Vertical Integration and Consumer Choice: Evidence from a Field Experiment*

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Abstract

Platforms, retailers, and other firms often offer their own products alongside products sold by competitors, but this form of vertical integration has become a target of regulation in digital markets. We study the effects of this practice through a field experiment that hides brands owned by Amazon (i.e., private labels) from shoppers on Amazon.com. We first consider the effects of this removal on three aspects of consumer behavior: substitution to other products, changes in search effort, and substitution to other retail websites. In the absence of Amazon brands, our results indicate that consumers substitute toward products that are similar along most observable dimensions. We find no evidence that treated consumers change their search effort, nor that they shift their shopping behavior to other retail websites. To evaluate a fourth mechanism—how the presence of Amazon brands affects equilibrium prices—we estimate a structural model of demand and simulate counterfactual prices when removing such products. Our estimates imply that, for the categories we study, removing Amazon brands would reduce consumer surplus by 3.8 percent in the short run, and roughly one quarter of the impact is due to equilibrium price increases by other products. The effects are heterogeneous, with consumer surplus reductions exceeding 10 percent in some categories, while other categories realize no change or even positive increases in consumer surplus when Amazon brands are removed.

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JEL Classification: L13, L15, L81, D12, D83

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1 Introduction

The size and scope of digital platforms, such as Amazon and Google, has resulted in scrutiny by policymakers. In Europe, regulators have recently passed the Digital Markets Act[1] and the Digital Services Act[2] to constrain and monitor the behavior of large platforms. In the US, the Department of Justice (DOJ) is involved in legal proceedings against Google[3] and the Federal Trade Commission (FTC) against Amazon,[4] both of which accuse the platforms of abuse of their respective dominant positions.

One issue of regulatory concern is the practice by major technology platforms of vertically integrating and featuring their own products alongside those of third parties. This practice is common among the large firms designated as "gatekeepers" by the Digital Markets Act. For example, Google owns Google Maps and Google Shopping, which directly compete with third-party maps and e-commerce alternatives. Similarly, Amazon sells private-label products—under brands such as Amazon Basics, Solimo, and Mama Bear—on its retail website alongside competing products offered by independent manufacturers and brands. This practice has raised concerns of reduced competition and harm to consumers, especially if the gatekeeper treats its own products more favorably, i.e., engages in self-preferencing.

We study the effects of Amazon-owned brands, or private labels, on consumer decisions and welfare. To answer this question, we develop a browser extension that can manipulate and track browsing behavior and recruit participants to install it. We use the extension to introduce random variation in the set of products observable to consumers. For our main treatment, we prevent consumers from seeing Amazon brands on Amazon's website. This allows us to measure the (short-run) effects on search behavior and product choices in the absence of Amazon's private labels.

We focus on four demand-side channels by which the presence of private label products can affect consumer welfare. First, their presence increases the number of options that consumers can choose from—the variety effect. Second, their presence may increase or decrease search intensity for consumers. Third, their presence may affect cross-platform or cross-retailer behavior, e.g., private labels may encourage consumers to shop on Amazon, instead of Walmart.com. Fourth, their presence can have competitive effects on equilibrium prices of other products.

We use our experimental variation to provide reduced-form evidence on the extent of the first three mechanisms. We find that when Amazon brands are not available, consumers substitute to broadly similar products, except that those substitutes have fewer reviews. We find no

[1] digital-markets-act.ec.europa.eu.

[2] https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-services-act_en.

[3] https://www.justice.gov/opa/pr/justice-department-sues-google-monopolizing-digital-advertising-technologies

[4] https://www.ftc.gov/news-events/news/press-releases/2023/09/ftc-sues-amazon-illegally-maintaining-monopoly-power.

evidence of changes to search behavior on Amazon, nor evidence that consumers spend more time on other online retail sites. To assess the fourth mechanism, we estimate a structural model of demand and use the model to simulate counterfactual equilibrium prices in the absence of Amazon brands. The model allows us to quantify changes in consumer welfare.

For this research, we developed a browser extension called Webmunk, recruited US residents to install it, and compensated them for their participation.[5] The extension randomly allocates study participants into three groups: a control group, whose behavior on Amazon.com is tracked for the period of the study; a Hide Amazon group, for whom the extension removes Amazon brands from search results and other pages on Amazon.com; and a Hide Random group, for whom the extension removes a random set of products.

