouraged users to participate in the experiment with conditions that emulated their experiences on actual e-commerce websites and apps. The comments and time taken by the average user on the platform give us confidence that the users engaged appropriately with the experiment.
- We deliberately avoided the use of financial incentives within the experiment itself or tied to the outcomes in any way. Such incentives could lead the participants to “game” the experiment to get the final prize. Some incentives, such as the chance to actually receive the products in question²⁹, could potentially reduce distortions, but these would not be feasible.

²⁹ As suggested by [Smith \(1976\)](#), and later by [Eckerd et al. 2021](#).

- The design of the experiment encouraged participants to take their time with the experiment, as the instructions for how to proceed with the experiment were embedded within the shopping platform itself.
- For the experiment, we enforced an attention check on the participants during the survey. This was done by instructing the participants to select a specific answer to demonstrate their attention. Any respondents who did not choose correctly were excluded from the study. A total of 19, or 0.3 percent of the participants, failed the attention check, which gives us confidence in the quality of participation.
- The post-experiment survey included a wide range of questions about trust, expectations/beliefs and past behaviour, which means our results are not dependent on participants misunderstanding specific questions.

Conclusion and policy implications

This study carries out a detailed and comprehensive analysis of defaults in the UK e-commerce sector.

It characterises the prevalence of defaults through an extensive mapping of the defaults present in the user journeys on the shopping websites and apps of 558 UK retailers. The study uses the findings from the prevalence study to design and implement a large-scale randomised online experiment with 5,889 participants to estimate the impact of defaults on consumer behaviour, judgement, and welfare. Using an online platform that closely resembles a leading e-commerce website, we conducted two experiments – one for defaults pertaining to protection plans and the other for shipping and delivery options. For each experiment, participants were assigned to either a control group (no default options) or treatment groups (with preselected options or options that mimicked defaults). We also collected data from these users through an online survey conducted after the completion of the experiment.

The following are the key findings from this study:

1. There is widespread use of defaults in shopping websites and apps in the UK.
 - a. We identified 412 instances of defaults across nearly half (49%) of the sampled websites and apps.
 - b. Defaults were most common in the retail sector, with 69% of retail websites and apps in our sample including at least one default option (compared to 27% of entertainment, 34% of hospitality and 46% of transport & communication websites and apps).
 - c. Out of the 412 defaults identified, the most common type of default related to customer services (33% of defaults), and the most prevalent formats were preselected options (69% of defaults) and mimicking defaults (63% of defaults).
 - d. We also found a number of websites and apps used “enhancers”, or features that influence the impact of defaults, with “messaging”, or the use of text and reminders around the default choice, being the one used most often (31% of all defaults).
2. Some of these defaults affect consumer behaviour.
 - a. Consumers viewing preselected defaults were 60% more likely to choose the more expensive protection plan and 70% more likely to select the more expensive shipping option (in line with existing literature) while spending 12% less time on the shopping journey.
 - b. The impact of mimicking defaults on consumers was less clear: these defaults did not impact the probability of selecting the more expensive default option, consumer surplus or willingness to pay. Consumers viewing mimicking defaults related to a protection plan spent less time on the shopping journey, but there was no impact on shopping time for consumers viewing mimicking defaults related to shipping.
3. Defaults are typically not used in a way that misleads or manipulates consumers.
 - a. Our prevalence study suggests that a majority of the defaults present the cheaper option as the selected choice.

- b. While a majority of consumers do not feel poorly about their choices after the experience of defaults, after encountering a preselected default, consumers are less likely to pick the same option again.
 - c. There was no statistically significant impact of preselected defaults on our self-reported measure of consumer willingness to pay for the product or consumer surplus.
4. Defaults can be harmful when measured through user behaviour, and have a differential impact on sub-groups of consumers.
- a. Measured through how people responded, those who noticed the defaults were 31 percentage points less likely to select the expensive default option than those who did not.
 - b. Participant age had a significant role in their interaction with the default, with older persons reporting a greater probability of selecting the more expensive default option.
 - c. 16 percent of participants reported having accidentally purchased an item in the past 12 months due to defaults, with 41 percent of these returning the item.

Policy Implications

This study on the prevalence and impact of default settings in online choice architecture (OCA) within the UK e-commerce sector provides critical insights into how consumer decisions are influenced by the design of digital shopping environments.

Taken as a whole, this study suggests that while defaults are prevalent, and can potentially have a large impact on consumers, the manner in which they are used in the British online retail sector does not suggest they are being used for misleading consumers. Our experiment suggests that their impact is higher on more vulnerable groups of consumers, such as the elderly. We also find suggestive evidence that their impact can be mitigated through interventions that increase their salience.

Based on the study's conclusions, we do not find there to be a compelling case for active legislative intervention to regulate the use of defaults online. However, given the large potential impact that defaults can have, if used in a way that misleads consumers, we advise that there should be a forward-looking approach to regulations, which can monitor their use and impact, while guiding the retailers towards a fair, transparent, and consumer-friendly use of defaults. These can include the following:

1. Establishing standards for default settings

Our analysis creates a typology of defaults to enable their identification and classification. This includes mimicking defaults, which are often used by retailers to direct user behaviour. From the consumer's perspective, it would be useful to establish best practices and set criteria for an ethical deployment of defaults to prevent manipulative practices. These standards should be informed by the differential impact of defaults on groups that are more vulnerable. This would allow for a more targeted approach to standards, which protects those at-risk of harm.

2. Consumer awareness and guidance

Our results suggest that age is an important mediator in the experience of defaults. As more older persons move online for shopping, it would be useful to target this specific demographic for consumer education and increase the awareness around the use of defaults.

3. Fostering consumer-centric innovation

Defaults form one part of the larger set of practices included in Online Choice Architecture. There is an increasing amount of resources being invested by online retailers to increase innovation in the features of this architecture. This is an area where retailers can collaborate with the government to ensure that this innovation focuses on creating consumer-centric and welfare-enhancing outcomes rather than features that can manipulate users or restrict competition. Features can be built in to protect any groups that are vulnerable to harm. For instance, our research shows that increasing the salience of defaults can be a simple and effective way to ensure that consumers are not misled to make incorrect choices which can be expensive for the consumers and producers both. Retailers can be guided to invest in similar low-cost, easy to implement and effective measures.

The implementation of these policy recommendations could significantly enhance consumer welfare in the digital marketplace, ensuring that the rapid growth of e-commerce operates in harmony with the interests of consumers. By fostering an environment of transparency, informed choice, and ethical practice, policymakers can help to sustain consumer confidence in digital commerce and support the sustainable growth of the e-commerce sector.

Appendix 1 – List of variables

The table below outlines the information collected for each shopping journey.

Table A1: List of variables

Variable	Description	Response options
Checkout ID	A unique identifier for each purchase process.	
Retailer name	The name of the online provider.	
Retailer sector	The sector that the online provider operates in.	Retail/entertainment/hospitality/transport and communication
Retailer subsector	The subsector that the online provider operates in.	
Product purchased	The type of product purchased, e.g., laptop.	
Name of item	The name of the item listed on the product page.	
Base price of item	The price of the item listed on the product page.	
Final price of item	The total price of the item listed on the checkout page.	
Default presence	Whether there was a default present.	Yes/No
Default type	The type of default present.	Purchase agreement/customer service/product characteristics/add-on
Preselection	Whether an option within the default was preselected.	Yes/No
Opt-out	Whether the default required you to opt-out to avoid selecting the default.	Yes/No
Pre-ordered	Whether the option was made to be a default by being the first in order	Yes/No

Variable	Description	Response options
Masquerading	Whether an option within the default was presented as more visually salient.	Yes/No
Name of default	The name of the default.	
Price of default	The price of the default option.	
Number of options	The total number of options for default.	
Location of default	The page where the default first appears.	Product page/intermediate page/checkout page
Price of non-default options	The price of the non-defaulted options.	
Price display salience	Whether the description of the price	Yes/No
Bundling of defaults	Whether the default was bundled with another default.	Yes/No
Decoys present	Whether there were options that were definitely worse to direct consumer towards one	Yes/No
Asymmetric options	Whether the options were presented in an asymmetric manner	Yes/No
Messaging	Whether language encouraging you to select the default is present.	Yes/No
Number of reminders	The number of times the default appears in the purchasing process.	

Appendix 2 – Post-experiment survey

The survey that immediately followed the online choice experiment is provided below.

1. Imagine that you are shopping online, what is the total amount that you would be willing to pay for a new [laptop] that will be delivered [default option, e.g., within 1-2 days] of your order being placed? Please indicate the amount using the sliding scale below.
 - a. Sliding scale: £x – £y
2. COMPREHENSION CHECK: What category of product did you purchase on the online retail platform?
 - a. [Laptop]
 - b. Children's socks
 - c. Washing machine
 - d. Cutlery set
 - e. Multi-vitamin tablets
3. FREE-TEXT: Thinking back to the product you selected to purchase just now in the experiment. Can you briefly tell us why you selected this specific product?
4. Were you able to choose from multiple [shipping] options for the product you purchased?
 - a. Yes [continue to Q5]
 - b. No [skip to Q11]
 - c. I don't know [skip to Q11]
5. FREE-TEXT: Please tell us which [shipping] options were you able to choose from?
6. Was one of these options preselected (i.e., had already been selected for you) or more visually prominent (i.e., made to stand out/emphasised more than other options)?
 - a. Yes [continue to Q7]
 - b. No [skip to Q11]
 - c. I don't know [skip to Q11]
7. Which of the following [shipping] option was preselected or more visually prominent?
 - a. [Shipping] option a
 - b. [Shipping] option b
 - c. [Shipping] option c
 - d. I don't know
8. Did you select a different [shipping] option to the one that was preselected or more visually prominent?
 - a. Yes [continue to Q9]

- b. No [skip to Q10]
9. Why did you select a different [shipping] option to the one that was preselected or more visually prominent? Please select all that apply.
- a. I chose a cheaper [shipping] option
 - b. I wanted a faster [shipping] option
 - c. I chose the [shipping] option I thought was recommended by the retailer
 - d. I chose the [shipping] option I thought was most popular among other consumers
 - e. My decision was influenced by the time I was willing to spend on completing my purchase
 - f. I always select a different option to the one that is preselected or more visually prominent
 - g. This was not an important decision for me
 - h. Other [please specify]
10. Why did you select the same [shipping] option as the one that was preselected or more visually prominent? Please select all that apply.
- a. I chose a cheaper [shipping] option
 - b. I wanted a faster [shipping] option
 - c. I chose the [shipping] option I thought was recommended by the retailer
 - d. I chose the [shipping] option I thought was most popular among other consumers
 - e. My decision was influenced by the time I was willing to spend on completing my purchase
 - f. I always select the same option to the one that is preselected or more visually prominent
 - g. This was not an important decision for me
 - h. Other [please specify]
11. If you had to make the decision again, would you choose to purchase the same [laptop] with the same [shipping] option?
- a. Yes
 - b. No
 - c. I don't know
12. Please tell us to what extent you believe the following statement holds true: In general, I spend time considering different [shipping] options when I shop online.
- a. Sliding scale [completely true/mostly true/somewhat true/slightly true/not at all true].

In this experiment we are exploring the impact of defaults on people's decision making. In this context, we define defaults as a situation where an option (e.g., for shipping or warranty) has been chosen or is in some way presented preferentially to other options, to a consumer.

This can include preselected options, which occurs when the option has already been selected for you (usually shown through checked boxes or radio buttons) as well as visually prominent options, which is when one option has been made to stand out/emphasised more than other options (e.g., by bigger text, text in a different font and/or colour).

13. Were you familiar with the concept of defaults before this experiment?

- a. Yes
- b. No

14. Have you noticed online retailers using defaults when you shop online?

- a. Yes
- b. No

15. ATTENTION CHECK: This is an attention check. Please select 'yes' from the options below.

- a. Yes
- b. No
- c. I don't know

16. What percentage of online retailers do you think use defaults?

- a. 0-100% sliding scale

17. In the past 12 months, have you accidentally completed a purchase for an item, an option, or a service that you did not intend to because of a default?

- a. Yes
- b. No
- c. I don't know

18. In the past 12 months, have you had to return an item because of an unintentional purchase or selection as a result of a default?

- a. Yes
- b. No
- c. I don't know

19. Knowing what you know now about default practices used by online retailers, would you choose to purchase the same [laptop] with the same [shipping] option?

- a. Yes
- b. No
- c. I don't know

20. Knowing what you know now about default practices used by online retailers, please tell us again what is the total amount that you would be willing to pay for a new [laptop] that will be delivered [default option, e.g., within 1-2 days] of your order being placed? Please indicate the amount using the sliding scale below.

a. Sliding scale: £x – £y

Imagine that you're shopping for a product online and you have selected the product you wish to purchase. You're presented with multiple options for [shipping] and one of these is either preselected or visually more prominent. Please tell us to what extent you believe that the statements below hold true.

21. I would complete my purchase without changing the preselected option/by selecting the visually prominent option.

a. Sliding scale [completely true/mostly true/somewhat true/slightly true/not at all true].

22. I would believe that the preselected/visually prominent option is the recommended option.

a. Sliding scale [completely true/mostly true/somewhat true/slightly true/not at all true].

23. I would believe that the preselected/visually prominent option is the option most commonly chosen by other consumers.

a. Sliding scale [completely true/mostly true/somewhat true/slightly true/not at all true].

24. I would believe that the preselected/visually prominent option was emphasised by the retailer because it is the most profitable for them.

a. Sliding scale [completely true/mostly true/somewhat true/slightly true/not at all true].

25. In real life, approximately how often have you purchased the category of item (e.g., laptops) that you chose to purchase in the experiment?

a. More than once a week

b. About once per week

c. Several times a month

d. About once a month

e. Once in a few months

f. Once a year or less

g. Never

26. How often do you purchase items online?

a. More than once a week

b. About once per week

c. Several times a month

d. About once a month

e. Once in a few months or longer

f. Never

27. How often do you purchase items from Amazon?

- a. More than once a week
- b. About once per week
- c. Several times a month
- d. About once a month
- e. Once in a few months or longer
- f. Never

[Note: all multiple-choice questions will include “Prefer not to say” as an option.]

28. Please enter the first half of your postcode (Type 0 if you do not want to answer this question).

29. Do you have any health conditions or illnesses which affect you in any of the following areas? Please select all options that apply to you.

- a. Learning or understanding or concentrating
- b. Memory
- c. Mental health
- d. Socially or behaviourally (for example associated with autism spectrum disorder (ASD) which includes Asperger’s, or attention deficit hyperactivity disorder (ADHD))
- e. Vision (for example blindness or partial sight)
- f. Hearing (for example deafness or partial hearing)
- g. Mobility (for example walking short distances or climbing stairs)
- h. Dexterity (for example lifting and carrying objects, using a keyboard)
- i. Stamina or breathing or fatigue
- j. Prefer not to say
- k. None of the above

30. Which of the following best describes your personal income, before taxes, last year?

- a. Up to £9,999
- b. £10,000 - £24,999
- c. £25,000 - £49,999
- d. £50,000 - £74,999
- e. £75,000 - £99,999
- f. £100,000 or more

g. Prefer not to say

31. What is the highest level of education you have completed?

a. Less than primary school / primary school not completed

b. Primary

c. Secondary

d. Vocational

e. Undergraduate

f. Postgraduate

g. Prefer not to say

32. What is your age?

a. 18-24 years old

b. 25-34 years old

c. 35-44 years old

d. 45-54 years old

e. 55-64 years old

f. 65 years or older

g. Prefer not to say

33. What is your sex?

a. Female

b. Male

c. Prefer not to say

34. What is your ethnicity?

a. White (includes English/Welsh/Scottish/Northern Irish/British/Gypsy or Traveller/Any other White background)

b. Mixed/Multiple ethnic groups (includes White and Black Caribbean/White and Black African/White and Asian/Other Mixed)

c. Asian/Asian British (includes Asian British/Indian/Pakistani/Bangladeshi/Chinese/Other Asian)

d. Black/African/Caribbean/Black British (includes Black British/African/Caribbean/Other Black)

e. Other ethnic groups (includes Arab/Any other ethnic group)

f. Prefer not to say

35. FREE-TEXT: Did you encounter any technical difficulties while completing this experiment?
(optional)
36. FREE-TEXT: Do you have any additional comments after completing this experiment?
(optional)

Appendix 3 – Online choice experiment screenshots

Below we provide screenshots from the online choice experiment, demonstrating the information presented to participants on the online platform.

Experiment instructions

The experiment has now started. Please read the instructions below carefully.

On the next page, you will be directed to an online retail platform. Below we ask you to choose the product type that you would like to purchase. You will then be able to purchase one of three products of that type on the online retail platform.

Out of the three products, we would like you to select the product that you most want to buy. You can click on each of the products to view information about them and you are able to review all the products before you make your choice.

Once you have reviewed each product, to select the product you most want to buy please click the "Add to cart" button and confirm your selection by clicking the "Purchase this item" button on the shopping cart page.

We would like you to complete this exercise as if you were purchasing the product in real life.

Please be aware that the online platform can sometimes be a bit slow to respond - we appreciate your patience.

How many products will be displayed on the online retail platform? You must correctly answer this question before you can proceed with the experiment.

- 1
- 2
- 3
- 4

Among the options provided, which one of the following categories of product do you tend to prefer purchasing online?

- Home and kitchen
- Electronic accessories
- Health and cosmetics

Among the options provided, which specific product do you tend to prefer purchasing online?