Upon enrollment, we ask participants to partake in a set of incentivized shopping tasks and then track their organic browsing behavior on Amazon for the following 8 weeks. In the incentivized tasks, participants are asked to shop for products from pre-defined categories to add to an Amazon wishlist especially created for our study. We pre-selected 23 product categories (e.g., allergy medications, paper towels, socks, batteries) from a set of six meta-categories—health, paper products, household items, apparel, electronics, and personal care. The first five meta-categories are characterized by a high share of Amazon branded options. The sixth, personal care, does not have any Amazon brands, and we selected it as a placebo.

The randomization allows us to compare the characteristics of the chosen products across the three treatment groups.[6] In the absence of Amazon brands, consumers choose products with similar price, delivery speed, average star rating, and Prime eligibility, showing no statistically significant differences from those selected by the control group. Though the average star rating is similar, the number of accumulated reviews of the chosen product is much lower when Amazon brands are hidden compared to when Amazon brands are available. The Hide Random group allows us to confirm that these differences are not simply due to a decrease in product variety, but directly linked to the characteristics of Amazon branded products.

Notably, this substitution toward similar products does not appear to require additional effort from consumers. The number of searches performed and the number of products viewed remain comparable across treatment groups, suggesting that consumers are able to find alternative products without engaging in a more extensive search process. Furthermore, traffic to other retail websites outside of Amazon does not increase when Amazon brands are hidden, indicating that consumers remain within the platform and simply shift to comparable alternatives rather than seeking options elsewhere.

These substitution patterns are consistent with stated consumer preferences in our surveys. Indeed, consumers say they care about prices, delivery, and quality (as proxied by online rat-

[5]Webmunk is open-sourced and available for use by other researchers. Please see Farronato, Fradkin and Karr (2024) or visit `www.webmunk.org` for details.

[6]We pre-registered the reduced form analysis plan under AEARCTR-0011370. `https://doi.org/10.1257/rct.11370-1.0`.

ings) much more than brand or seller reputation. When asked to rate the chosen products they received from the incentivized shopping task, consumers scored them similarly, regardless of whether they had access to private labels. On average, participants indicated that they valued Amazon private labels $1.75 less than comparable non-Amazon products priced at $25. When the reference product is priced at $10, Amazon brands are valued $0.20 less. The average difference masks substantial heterogeneity across respondents. Stated preferences indicate that the relative preference for Amazon brands compared to other products can be offset by other variables such as average ratings and delivery speed.

To further understand consumer preferences for Amazon private labels and to measure their effects on welfare, we estimate a structural model of demand and supply. We use a discrete choice demand model with heterogeneous preferences across individuals for features like price and Amazon brands. Using individual product selections, we estimate the model via maximum likelihood, while calibrating the mean own-price elasticity to a value of -5 to match reported data on margins for Amazon sellers. Consistent with the survey results, our demand estimates imply that Amazon brands are valued less than comparable non-Amazon products, and there is meaningful variation in preferences for Amazon products across consumers. Our estimates imply mean marginal costs of roughly $15 and own-price elasticities that range from -8.22 to -2.14 at the 10th and 90th percentiles.

We use the structural model to measure the effects of removing Amazon products from consumers' consideration sets. We remove Amazon brands, shift the remaining products upward in search rankings, and re-compute equilibrium prices. For the product categories in our sample where Amazon brands are present, we estimate that removing Amazon products reduces consumer surplus by 3.8 percent due to reductions in product variety and pricing pressure on competing products. Roughly one quarter (22 percent) of the loss in consumer surplus is due to higher equilibrium prices for the remaining products. We find sizable heterogeneity in the effect on consumer surplus across categories. Removing Amazon products reduces consumer surplus by over 10 percent in batteries, pain relievers, allergy medications, and trash bags. On the other hand, removing Amazon brands results in near-zero consumer surplus effects in a handful of categories and increases consumer surplus in socks and toilet paper. These heterogeneous effects can be rationalized by the fact that the alternative products taking the position of Amazon brands can be better or worse than the removed products. In the set of categories where consumer surplus increases when Amazon products are removed, products that consumers perceive to be better move up in the search rankings and are chosen more often. This effect offsets or even dominates the price increase, yielding greater consumer surplus.

Our study is subject to limitations. Our study design ensures that the participants have been active Amazon shoppers. Further, we require the participants to use a desktop browser. Because of these margins of selection, our results may not completely generalize to the full population of online shoppers. Another limitation is that our study was conducted over a limited time frame:

an incentivized shopping task followed by a 8-week observational period. Consumer behavior along various margins, such as search and cross-platform behavior, may take longer than 8 weeks to adjust to the removal of Amazon brands. Thus, the results from our experimental variation are limited to short-run effects. Similarly, our counterfactual simulations only measure short-run effects where prices can adjust. We abstract away from longer-run effects such as changes to non-price characteristics and the entry of new products.