- Desk chair
- Iron
- Kettle
- Vacuum

BACK

NEXT

Figure A3.1: Choice of product category and item

Figure A3.2: Choice of products

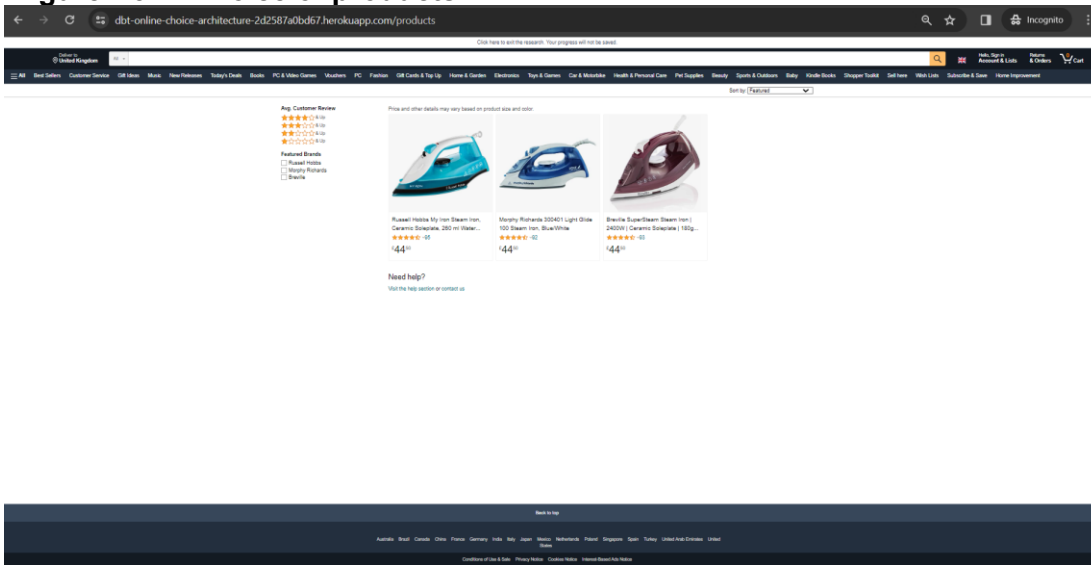


Figure A3.3: Product screen for protection plan control group

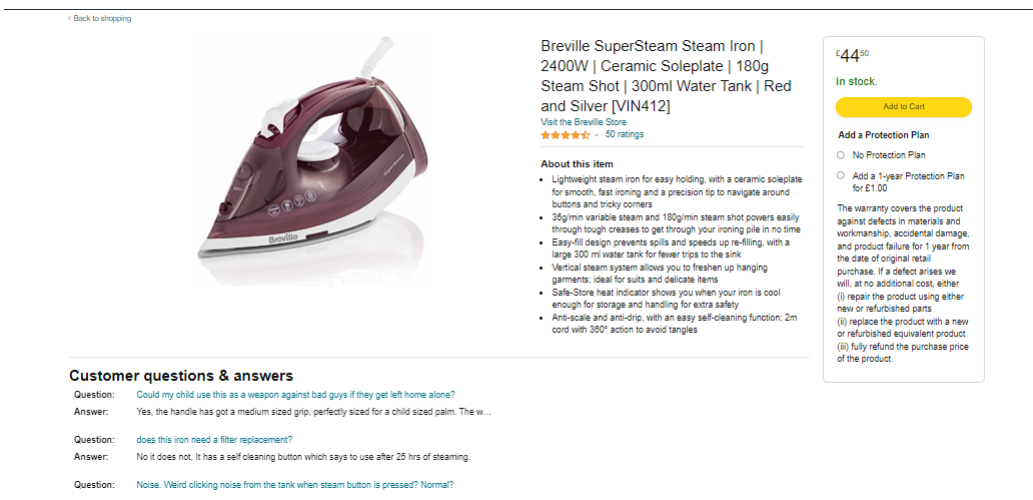


Figure A3.4: Choice of shipping options with mimicking default



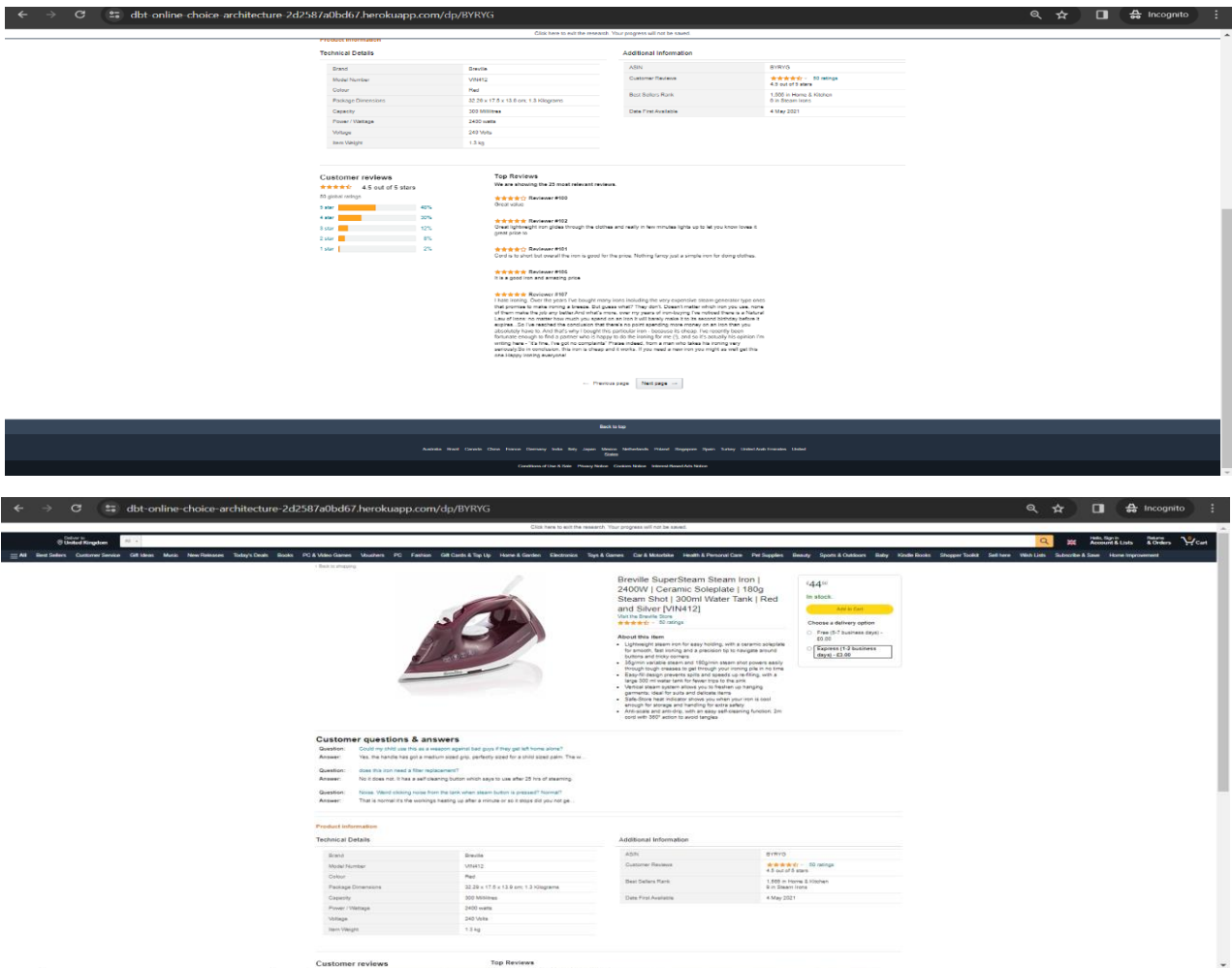


Figure A3.5: Choice of protection plan options with preselected default

£44⁵⁰

In stock.

Add to Cart

Add a Protection Plan

No Protection Plan

Add a 1-year Protection Plan for £1.00

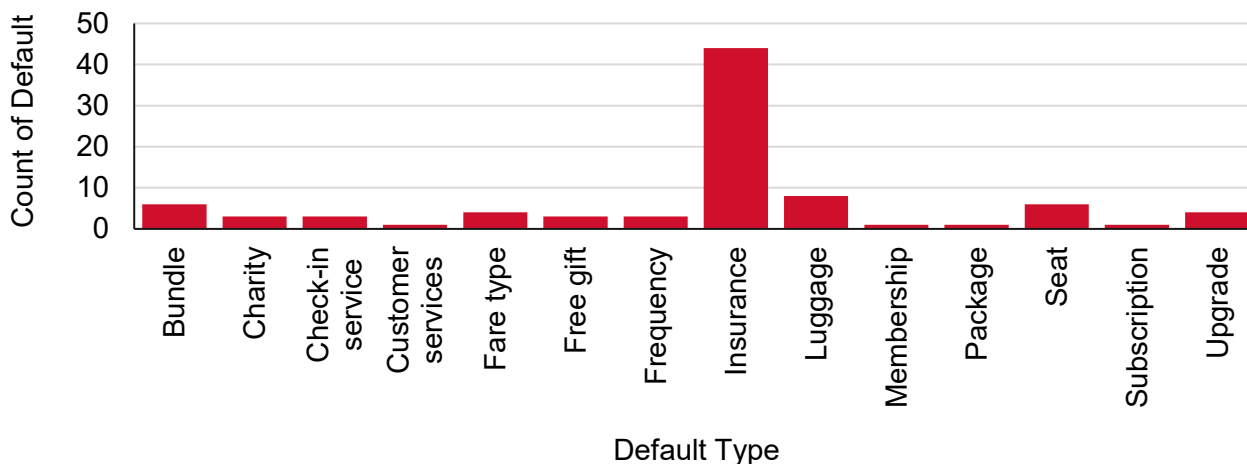
The warranty covers the product against defects in materials and workmanship, accidental damage, and product failure for 1 year from the date of original retail purchase. If a defect arises we will, at no additional cost, either

- (i) repair the product using either new or refurbished parts
- (ii) replace the product with a new or refurbished equivalent product
- (iii) fully refund the purchase price of the product.