Related literature. Recent regulatory scrutiny over the market power of digital platforms has given rise to a new literature on vertical integration and biased intermediation (Hagiu, Teh and Wright, 2022; De Corniere and Taylor, 2019; Teng, 2022), specifically on Amazon (Lee and Musolff, 2022; Gutierrez, 2022; Lam, 2022; Chen and Tsai, 2021; Raval, 2022; Reimers and Waldfogel, 2023; Waldfogel, 2024). Relative to the above papers, our work has several key advantages. First, our data contain searches and product selections from a variety of real consumers. Second, our field experiment allows us to draw causal links between ranking and consumer choices, and between the availability of Amazon brands and substitution patterns. Third, we link the shopping behavior on Amazon to surveys, order histories, and visits to non-Amazon retailers, shedding light on the generalizability of our results based on incentivized shopping tasks (Morozov and Tuchman, 2024) for more organic search and shopping behavior (Ursu, 2018; Santos, Hortaçsu and Wildenbeest, 2012; Dinerstein et al., 2018).

Our approach to collecting data and studying consumer behavior contributes to recent and growing research that uses software to track consumers and run online experiments. Allcott, Gentzkow and Song (2022) study the addiction properties of social media use. Aridor (2022) observes participants' substitution patterns when he experimentally shuts off access to Instagram or Youtube. Levy (2021) differentially exposes study participants to news outlets on social media to study its effects on political polarization. Beknazar-Yuzbashev et al. (2022) study the effects of removing toxic content on social media consumption, highlighting the trade-off between consumption and content toxicity. More recently, Allcott et al. (2024) use a similar approach to identify the reasons behind Google's dominant position in online search.

Our paper relates to a large literature on private labels. Private labels are standard practice of many offline retailers, accounting for almost 20% of products sold (Dubé, 2022). In comparison, we find that Amazon brands are only 2.5% of products sold in the Amazon order histories of our study participants, who are particularly active Amazon shoppers. An older literature has found positive benefits from the introduction of private labels in physical retail, by offering consumers cheaper alternatives of similar quality (Newmark, 1988), without negatively affecting competition (Adelman, 1949). Research has shown that there are a variety of reasons why retailers may offer private labels (Dhar and Hoch, 1997), from imitating national brands at lower prices (Scott Morton and Zettelmeyer, 2004), especially the most successful brands (ter Braak and Deleersnyder, 2018; Zhu and Liu, 2018), to ensuring quality (Hoch and Banerji, 1993) and offering a variety of premium and value options (Ter Braak, Dekimpe and

Geyskens, 2013). Relatedly, Ailawadi, Pauwels and Steenkamp (2008) find that private labels increase store loyalty.

Previous work has also demonstrated how traditional retailers often preferentially treat their private labels (Kumar et al., 2007), by physically placing them prominently (Kotler and Keller, 2016), sometimes side by side with national brands, using similar packaging, discounts, free samples, and comparative messaging (Bronnenberg et al., 2015; Bronnenberg, Dubé and Sanders, 2020; Bronnenberg, Dubé and Joo, 2022). Despite the prevalence and pro-competitive nature of these practices offline, regulators have taken a different approach towards Amazon and its private labels given the dominant position that Amazon and other similarly large platforms have in their respective markets (Dubé, 2022). In our research, we take these concerns over market power seriously and empirically assess whether and to what extent Amazon's private labels distort consumer choice or harm competition. By leveraging randomized experimental variation, we provide direct evidence on the actual impact of private labels on consumer behavior and market outcomes. A key feature of our online setting is that we can directly measure and manipulate product placement, which we find to be meaningful for consumer choice.

The rest of the paper is structured as follows. Section 2 describes our data collection methodology and presents summary statistics about our study population. In Section 3, we present reduced-form evidence on demand effects, including substitution between Amazon brands and non Amazon brands, search effort, and cross-platform effects. The section also discusses our reduced form results in light of perceptions of Amazon brands that consumers report through survey responses. Section 4 presents our structural demand model and counterfactual estimates of impacts to equilibrium prices and welfare. Section 5 concludes.