Appendix 4 – Prevalence study – Additional findings

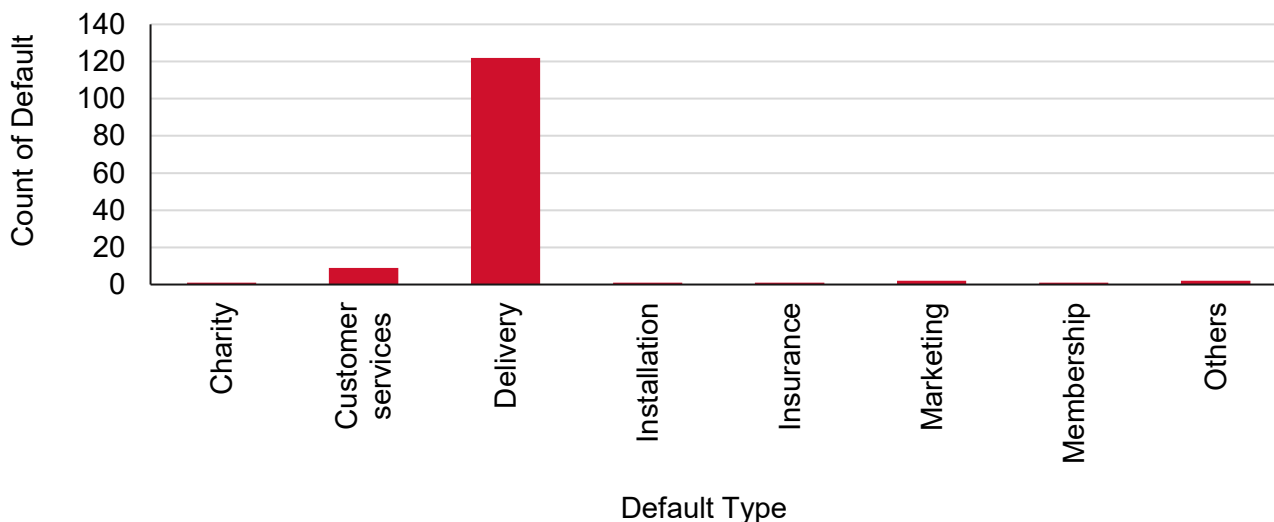
The figure below demonstrates the distribution of default types within the add-on ('what') category of defaults³⁰. Insurance is the most common default type within this category.

Figure A4.1: Distribution of default types within Add-on subcategory



The figure below demonstrates the distribution of default types within the customer service ('what') category of defaults. Delivery is the most common default type within this category.

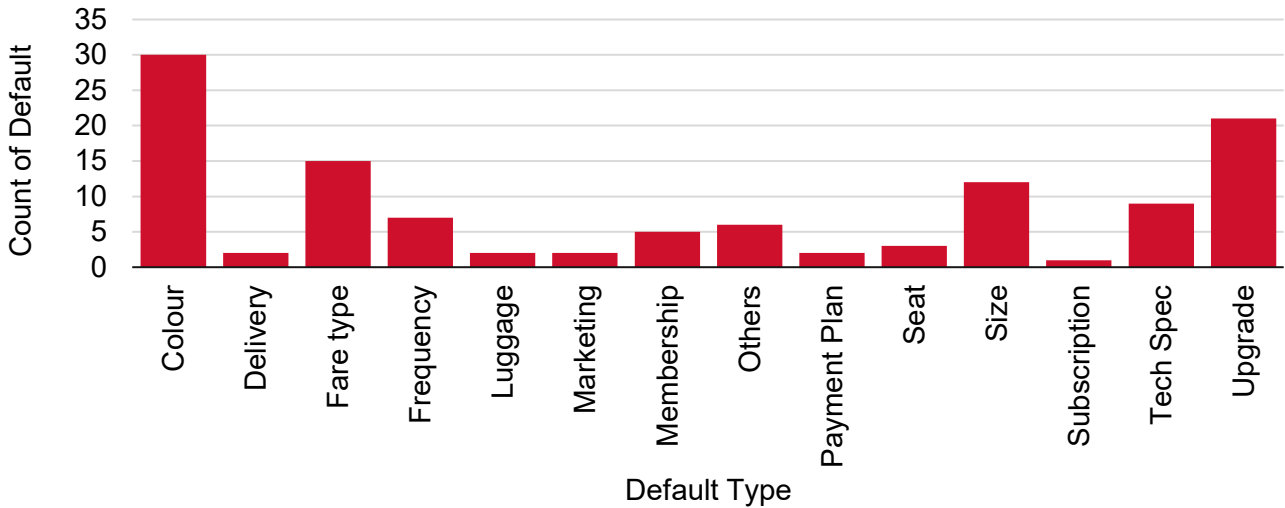
Figure A4.2: Distribution of default types within Customer Service subcategory



³⁰ In the following figures, some default types appear in multiple subcategories. This is because the classification depends on the nature of the product being offered by the platform. For instance, a subscription or a membership for delivery can be an add-on for a grocery website such as Tesco, but can be the product itself for a merchant that specialises in regular deliveries such as HelloFresh.

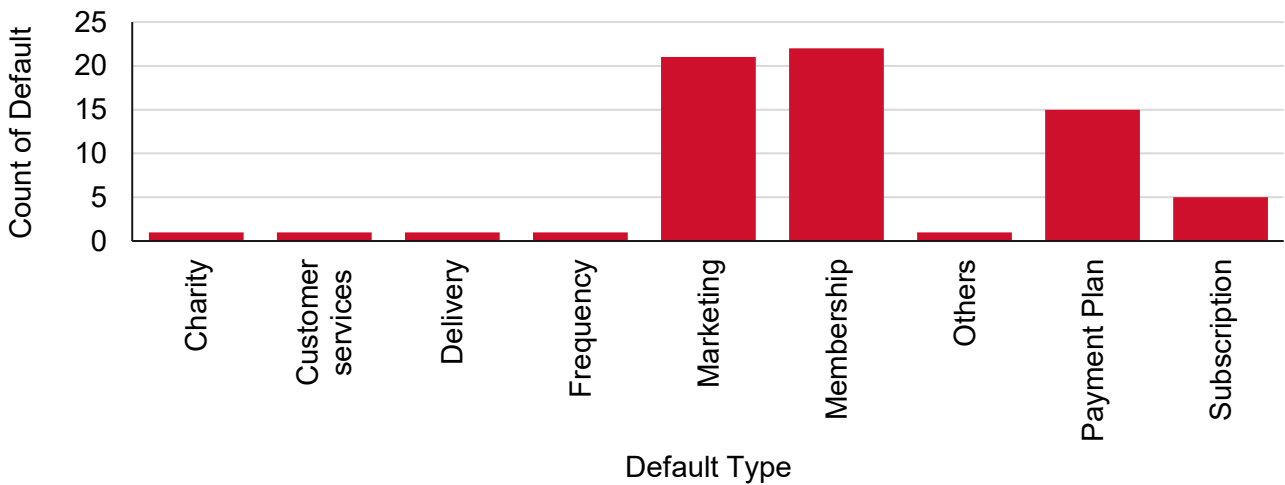
The figure below demonstrates the distribution of default types within the product characteristics ('what') category of defaults. Colour is the most common default type within this category.

Figure A4.3: Distribution of default types within Product Characteristics subcategory



The figure below demonstrates the distribution of default types within the purchase agreement ('what') category of defaults. Membership is the most common default type within this category, followed closely by marketing.

Figure A4.4: Distribution of default types within Purchase Agreement subcategory



The figure below demonstrates how the price of the defaults compared to the alternatives.

Figure A4.5: Pricing of defaults in sample



Figure A4.6: Pricing of defaults in sample

	Preselection option	Opt-out Option	Pre-ordered default	Mimicking default
More Expensive	64	2	1	114
Same or Cheaper	220	13	0	145

Appendix 5 – Online Choice Experiment – Additional Findings

Summary statistics and regression analyses

The table below reports the number of participants within each of the six groups.

Table A5.1: Sample size by group

Experiment group	N = 5,889
Shipping: Control group	996 (17%)
Shipping: Preselected default	987 (17%)
Shipping: Mimic default	990 (17%)
Protection Plan: Control group	970 (16%)
Protection Plan: Preselected default	970 (16%)
Protection Plan: Mimic default	976 (17%)

The table below reports the mean values and standard deviations of the four dependent variables.

Table A5.2: Summary statistics for key dependent variables

Variable	Mean	Standard deviation
Willingness to pay (£)	75	48
Surplus (£)	11	39
Probability (Selecting expensive option)	0.38	0.49
Shopping time (minutes)	1.93	1.98

Balance checks

To ensure that distribution of respondents was balanced across the 6 groups (2 controls and 4 treatments), we verified the split of the sample's demographics. Table 10 below reports statistics related to the demographics within each treatment group. It reports the number and percentage of people in each of the demographic groups for each treatment group. Across age, education, sex, income and ethnicity, the samples can be seen to be evenly balanced across groups. The balance also confirms randomisation of the participants across treatment groups.

Table A5.3: Demographic distribution by group

Demographic	Protection Plan			Shipping		
	Control	Preselected Default	Mimic Default	Control	Preselected Default	Mimic Default
Age						
18-24 years old	81 (8%)	79 (8%)	65 (7%)	77 (8%)	76 (8%)	79 (8%)
25-34 years old	296 (31%)	263 (27%)	291 (30%)	287 (29%)	272 (28%)	269 (27%)
35-44 years old	236 (24%)	282 (29%)	253 (26%)	269 (27%)	252 (26%)	262 (26%)
45-54 years old	173 (18%)	176 (18%)	180 (18%)	189 (19%)	198 (20%)	181 (18%)
55-64 years old	121 (12%)	108 (11%)	134 (14%)	118 (12%)	132 (13%)	138 (14%)
65 years or older	62 (6%)	57 (6%)	50 (5%)	51 (5%)	52 (5%)	54 (6%)
Prefer not to say	1 (<1%)	5 (1%)	3 (<1%)	5 (1%)	5 (1%)	7 (1%)
Sex						
Female	462 (48%)	512 (53%)	507 (52%)	503 (51%)	500 (51%)	494 (50%)
Male	503 (52%)	451 (46%)	461 (47%)	485 (49%)	478 (48%)	485 (49%)
Prefer not to say	5 (1%)	7 (1%)	8 (1%)	8 (1%)	9 (1%)	11 (1%)
Income						
Up to £9,999	93 (10%)	108 (11%)	103 (11%)	95 (10%)	111 (11%)	118 (12%)
£10,000 - £24,999	277 (29%)	234 (24%)	227 (23%)	252 (25%)	256 (26%)	260 (26%)
£25,000 - £49,999	385 (40%)	391 (40%)	406 (42%)	411 (41%)	383 (39%)	393 (40%)
£50,000 - £74,999	112 (12%)	116 (12%)	119 (12%)	125 (13%)	120 (12%)	117 (12%)

Demographic	Protection Plan			Shipping		
	Control	Preselected Default	Mimic Default	Control	Preselected Default	Mimic Default
£75,000 - £99,999	32 (3%)	34 (4%)	33 (3%)	31 (3%)	38 (4%)	18 (2%)
£100,000 or more	16 (2%)	20 (2%)	25 (3%)	17 (2%)	17 (2%)	16 (2%)
Prefer not to answer	55 (6%)	67 (7%)	63 (7%)	65 (67%)	62 (6%)	68 (7%)
Education						
Primary	2 (<1%)	4 (<1%)	1 (<1%)	2 (<1%)	0 (0%)	1 (<1%)
Secondary	191 (20%)	195 (20%)	192 (20%)	190 (19%)	194 (20%)	192 (19%)
Vocational	154 (16%)	149 (15%)	150 (15%)	162 (16%)	157 (16%)	179 (18%)
Undergraduate	394 (41%)	419 (43%)	395 (40%)	409 (41%)	420 (43%)	412 (42%)
Postgraduate	222 (23%)	191 (20%)	225 (23%)	219 (22%)	205 (21%)	199 (20%)
Prefer not to say	6 (1%)	11 (1%)	13 (1%)	13 (1%)	10 (1%)	7 (1%)
Unknown	1 (<1%)	1 (<1%)	0 (0%)	1 (<1%)	1 (<1%)	0 (0%)
Ethnicity						
Asian/Asian British	66 (7%)	64 (7%)	67 (7%)	60 (6%)	78 (8%)	56 (6%)
Black/African/Caribbean/Black British	38 (4%)	43 (4%)	32 (3%)	29 (3%)	35 (4%)	32 (3%)
Mixed/Multiple ethnic groups	22 (2%)	31 (3%)	21 (2%)	29 (3%)	27 (3%)	20 (2%)
Other ethnic groups	9 (1%)	6 (1%)	9 (1%)	9 (1%)	5 (1%)	8 (1%)

Demographic	Protection Plan			Shipping		
	Control	Preselected Default	Mimic Default	Control	Preselected Default	Mimic Default
Prefer not to say	7 (1%)	16 (2%)	6 (1%)	11 (1%)	11 (1%)	11 (1%)
White	828 (85%)	810 (84%)	841 (86%)	858 (86%)	831 (84%)	863 (87%)

The analysis carried out in this report uses linear probability models (LPM)³¹ and ordinary least squares (OLS) regressions with fixed effects to study the impact of defaults on consumers. In this appendix, we provide the specifications that have been used for the analysis.

Specification for primary analysis

For each of the two experiments, for protection plan and shipping, the primary analyses use a specification that is common in literature on randomised control trials.

$$Y_i = \beta_1 Treatment1_i + \beta_2 Treatment2_i + \delta_j + \epsilon_i$$

For participant i who purchases product j , the dependent variables Y_i on the left-hand side can be one of four outcomes variables as described in the report. These are i) willingness to pay, ii) surplus, iii) shopping time, and iv) probability of selecting the expensive default option. The fourth variable, which is a probability, can be analysed using several different methods (including logistic regressions), but we use the linear probability model to facilitate comparison with the other results. The explanatory variables on the right-hand side are dummy variables for the two treatments. $Treatment1_i$ takes the value 1 if the participant was assigned to the experiment setup which presented a preselected default, and 0 if not. $Treatment2_i$ takes the value 1 if the participant was presented with a mimicking default, and 0 if not. The omitted group here is the *control* group, which provides the benchmark for comparison. δ_j are product fixed effects, and ϵ_i is the regression error term.

β_1 and β_2 are the regression coefficients that we report in the regression tables, and are a measure of how selection into the preselected or mimicking defaults (respectively) impacts the outcome variable. Positive and significant values of the coefficients indicate that the treatment causes an increase in the value of the outcome variable. Similarly, negative and significant coefficients would indicate that the treatment causes a decrease in the value of the dependent variable being measured.

³¹ The results are not qualitatively different if we use logistic models (results not reported).

Table A5.4: Impact of default treatments on the consumer choice in the online shopping task³²

	Experiment: Protection Plan				Experiment: Shipping			
Treatment	WTP		Pr(Select Expensive Option)		WTP		Pr(Select Expensive Option)	
Treatment: Preselected default	0.44 (2.24)	0.66 (1.74)	0.60 *** (0.02)	0.60 *** (0.02)	3.00 (2.08)	2.96 (1.63)	0.70 *** (0.02)	0.70 *** (0.02)
Treatment: Mimicking default	-0.91 (2.20)	-0.58 (1.65)	0.02 (0.02)	0.01 (0.02)	-0.11 (2.06)	-0.22 (1.62)	0.06 *** (0.01)	0.05 *** (0.01)
Product Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2916	2916	2916	2916	2973	2973	2973	2973
R ²	0.00	0.42	0.32	0.33	0.00	0.39	0.45	0.45

Table A5.5: Impact of default treatments on welfare in the online shopping task

	Experiment: Protection Plan		Experiment: Shipping	
Treatment	Surplus	Surplus	Surplus	Surplus
Treatment: Preselected default	-0.83 (1.82)	-0.83 (1.73)	0.62 (1.70)	0.86 (1.62)
Treatment: Mimicking default	-0.07 (1.75)	-0.62 (1.65)	-0.86 (1.69)	-0.38 (1.61)
Product Fixed Effects	No	Yes	No	Yes
Observations	2916	2916	2973	2973
R ^{2 33}	0.00	0.11	0.00	0.09

³² The values in the cells show the value of the regression coefficient followed by the standard errors in parentheses. The stars indicate p-values: * = p<0.1, ** = p<0.05, *** = p < 0.01 where *** would mean that the result is not zero with a very high probability.

³³ R-squared (R²) is a statistical measure that represents the proportion of the variance for a dependent variable that is explained by an independent variable or variables in a regression model. The closer R² is to 1, the more variation is explained by the variables within the model. For behavioural studies, R² is typically

Table A5.6: Impact of default treatments on shopping time in the online shopping task

	Experiment: Protection Plan		Experiment: Shipping	
Treatment	Shopping Time	Shopping Time	Shopping Time	Shopping Time
Treatment: Preselected default	-0.24 * (0.10)	-0.24 * (0.09)	-0.23 * (0.10)	-0.24 * (0.10)
Treatment: Mimicking default	-0.28 ** (0.09)	-0.28 *** (0.09)	-0.17 (0.09)	-0.18 * (0.09)
Product Fixed Effects	No	Yes	No	Yes
Observations	2916	2916	2973	2973
R ²	0.00	0.02	0.00	0.01

Table A5.7: Impact of default treatments on choice

	Experiment: Protection Plan		Experiment: Shipping	
Treatment	Noticed options	Did not notice options	Noticed options	Did not notice options
	Pr (Selecting the more expensive option)			
Treatment: Preselected default	0.53 *** (0.03)	0.56 *** (0.03)	0.58 *** (0.02)	0.89 *** (0.04)
Treatment: Mimicking default	0.02 (0.02)	-0.02 (0.04)	0.05 *** (0.01)	0.08 (0.08)
Product Fixed Effects	Yes	Yes	Yes	Yes
Observations	1930	986	2511	462
R ²	0.41	0.38	0.36	0.22

low given the wide range of unobservable cognitive and human experience factors which feed into an individual's decision making.

Appendix 6 – Online choice experiment – Mediator Analysis

Specification for mediator analysis

For checking how the mediator variables, we use regression specifications that contain an interaction term. The specification is as follows:

$$Y_i = \alpha Mediator_i + \beta_1 T1_i + \beta_2 T2_i + \beta_3 T1_i X Mediator_i + \beta_4 T2_i X Mediator_i + \delta_j + \epsilon_i$$

Here, for participant i who purchases product j , the explanatory variables on the right-hand side contain the mediators and treatments. $T1_i$ and $T2_i$ are the treatment variables, which take the value 1 if the participant was assigned to preselected or mimic default treatment group, respectively, and 0 if not. The associated regression coefficients β_1 and β_2 reflect the effect of the treatment on the outcome variable, as before. $Mediator_i$ is a variable that takes the value of the mediator being analysed (such as age, gender, income) and the regression coefficient α reflects the impact the mediator value directly has on the outcome variable.