2 Data Collection

Our study uses a custom browser extension called Webmunk. Webmunk is an extension similar to an ad blocker and can be installed on the Chrome browser of any computer. The extension has three crucial functionalities. First, it prompts participants to perform specific tasks. Second, it tracks participants' browsing behaviors on pre-determined websites. Third, it allows us to manipulate participants' browsing experience to create different treatment conditions across users and estimate treatment effects of interest. We discuss each of the three functionalities as part of the study design, and then present our sample of study participants.[7]

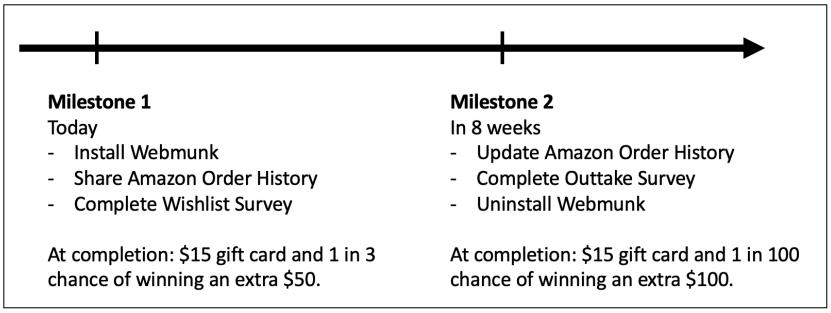
2.1 Study Design

Recruitment and Study Timeline. We recruited American adults through Facebook advertisements between mid-June and beginning of October 2023.[8] participants filled out an initial

[7]For additional technical details, see Farronato, Fradkin and Karr (2024).

[8]The study was approved under Harvard IRB21-1677.

Figure 1: Study Timeline



Qualtrics survey, which determined eligibility for the study and collected explicit participant consent to be part of the study. The survey is available in Appendix D. Three eligibility criteria are worth highlighting. First, participants must shop online primarily on a computer, given that Webmunk cannot be installed on a mobile phone or tablet. In our case, 52% of the participants satisfy this condition. Second, participants must use Chrome for their regular browsing, because Webmunk only works on Chrome. This is not a big constraint, since 76% of the respondents who shop on a computer use Chrome. Third, participants needed to be frequent Amazon shoppers (shop at least 2 to 3 times a month on Amazon).

Upon eligibility and consent to participate in the study, participants install Webmunk through the Chrome Web Store and register with their email address. The email address serves two purposes. First, we use it to check that the participant gave their explicit consent to participate in the study, by matching the email address to answers to the initial survey via the Qualtrics API. Only participants who are eligible, consented, and gave matching emails in the initial survey and on the browser extension are enrolled into the study. Second, we use the email address to send participants gift cards as compensation for participating in the study.[9]

Figure 1 presents the experiment timeline from the participants' perspective. Upon installing Webmunk, participants are asked to fill out an intake survey, engage in six incentivized shopping tasks (denoted *incentivized shopping tasks* and described in more detail below), and share their past Amazon order history from January 2022 to the day of enrollment.[10] The tasks to complete appear on the extension pop-up window, as shown in Appendix Figure C.1. At completion of these tasks, which we denote as *milestone 1*, participants receive a $15 gift card and a one in three chance of winning an extra $50 (this additional compensation is designed to make the shopping tasks incentive compatible, and is described below). Participants are then asked to keep the extension installed for eight weeks. At the end of the period, we request an update to

[9]Webmunk employs industry-standard encryption protocols so that personally identifiable information about participants and their actions is not stored in plain-text or observable in transit over the Internet. Additionally, to obfuscate identities further, the mapping between the email address and the participant's anonymous identifier is stored separately from the participant data collected by Webmunk, which are associated to the anonymous identifier.

[10]The order history is automatically crawled by Webmunk after participants click on "Upload your Amazon order history" on Webmunk's pop-up window (see Appendix Figure C.1).

their Amazon order history, a final survey designed to quantify their satisfaction for products purchased on Amazon, and their preferences towards Amazon brands. The outtake survey is also available in Appendix D. When they complete these final tasks (*milestone 2*), participants receive an additional $15 gift card and a 1/100 chance to win an extra $100.

Incentivized shopping tasks. Upon enrollment, participants are asked to fill out an initial survey, available in Appendix D. In this survey, we ask for basic demographic characteristics and shopping behavior. In addition, we ask participants to engage in a set of incentivized shopping tasks. These shopping tasks are designed to allow us to easily compare choices and behavior across all participants holding constant the product categories. This gives us substantially more statistical power than just looking at organic browsing behavior, which exhibits substantial heterogeneity, as we confirmed in pilot studies.