$T1 X Mediator_i$ and $T2 X Mediator_i$ are the interaction variables that multiply the treatment dummy variables with the mediator variable. These are the key variables of interest, and their associated coefficients β_3 and β_4 provide an estimate of the influence that the mediator has on the outcome variable *through* the treatment variables.

The remaining symbols have the same meanings as in the specifications in Appendix 3.

Product Traits

1. Product Type

Tables 15 and 16 report the results from the regressions with specific product types included as mediators for the two experiments. For legibility, the tables only report the regression coefficients for the interaction terms. The results show that individual product choices do not have much influence on the impact of the treatments, with “Bluetooth headphones” as the base to compare against. For WTP, surplus, and shopping time, the coefficients remain statistically indistinguishable from zero for all products in both experiments. For the probability of selecting the expensive option, once we account for the impact of defaults, the choice of product has no additional impact. There are some product types, such as weighing machine for the protection plan experiment, and kettle, heart rate monitor and weighing machine for the shipping experiment, that suggest small additional impacts, but these estimates have a high variance.

Table A6.1: Influence of product choice on impact of default treatments in the online shopping task for protection plan

Experiment: Protection Plan				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Treatment: Preselected default	5.10 (4.79)	3.52 (4.78)	0.56 *** (0.04)	-0.37 (0.28)
X Desk chair	-14.79	-16.22	0.08	0.13

Experiment: Protection Plan				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
	(8.99)	(8.97)	(0.08)	(0.42)
X Hair Styling Appliance	-8.51 (6.97)	-7.66 (6.96)	0.08 (0.06)	0.22 (0.31)
X Heart Rate Monitor	-11.97 (6.77)	-10.89 (6.77)	-0.12 (0.14)	-0.15 (1.14)
X Iron	5.76 (10.41)	6.8 (10.41)	-0.02 (0.14)	-0.28 (0.53)
X Kettle	-2.66 (5.36)	-1.67 (5.36)	0.06 (0.06)	0.14 (0.33)
X Keyboard	-2.1 (5.57)	-1.23 (5.56)	-0.07 (0.08)	0.3 (0.36)
X Power bank	-6.62 (5.29)	-5.67 (5.28)	0 (0.08)	-0.26 (0.49)
X Smart speaker	-6.55 (8.33)	-9.79 (8.25)	0.08 (0.07)	0.58 (0.39)
X Vacuum	-4.1 (8.38)	-4.78 (8.38)	0 (0.07)	-0.13 (0.41)
X Weighing Machine	0.93 (6.97)	1.56 (6.98)	0.26** (0.09)	1.34* (0.61)
Treatment: Mimicking default	1.40 (4.71)	1.40 (4.69)	0.00 (0.04)	-0.56 * (0.23)
X Desk chair	0.92 (10.67)	0.68 (10.62)	0.05 (0.1)	0.54 (0.44)
X Hair Styling Appliance	-10.81 (6.52)	-10.92 (6.51)	0.09 (0.06)	0.49 (0.26)
X Heart Rate Monitor	3.43 (8.61)	3.36 (8.57)	0.07 (0.14)	0.07 (0.14)
X Iron	2.01 (6.91)	2.1 (6.92)	-0.08 (0.15)	0.33 (0.51)

Experiment: Protection Plan				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
X Kettle	-2.95 (5.12)	-2.97 (5.1)	0.02 (0.07)	0.34 (0.29)
X Keyboard	-1.99 (5.22)	-1.94 (5.21)	-0.03 (0.08)	0.64 (0.33)
X Power bank	0.96 (5.52)	0.98 (5.5)	-0.01 (0.07)	-0.1 (0.42)
X Smart speaker	-5.12 (7.26)	-5.28 (7.23)	0.02 (0.07)	0.41 (0.32)
X Vacuum	4.72 (8.05)	5.15 (8.03)	-0.11 (0.08)	0.06 (0.33)
X Weighing Machine	5.68 (6.92)	5.68 (6.89)	0.01 (0.09)	0.63 (0.4)
Observations	2916	2916	2916	2916
R ²	0.43	0.12	0.34	0.02

Table A6.2: Influence of product choice on impact of default treatments in the online shopping task for shipping

Experiment: Shipping / Delivery				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Treatment: Preselected default	5.22 (4.25)	3.26 (4.24)	0.66 *** (0.04)	-0.28 (0.31)
X Desk chair	-11.73 (8.34)	-11.91 (8.29)	0.06 (0.08)	-0.44 (0.47)
X Hair Styling Appliance	0.44 (6.20)	0.14 (6.19)	0.10 (0.05)	0.26 (0.35)
X Heart Rate Monitor	4.43 (8.71)	3.82 (8.63)	0.21 * (0.09)	-0.43 (0.61)

Experiment: Shipping / Delivery

	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
X Iron	-5.12 (5.43)	-5.42 (5.43)	0.10 (0.10)	-0.20 (0.74)
X Kettle	-2.45 (4.74)	-2.78 (4.73)	0.11 * (0.05)	-0.01 (0.36)
X Keyboard	-5.41 (6.16)	-5.02 (6.15)	-0.13 (0.08)	0.54 (0.40)
X Power bank	-2.66 (4.77)	-2.32 (4.76)	-0.11 (0.07)	-0.11 (0.39)
X Smart speaker	4.89 (7.97)	4.72 (7.96)	0.06 (0.07)	0.23 (0.40)
X Vacuum	-7.74 (7.94)	-7.94 (7.92)	0.07 (0.06)	-0.15 (0.41)
X Weighing Machine	-11.77 (8.91)	-12.32 (8.94)	0.18 * (0.08)	0.20 (0.56)
Treatment: Mimicking default	0.21 (4.35)	-0.09 (4.33)	0.10 ** (0.03)	-0.23 (0.26)
X Desk chair	-4.68 (7.79)	-4.49 (7.77)	-0.06 (0.07)	-0.36 (0.43)
X Hair Styling Appliance	0.26 (6.25)	0.13 (6.22)	0.04 (0.05)	0.35 (0.32)
X Heart Rate Monitor	6.64 (9.92)	6.99 (9.87)	-0.12 (0.08)	-0.74 (0.53)
X Iron	-6.71 (5.47)	-6.22 (5.48)	-0.16 * (0.08)	-0.68 (0.59)
X Kettle	0.02 (4.74)	0.24 (4.73)	-0.07 (0.04)	0.01 (0.31)
X Keyboard	0.46 (6.72)	0.81 (6.70)	-0.12 (0.07)	0.15 (0.32)

Experiment: Shipping / Delivery				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
X Power bank	3.02 (5.00)	3.32 (4.97)	-0.10 (0.06)	-0.01 (0.34)
X Smart speaker	5.43 (7.82)	5.66 (7.79)	-0.08 (0.06)	0.39 (0.37)
X Vacuum	-6.15 (8.00)	-5.99 (7.98)	-0.05 (0.06)	-0.02 (0.37)
X Weighing Machine	-8.68 (9.35)	-8.39 (9.36)	-0.10 (0.06)	0.43 (0.57)
Observations	2973	2973	2973	2973
R ²	0.39	0.09	0.46	0.02

2. Product Category

Next, we examine the influence of the three product categories on the results of the online experiment. This exercise checks if there are any systematic differences in how consumers respond to defaults across the three product categories that are offered – Home and Kitchen, Electronic Accessories and Health and Cosmetics. We repeat the regression analysis with an interaction term and report the results below in Tables 17 and 18 for each of the two experiments. The coefficients are reported with the category “Electronic Accessories” as the base or omitted category, and for easier understanding we only report the coefficients for the interaction terms.

These results suggest that there are generally no differences in the impact of protection plan and shipping defaults on consumers across product categories. The one exception is for preselected defaults: for both Health and Cosmetics and Home and Kitchen, participants were 15% and 12% more likely, respectively, to select the more expensive shipping option compared to Electronic Accessories.

Table A6.3: Influence of product category on the impact of default treatments in the online shopping task for protection plan

Experiment: Protection Plan				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Treatment: Preselected default	2.97 (3.38)	0.57 (2.67)	0.57 *** (0.03)	-0.28 (0.16)
X Health and Cosmetics	-5.14 (5.36)	-3.84 (4.83)	0.07 (0.05)	0.25 (0.24)

Experiment: Protection Plan				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
X Home and Kitchen	-5.88 (5.32)	-2.12 (4.10)	0.04 (0.04)	-0.05 (0.21)
Treatment: Mimicking default	0.16 (3.25)	0.29 (2.54)	0.00 (0.03)	-0.41 ** (0.14)
X Health and Cosmetics	-5.32 (4.98)	-6.10 (4.44)	0.08 (0.05)	0.36 (0.21)
X Home and Kitchen	-0.53 (5.34)	1.53 (4.04)	-0.02 (0.04)	0.16 (0.19)
Observations	2916	2916	2916	2916
R ²	0.02	0.03	0.33	0.01

Table A6.4: Influence of product category on impact of default treatments in the online shopping task for shipping

Experiment: Shipping				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Treatment: Preselected default	5.64 (3.10)	3.01 (2.52)	0.63 *** (0.03)	-0.18 (0.17)
X Health and Cosmetics	-0.80 (4.91)	-1.02 (4.50)	0.15 *** (0.04)	0.10 (0.23)
X Home and Kitchen	-7.40 (4.87)	-5.77 (3.78)	0.12 ** (0.04)	-0.21 (0.22)
Treatment: Mimicking default	3.14 (3.11)	1.72 (2.57)	0.05 * (0.02)	-0.13 (0.15)
X Health and Cosmetics	-3.05 (4.93)	-2.32 (4.53)	0.05 (0.04)	0.16 (0.22)
X Home and Kitchen	-8.15 (4.79)	-5.42 (3.72)	-0.02 (0.03)	-0.21 (0.20)

Experiment: Shipping				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Observations	2973	2973	2973	2973
R ²	0.02	0.03	0.46	0.01

3. Product base price

In this section, we examine if the base price of the product impacts how consumers respond to default options. We use a similar framework as with product type and category, but this time using the base price as the interaction variable in the regression. The results, reported in Tables 19 and 20 below, indicate that once we account for the effects of the default treatment, the base price does not have any additional influence on how consumers respond to the default.

Table A6.5: Influence of product base price on impact of default treatments in the online shopping task for protection plan

Experiment: Protection Plan				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
BasePrice	1.14 *** (0.05)	0.12 * (0.05)	0.00 . (0.00)	0.00 (0.00)
Treatment: Preselected default	-3.48 (4.47)	-2.63 (4.46)	0.63 *** (0.05)	-0.17 (0.25)
Preselected X BasePrice	0.07 (0.07)	0.03 (0.07)	-0.00 (0.00)	-0.00 (0.00)
Treatment: Mimicking default	-7.67 (4.19)	-7.76 (4.18)	0.08 (0.05)	-0.08 (0.23)
Mimicking X BasePrice	0.12 (0.07)	0.12 (0.07)	-0.00 (0.00)	-0.00 (0.00)
Observations	2916	2916	2916	2916
R ²	0.36	0.01	0.32	0.00

Table A6.6: Influence of base price on impact of default treatments in the online shopping task for shipping

Experiment: Shipping				
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
BasePrice	1.09 *** (0.05)	0.09 (0.05)	0.00 * (0.00)	0.01 ** (0.00)
Treatment: Preselected default	2.55 (4.24)	0.45 (4.23)	0.70 *** (0.04)	0.00 (0.22)
Preselected X BasePrice	0.00 (0.07)	0.00 (0.07)	0.00 (0.00)	-0.00 (0.00)
Treatment: Mimicking default	0.80 (4.23)	0.72 (4.22)	0.03 (0.04)	-0.02 (0.21)
Mimicking X BasePrice	-0.02 (0.07)	-0.03 (0.07)	0.00 (0.00)	-0.00 (0.00)
Observations	2973	2973	2973	2973
R ²	0.33	0.00	0.45	0.01

Consumer traits

For each of these variables, we run fixed-effects regressions, with an interaction between the trait and the treatment variables.³⁴

1. Consumer demographics

a. Income

Consumer income is positively correlated with willingness to pay and consumer surplus, as shown by the results in the first row in Table 21. However, income does not interact with the default treatments in any meaningful way, suggesting that it generally does not serve as a mediator in the effects of defaults.

Table A6.7: Influence of consumer income on the impact of default treatments in online shopping tasks

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expense Option)	Shopping Time	WTP	Surplus	Pr(Select Expense Option)	Shopping Time
Income	4.77 ***	4.82 ***	0.00	-0.05	2.81 *	2.79 *	0.01	-0.05
	(1.26)	(1.25)	(0.01)	(0.05)	(1.24)	(1.24)	(0.01)	(0.04)
Treatment: Preselected default	0.42	-0.85	0.58 ***	-0.11	-0.07	-2.19	0.71 ***	-0.10
	(4.94)	(4.92)	(0.05)	(0.27)	(4.42)	(4.42)	(0.04)	(0.21)
Preselected X Income	-0.32	-0.40	0.00	-0.05	1.06	1.07	-0.00	-0.04
	(1.77)	(1.76)	(0.02)	(0.08)	(1.61)	(1.61)	(0.01)	(0.06)
Treatment: Mimicking default	1.93	1.70	0.14 *	0.03	-4.22	-4.29	0.02	-0.07
	(5.01)	(4.98)	(0.05)	(0.22)	(4.59)	(4.58)	(0.04)	(0.22)
Mimicking X Income	-1.14	-1.07	-0.04 *	-0.10	1.51	1.48	0.01	-0.04
	(1.75)	(1.74)	(0.02)	(0.07)	(1.71)	(1.70)	(0.01)	(0.06)
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2731	2731	2731	2731	2778	2778	2778	2973
R ²	0.43	0.13	0.33	0.02	0.39	0.09	0.45	0.02

³⁴ With product-level fixed effects, we control for any variations in the data that occur due to the choice of the product. All standard errors are clustered to account for heteroskedasticity to ensure the results are not affected by any systematic changes in variance.

b. Education

The regression coefficients presented in Table 22 below suggest that the level of consumer education generally does not have any mediating effect on the impact of defaults.

Table A6.8: Influence of consumer education level on impact of default treatments in the online shopping tasks

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Education	-0.60	-0.62	0.01	0.06	-0.26	-0.20	-0.02 **	-0.03
	(1.17)	(1.16)	(0.01)	(0.05)	(1.15)	(1.15)	(0.01)	(0.06)
Treatment: Preselected default	0.96	-0.59	0.63 ***	-0.20	0.30	-1.90	0.73 ***	0.06
	(6.89)	(6.89)	(0.07)	(0.33)	(5.99)	(5.98)	(0.06)	(0.38)
Preselected X Education	-0.07	-0.05	-0.01	-0.01	0.70	0.73	-0.01	-0.08
	(1.79)	(1.79)	(0.02)	(0.09)	(1.57)	(1.57)	(0.02)	(0.09)
Treatment: Mimicking default	1.54	1.38	0.04	0.09	-8.95	-8.87	-0.03	-0.31
	(6.06)	(6.04)	(0.07)	(0.26)	(5.95)	(5.93)	(0.05)	(0.29)
Mimicking X Education	-0.54	-0.51	-0.01	-0.10	2.39	2.32	0.02	0.04
	(1.60)	(1.59)	(0.02)	(0.07)	(1.61)	(1.61)	(0.01)	(0.07)
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2914	2914	2914	2914	2971	2971	2971	2971
R ²	0.42	0.11	0.33	0.02	0.39	0.09	0.46	0.01

c. Age

We check the relationship between age and the default treatments using the age bracket provided by survey participants. The results, shown in Table 23, present insights into how different demographic groups are impacted. First, age is positively correlated with shopping time: an increase in one age “bracket” is correlated with spending at least 21 seconds longer (0.35 minutes) in the shopping task. Second, for the protection plan, an increase in age by 1 bracket is associated with a decrease in the probability of selecting the expensive option by 3%. Third, there is a strong interaction effect for the preselected treatment with a higher age bracket increasing the probability of selecting the more expensive option in the preselected treatment by 5% for the protection plan experiment and 4% for the shipping experiment. For mimicking defaults, on the other hand, a higher age level decreases the probability of selecting the more expensive shipping option by 3%.

Table A6.9: Influence of consumer age on the impact of default treatments in online shopping tasks

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Age	-0.92	-0.84	-0.03 **	0.35 ***	1.28	1.26	0.00	0.37 ***
	(0.81)	(0.81)	(0.01)	(0.04)	(0.79)	(0.79)	(0.01)	(0.05)
Treatment: Preselected default	-3.28	-4.18	0.44 ***	-0.38	7.03	5.29	0.58 ***	-0.06
	(4.49)	(4.48)	(0.05)	(0.20)	(4.07)	(4.06)	(0.04)	(0.22)
Preselected X Age	1.19	1.01	0.05 ***	0.05	-1.36	-1.47	0.04 **	-0.06
	(1.20)	(1.20)	(0.01)	(0.06)	(1.15)	(1.15)	(0.01)	(0.07)
Treatment: Mimicking default	-6.39	-6.51	0.09	-0.12	2.36	1.88	0.16 ***	0.00
	(4.29)	(4.28)	(0.05)	(0.18)	(3.98)	(3.97)	(0.04)	(0.18)
Mimicking X Age	1.85	1.88	-0.02	-0.05	-0.84	-0.74	-0.03 **	-0.06
	(1.17)	(1.17)	(0.01)	(0.05)	(1.09)	(1.08)	(0.01)	(0.06)
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2907	2907	2907	2907	2956	2956	2956	2956
R ²	0.43	0.12	0.34	0.07	0.39	0.09	0.46	0.06

d. Gender

The regression coefficients for gender, presented in Table 24, suggest a gender divide in the response to defaults, but only for shipping defaults. For preselected defaults, men are less likely to select the more expensive option, while gender does not appear to have an impact on any other variables.