The shopping tasks worked as follows. First, we asked participants to select preferred categories from pre-defined lists. They were then instructed to search on Amazon for products within those categories to add to an Amazon wishlist especially created for our study. Informed by pilot studies, we selected categories (Figure C.4) within health, paper products, household items, apparel, and electronics that contain a sizable share of Amazon brands. The categories within personal care were instead included as a placebo, because we observed no Amazon-branded products in those categories. One concern with shopping tasks is that they are artificial and participants may have no need for the items they are purchasing. For this reason, we picked categories of products that are likely needed in a household. The most popular categories ended up being moisturizer in health; toilet paper in paper products; laundry detergent in household items; t-shirt in apparel; charger in electronics; and deodorant in personal care.

In order to make the product choices incentive compatible, we randomly selected one out of every three study participants who successfully completed the incentivized shopping tasks. For them, we randomly picked one product in their wishlist, we purchased it and shipped it to the address listed in the wishlist (not visible to us). The difference between $50 and the price we paid for the product was sent to the study participant in the form of an additional gift card. In practice, the average price of the products added to the wishlist is around $21. Using data from the participants' prior order histories on Amazon, we confirm that this price is similar to the price of their average past order (at $23 from Appendix Table A.2).

Randomization and data tracking. When participants install the extension, Webmunk randomizes them into one of three treatment groups. In the control group, the extension does not modify anything of the participant's browsing experience. In the Hide Amazon condition, the extension identifies and removes products associated with an Amazon brand. To do this, the extension checks the HTML for pre-determined strings related to Amazon Brands (e.g., 'Amazon Basics' and 'Goodthreads').[11]. The extension also checks if an item was flagged by Amazon

[11]We search for the following Amazon brands: 'Amazon Basic Care', 'Amazon Basics', 'Amazon Collection', 'Amazon Commercial', 'Amazon Elements', 'Amazon Essentials', '206 Collective', 'Amazing Baby', 'Buttoned Down', 'Cable Stitch', 'Core 10', 'Daily Ritual', 'Goodthreads', 'Isle Bay', 'Lark & Ro', 'Moon and Back by Hanna Andersson', 'Moun-

Table 1: Product Meta-Categories and Categories in the Incentivized Shopping Tasks

Meta-Category	Category
Health:	Pain reliever, acid reducer, allergy medication, moisturizer
Paper products:	Paper towels, envelopes, notepads, toilet paper
Household items:	Trash bags, hand soap, umbrella, laundry detergent
Apparel:	Socks, t-shirt, shorts
Electronics:	Extension cord, monitor cable, batteries, charger
Personal care:	Nail clippers, deodorant, toothpaste, comb/brush

as an Amazon brand.[12] When the extension identifies a product as an Amazon brand, it hides the HTML block corresponding to that product, and the rest of the webpage is automatically adjusted not to show any blank spaces. In the Hide Random treatment, the extension counts the Amazon-branded products appearing on the page, and randomly selects an equal number of products to be removed.

Appendix Figure C.2 displays the same search results page under the three different treatments. Panel (a) shows the search results for the control group when searching for *batteries*. Panel (b) shows that the four products identified as Amazon brands—the 5^{th}, 6^{th}, 7^{th}, and 9^{th} products in Figure C.2a—are removed from the search results and automatically replaced with the products that immediately follow them in search results. Panel c shows how four products (corresponding to the four Amazon-branded results) are removed at random: the 2^{nd}, 4^{th}, 8^{th}, and 9^{th} products in Figure C.2a. Note that when products appear in sequence—for example, in search results or in carousels of product recommendations contained at the bottom of product pages—the removal of each product is seamless.

Products can also appear in non-search locations on Amazon.com. We employ a few strategies in these cases, since we are unable to precisely remove Amazon items in certain cases without negatively affecting the rendering of the page. In both the Hide Amazon and Hide Random treatments, we completely remove product comparison tables and recommendations of frequently bought together products that appear on the product page (Figure C.3), because a mix of private labels and non-private labels often appear together. In other cases, such as when Amazon brands are featured on the landing page (Amazon.com), or are listed in wishlists or past orders, we do not remove them from either treatment. As a result, even though we remove most Amazon branded products, there is still a small chance that a participant sees and purchases an Amazon brand even in the Hide Amazon treatment. We later show that the Hide Amazon treatment is effective at reducing the availability and purchase rates of Amazon

tain Falls', 'P2N Peak Performance', 'Pinzon', 'Presto!', 'Simple Joys by Carter's', 'Solimo', and 'Spotted Zebra'.

[12]Amazon started including the Amazon brand badge to search results carrying an Amazon brand. Whenever an Amazon brand is advertised, Amazon shows the Featured from our brands flag below the product image rather than the Sponsored flag. The browser extension identifies both phrases 'Amazon Brand' and 'Featured from Our Brands' as denoting Amazon brands.

brands.

While installed, the extension tracks a selection of the URLs participants visit. In particular, when browsing Amazon.com, the extension tracks search, product, cart, checkout, and wish-list pages, removing all personally identifiable information (such as credit card information or shipping addresses) before even storing the data. For pages within Amazon.com, the extension collects information on the products appearing on the pages, and a subset of the clicks the participant performs. This data collection effort allows us to, for example, identify that a participant searched for a *coffee mug* on Amazon.com, saw a list of search results, each with specific characteristics and position on the page, visited the product pages of a few of those products, and eventually added to cart and purchased one of them. Webmunk also tracks visits to other major e-commerce sites, such as Walmart.com and Target.com, but does not record any information except for the page URL.[13] This allows us to identify the extent to which participants shop across competing e-commerce sites.

2.2 Study Population

This section presents descriptive statistics about our study population. We start with Table 2, which presents the number of participants across the various steps of the experiment. Over 14,000 participants started the eligibility survey. Of these, 2,779 qualified and formally consented to the study, but only 74% of them successfully installed Webmunk. Out of the successful installs, 75% completed the incentivized shopping tasks, meaning that they shared with us an Amazon wishlist with 6 items across the categories listed in Table 1 (*wishlist choice sample*). This wishlist choice sample is the main dataset we use in this paper.

The study experienced further participant attrition. Even for those who completed their wishlist task, we were not always able to collect their order history. As a result, the total number of individuals who completed milestone 1 was 1,255. This is close to our planned sample size of 1,000—1,200 people who would complete milestone 1.[14] Finally, not all participants kept the extension installed for the following 8 weeks. 903 participants successfully completed milestone 2 and thus finished the full study.

To understand the pattern of attrition, we compare age and gender along the experiment funnel. The share of female participants increases along the study funnel (76% to 81%), but the average age remains approximately constant around 44 years old. The large proportion of women is clearly not representative of the US population and likely related to the fact that the research was advertised as a study of online shopping behavior. Yet, the large share of women is more likely to be representative of who is responsible for household-related shopping, which is what we are interested in studying here. Indeed, according to the consumer research company

[13] A full list of domains tracked is available in Appendix B.

[14] See our pre-registration here: AEARCTR-0011370. `https://doi.org/10.1257/rct.11370-1.0`.

Table 2: Number of Participants across the Experiment Funnel

Stage	N	Percent	% Female	Avg. Age
IRB Consent	2779	100.0%	76%	44
Webmunk Install	2063	74.2%	78%	44
Wishlist Choice Sample	1549	55.7%	78%	43
Order History	1433	51.6%	81%	45
Milestone 1	1255	45.2%	81%	44
Milestone 2	903	32.5%	81%	44

Notes: This table displays the number of participants across the various steps of the experiment. To be eligible for the study, individuals needed to be US residents, shop online primarily on a computer that is not shared with other household members, use Chrome for their regular browsing, shop at least 2-3 times a month on Amazon, and not work at Amazon. Milestone 1 involves completing the incentivized shopping tasks and uploading the Amazon order history (each of the two tasks separately are displayed as indented rows). Milestone 2 denotes the completion of the final survey and the uploading of the Amazon order history at the end of the study.

Numerator, 75% of Amazon shoppers are female.[15]

For participants who completed the incentivized shopping tasks, we have more demographic characteristics. Participants reside across the US, with the largest states being California (9.1% of participants), Massachusetts (7.4%), New York (6.6%), Texas (6.1%), Pennsylvania (6%), and Florida (5.7%). Their income ranges from less than $25,000 (13% of them) to over $200,000 (9%). The vast majority of the participants are white (74%), followed by Black and Asian participants (both at 10%). A large share, 33%, have a graduate degree, and another 24% have a bachelor degree. 27% live alone, whereas 19% live in a household of at least four people. 30% of the participants have children. Perhaps the most surprising fact is the share of online spending. Based on self-reported metrics, 57% of the respondents spend at least half of their monthly spending online.

Appendix Figure C.5 compares the study population to the US population across four demographic characteristics: geographic location across states (top left), household size (top right), income (bottom left), and race (bottom right). The plots show a remarkably similar distribution between our study participants and the US population, with some minor exceptions.The North-East is overrepresented among the top states (Massachusetts, New York, Pennsylvania), whereas California, Texas, and Florida are underrepresented. For income, the tails (less than $25,000 and over $200,000) are slightly underrepresented in our study. Lastly, white and Asian populations are overrepresented, whereas Black and Hispanic populations are underrepresented.