Table A6.10: Influence of consumer gender on impact of default treatments in the online shopping tasks

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Male	-0.16	0.09	0.01	-0.15	3.36	3.26	0.03	-0.19
	(2.55)	(2.54)	(0.03)	(0.15)	(2.57)	(2.57)	(0.02)	(0.14)
Treatment: Preselected default	-0.78	-2.00	0.61 ***	-0.21	4.38 *	2.06	0.77 ***	-0.26 *
	(2.39)	(2.39)	(0.03)	(0.11)	(2.20)	(2.21)	(0.02)	(0.11)
Preselected X Male	2.26	1.70	-0.02	-0.01	-2.66	-2.22	-0.15 ***	0.07
	(3.49)	(3.48)	(0.04)	(0.19)	(3.24)	(3.23)	(0.03)	(0.19)
Treatment: Mimicking default	-1.51	-1.49	0.02	-0.19	-0.06	-0.24	0.06 **	-0.13
	(2.32)	(2.31)	(0.03)	(0.10)	(2.13)	(2.12)	(0.02)	(0.11)
Mimicking X Male	1.90	1.80	-0.02	-0.13	0.16	0.19	-0.01	-0.07
	(3.31)	(3.31)	(0.04)	(0.17)	(3.24)	(3.23)	(0.03)	(0.18)
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2896	2896	2896	2896	2945	2945	2945	2945
R ²	0.42	0.12	0.33	0.02	0.39	0.09	0.46	0.01

2. Consumer Familiarity

The next set of mediators we examine is the level of familiarity that participants have with online shopping, the Amazon platform and with the product itself. Consumers' previous experiences can influence their behaviour and choices when faced with defaults. We base this analysis on the post-experiment survey where the participant was asked about their level of familiarity with each of the three areas. Tables 25-27 show the results of the regression analysis using an interaction between the familiarity and the treatment variables. We include fixed effects at the product level and have robust standard errors, as in the previous specifications.

a. Familiarity with Online Shopping

Consumers who had a higher level of familiarity with online shopping had a higher willingness to pay for products and surplus. For shipping defaults specifically, consumers who were more familiar with online shopping spent less time on the shopping task, suggesting greater ease with the process. However, the interaction of the term with the treatment variables suggests differences in familiarity with online shopping do not impact how consumers respond to defaults.

Table A6.11: Influence of consumer familiarity with online shopping on the impact of default treatments in online shopping tasks

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Familiarity with Online Shopping	3.79 ***	3.79 ***	-0.01	-0.07	4.38 ***	4.35 ***	0.01	-0.19 **
	(1.05)	(1.05)	(0.01)	(0.07)	(1.05)	(1.04)	(0.01)	(0.06)
Treatment: Preselected default	5.92	4.19	0.57 ***	-0.07	12.29 *	10.15	0.71 ***	-0.82 *
	(6.03)	(6.03)	(0.06)	(0.38)	(5.68)	(5.68)	(0.06)	(0.36)
Preselected X Familiarity	-1.22	-1.16	0.01	-0.04	-2.28	-2.27	-0.00	0.14
	(1.48)	(1.48)	(0.01)	(0.08)	(1.39)	(1.39)	(0.01)	(0.08)
Treatment: Mimicking default	6.38	6.27	-0.03	-0.61	6.31	6.17	0.05	-0.78 *
	(5.95)	(5.94)	(0.07)	(0.35)	(5.69)	(5.67)	(0.05)	(0.34)
Mimicking X Familiarity	-1.68	-1.66	0.01	0.08	-1.63	-1.64	0.00	0.15 *
	(1.42)	(1.42)	(0.02)	(0.08)	(1.39)	(1.39)	(0.01)	(0.07)
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2916	2916	2916	2916	2973	2973	2973	2973

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
R ²	0.43	0.12	0.33	0.02	0.40	0.10	0.46	0.02

b. Familiarity with Amazon

The online experiment platform was made to closely resemble the Amazon website to create a more realistic user experience for the experiment. In this section, we explore how the consumer's familiarity with Amazon affected the outcomes. As shown in Table 26, consumers who were more familiar with Amazon were likely to have a higher willingness to pay and consumer surplus and spent less time on the online shopping task. However, the interaction of the term with the treatment variables suggests differences in familiarity with Amazon generally do not impact how consumers respond to defaults.

Table A6.12: Influence of consumer familiarity with Amazon on impact of default treatments

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Familiarity with Amazon	2.40 *	2.39 *	-0.00	-0.11 *	4.13 ***	4.09 ***	0.01	-0.13 **
	(1.01)	(1.00)	(0.01)	(0.05)	(0.87)	(0.87)	(0.01)	(0.05)
Treatment: Preselected default	4.73	3.10	0.58 ***	-0.01	11.87 *	9.73 *	0.72 ***	-0.50 *
	(5.40)	(5.38)	(0.05)	(0.29)	(4.66)	(4.65)	(0.05)	(0.25)
Preselected X Familiarity	-1.18	-1.14	0.00	-0.06	-2.51 *	-2.50 *	-0.00	0.07
	(1.47)	(1.46)	(0.01)	(0.07)	(1.26)	(1.26)	(0.01)	(0.06)
Treatment: Mimicking default	-2.70	-2.73	-0.03	-0.40	4.99	4.83	0.05	-0.51 *
	(4.82)	(4.80)	(0.06)	(0.26)	(4.30)	(4.29)	(0.04)	(0.24)
Mimicking X Familiarity	0.49	0.49	0.01	0.03	-1.44	-1.44	0.00	0.09
	(1.33)	(1.33)	(0.01)	(0.06)	(1.21)	(1.20)	(0.01)	(0.06)

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2916	2916	2916	2916	2973	2973	2973	2973
R ²	0.43	0.12	0.33	0.02	0.40	0.10	0.46	0.02

c. Familiarity with Product

Finally, we explore how consumer familiarity with specific products impacted their response to defaults. The results presented in Table 27 suggest that this variable has an impact only in the case of mimicking defaults related to shipping, where a higher level of familiarity with the product increases the probability of selecting the more expensive shipping option.

Table A6.13: Influence of consumer familiarity with product on impact of default treatments

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Familiarity with Product	-1.24	-1.39	0.07 *	-0.12	6.85	6.84	0.00	0.00
	(2.10)	(2.05)	(0.03)	(0.13)	(3.62)	(3.61)	(0.01)	(0.25)
Treatment: Preselected default	-7.79 .	-9.41 *	0.63 ***	-0.36	-2.46	-4.60	0.71 ***	0.03
	(4.33)	(4.33)	(0.04)	(0.24)	(5.30)	(5.32)	(0.04)	(0.28)
Preselected X Familiarity	8.73 *	8.82 *	-0.03	0.09	5.09	5.12	-0.01	-0.22
	(3.95)	(3.96)	(0.03)	(0.21)	(5.13)	(5.15)	(0.04)	(0.27)
Treatment: Mimicking default	-6.55	-6.73	0.05	-0.05	-1.45	-1.31	-0.05	-0.33
	(5.30)	(5.25)	(0.05)	(0.20)	(4.64)	(4.61)	(0.04)	(0.36)
Mimicking X Familiarity	6.47	6.59	-0.04	-0.25	1.90	1.62	0.09 **	0.20
	(5.07)	(5.03)	(0.04)	(0.16)	(4.40)	(4.38)	(0.03)	(0.36)
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2743	2743	2743	2743	2745	2745	2745	2745
R ²	0.44	0.12	0.34	0.02	0.41	0.10	0.47	0.01

Appendix 7 – Online choice experiment – Robustness checks

Specification for robustness checks

The robustness checks presented here follow a similar specification to the one in the primary specification, with the addition of a set of explanatory variables on the right-hand side. We denote these variables using X' , and it is defined as a matrix of individual characteristics, specifically age, income, ethnicity, gender and details on disabilities or illness (all transformed to categorical variables). The specification is as follows, where all the other symbols have the same meaning as described above:

$$Y_i = \beta_1 Treatment1_i + \beta_2 Treatment2_i + X' \lambda_i + \delta_j + \epsilon_i$$

The following table shows the results of running the regression analysis with the inclusion of controls for individual demographic variables for age, income, sex, ethnicity, and ability.

Table A7.1: Regression analysis with demographic controls to check for robustness

	Experiment: Protection Plan				Experiment: Shipping			
	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time	WTP	Surplus	Pr(Select Expensive Option)	Shopping Time
Treatment: Preselected default	0.71	-0.79	0.59 ***	-0.24 *	2.88	0.79	0.70 ***	-0.29 **
	(1.78)	(1.78)	(0.02)	(0.10)	(1.66)	(1.66)	(0.02)	(0.10)
Treatment: Mimicking default	-0.54	-0.59	0.02	-0.30 ***	0.11	-0.06	0.05 ***	-0.23 **
	(1.74)	(1.74)	(0.02)	(0.09)	(1.65)	(1.64)	(0.01)	(0.08)
Demographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Product Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2916	2916	2916	2916	2973	2973	2973	2973
R ²	0.45	0.16	0.37	0.12	0.43	0.14	0.48	0.11

Appendix 8 – UK Internet User Population

The table below presents estimates of the proportion of population by age, ethnicity, and gender.

Table A8.1: Demographic distribution of UK Internet users³⁵

Demographics	Proportion of group in total UK Internet user population
Age	
18-24 years old	14%
25-34 years old	18 %
35-44 years old	17%
45-54 years old	18%
55-64 years old	16%
65 years or older	17%
Sex	
Female	50%
Male	50%
Ethnicity	
Asian/Asian British	6%
Black/African/Caribbean/Black British	3%
Mixed/Multiple ethnic groups	1%
Other ethnic groups	2%
White	88%

³⁵ Authors' calculations based on ONS data on [Internet Users in the UK \(2020\)](#)

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