We perform three sets of checks to verify that: 1) demographics are balanced across the treatment groups; 2) there is no differential attrition across the treatment groups; and 3) since we rely on the extension collecting participant data, there is no differential tracking across treatment groups. We find no differences in participants across these margins. We report these checks in Appendix A.1.

[15] `https://www.homepagenews.com/retail-articles/numerator-average-amazon-shopper-spent-2662-on-site-in-2023/`, accessed June 2024.

3 Reduced-Form Evidence of Demand Effects

In this section, we study the causal effects of removing Amazon brands on the shopping behavior and choices of participants. We focus on the incentivized shopping tasks, for which we have comparable data across conditions and categories. We provide evidence on how observable characteristics of selected products change when Amazon brands are not available (Subsection 3.1); how search effort is impacted (Subsection 3.2), whether consumers' propensity to shop on Amazon decreases (Subsection 3.3); and finally, how customer satisfaction for the selected products varies with the availability of Amazon brands (Section 3.4). The last subsection offers additional survey-based results that shed light on how consumers make choices on Amazon.

3.1 Substitution Patterns

We first consider the choices individuals make. Individuals for whom Amazon brands are exogenously not available must substitute to other products. Of key interest is which types of products they substitute towards. If consumers substitute towards very different products (in terms of prices and other observable characteristics), then Amazon brands are likely offering alternatives that are distinctly positioned and potentially of high value to consumers. Alternatively, if consumers substitute towards very similar products, then Amazon branded products are likely increasing competition but do not constitute a fundamentally different offering. Lastly, to the extent that Amazon self-preferences, the offering of these products could be harmful to consumers.

We study these effects with simple linear regressions. We pre-registered specifications of the following type:

$$y_{ic} = \beta Hide\_Amazon_i + \gamma_c + \epsilon_{ic}, \tag{1}$$

where y_{ic} denotes characteristics of the product chosen by participant i in category c.[16] The fixed effects γ_c are included to control for category differences (where the categories are defined as in Table 1). $Hide\_Amazon_i$ is a dummy equal to 1 if the participant is in the Hide Amazon treatment group. We compare the choices of participants in the Hide Amazon treatment group with the control and Hide Random groups separately. We cluster standard errors at the participant level.

Before turning to the results, we discuss some measurement issues when conducting this analysis. We would like to measure the characteristics of the products chosen by participants. We observe product characteristics from three different sources: search results, product pages, and wishlist pages. The observable characteristics can vary across sources, since search and wishlist pages only have a subset of product information. Furthermore, some characteristics of the product such as the price and reviews may change over time, and can result in measurement

[16] These characteristics are tracked through Webmunk. As discussed in Section 2.2, tracking is missing for a subset of the products. However, Appendix Table A.4 shows no differential tracking rates across treatment groups.

Table 3: Summary Stats

	Meta-Categories with Amazon Brands			Personal Care categories without Amazon Brands		
	Control (1)	Hide Amazon (2)	Hide Random (3)	Control (4)	Hide Amazon (5)	Hide Random (6)
Amazon Brand	0.09	0.02	0.10	0.00	0.00	0.00
Average Star Rating	4.54	4.56	4.54	4.48	4.53	4.51
Fast Delivery	0.40	0.38	0.39	0.44	0.43	0.48
Free Delivery	0.75	0.77	0.75	0.80	0.83	0.84
Nr. Reviews	27,525	18,973	25,805	12,703	14,326	13,954
Price ($)	21.08	20.45	20.61	16.69	15.80	16.49
Prime Eligible	0.60	0.60	0.62	0.66	0.65	0.68

Notes: This table presents summary statistics for the incentivized shopping tasks. The first row shows the share of products selected by participants that are Amazon brands. The other rows show the average price, average star rating, number of reviews, share of products that are Prime eligible, share of products that have free delivery, share of products that have fast delivery, and share of products that are sold by Amazon.

error issues when tracked through the wishlist pages.[17] We leverage the repeated observations across pages to fill in values when missing and disambiguate when we have multiple values for a given variable.

Table 3 presents summary statistics of the selected products, separately for meta-categories where Amazon brands are present and for personal care, where Amazon branded products do not yet exist. The first row shows that our treatment is effective at reducing the availability of Amazon brands. In the control and Hide Random groups, between 9 and 10% of products selected carry an Amazon brand. In the Hide Amazon group, that share drops to 2%.[18] On the left-hand side of the table, we highlight the key difference between the Hide Amazon group and the other experimental conditions. When Amazon brands are not available, participants select products that have accumulated a much lower number of reviews (about 19,000 compared to 26,000-27,000 accumulated reviews).

Table 4 presents the treatment effect results. Panel (a) compares the Hide Amazon treatment group with the control group. Column (1) confirms that the treatment was effective at reducing the availability of Amazon brands in the treatment group. Yet, many characteristics of the selected products by treated and control participants are not distinguishable from one another: prices, average star rating, Prime eligibility, and whether the product was sponsored in search are all comparable. On the other hand, the number of reviews is significantly lower in the Hide Amazon treatment. The removal of Amazon Brands also yields an increase in the selection of major brands, which see a 4.4 percentage-point increase in choice probability. Note that the increase in major brands is larger than what would be predicted by a simple random

[17] We have HTML screenshots of the wishlist pages as part of our verification process of task completion. These screenshots can happen with a delay of a few days from when the participant completed the task.

[18] Note that people could find Amazon branded products, for example, in their prior orders. Once they land on a product page for an Amazon brand, our extension does not forbid participants in the treatment group from selecting the item and adding it to the wishlist (or purchasing it).

Table 4: Treatment Effect Regressions

(a) Amazon vs Control

	Amazon Brand (1)	Price (2)	Reviews (3)	Stars (4)	Major Brand (5)	Prime Eligible (6)	Sponsored (7)
Hide Amazon	-0.076***	-0.758	-9,049.732***	0.030	0.044***	-0.006	-0.028
	(0.007)	(0.402)	(1,669.677)	(0.015)	(0.013)	(0.021)	(0.018)
R^2	0.085	0.109	0.111	0.077	0.296	0.116	0.032
Observations	5,200	5,120	5,135	5,193	4,789	4,734	3,482
Mean of Y	0.092	21.083	27930.659	4.538	0.36	0.603	0.416
Category fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(b) Amazon vs Random

	Amazon Brand (1)	Price (2)	Reviews (3)	Stars (4)	Major Brand (5)	Prime Eligible (6)	Sponsored (7)
Hide Amazon	-0.083***	-0.071	-7,160.784***	0.028	0.047***	-0.023	-0.017
	(0.007)	(0.398)	(1,552.692)	(0.016)	(0.013)	(0.021)	(0.018)
R^2	0.085	0.110	0.100	0.081	0.282	0.115	0.025
Observations	5,105	5,037	5,043	5,101	4,697	4,654	3,446
Mean of Y	0.098	20.613	26189.158	4.536	0.366	0.62	0.404
Category fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The pre-registered primary outcomes of interest are the following: whether the chosen product carries an Amazon brand, price, number of reviews, major brand, whether the search result is sponsored, whether the chosen product is sold by Amazon (note, we omitted this variable since we could not reliably measure it). The other outcomes are secondary outcomes.
$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$, $.p < 0.10$.

substitution pattern (diversion by share). Major brands have a 36% market share, and if 36% of the individuals who would have bought Amazon products (7.6% from column 1) bought major brands instead, the increase in major brands would have been lower, at 2.8 percentage points.

Because our extension removes sections of the product pages—such as product comparisons and frequently bought together recommendations—that may affect consumer choice beyond the simple absence of Amazon brands, Panel (b) of Table 4 compares the Hide Amazon treatment with the Hide Random treatment, both of which experience the same type of page modifications and the same sized reductions in search result products. Results are similar to those in Panel (a), although the reduction in the chosen product reviews is modestly smaller in magnitude.

Overall, the results suggest that, when Amazon brands are not available, consumers choose fairly similar alternatives, except that these alternatives have fewer reviews. Appendix Table C.3 conducts this analysis for the personal care meta-category, where there were no Amazon brands. We find no effects, consistent with proper randomization, and no unintended treatment side effects. Additionally, Appendix Table C.4 combines the observations from the personal care meta-category and all other meta-categories to estimate difference-in-differences coefficients, where the first difference is given by participants being randomized in multiple treatments, and

the second difference comes from comparing categories with and without Amazon brands. We again find similar results.

The substitution towards products with fewer reviews is the largest and most robust effect of removing Amazon brands, and is confirmed across many specifications. Its interpretation is non-trivial, however. To the extent that the number of reviews signals popularity and underlying quality, the fact that the substitute product has fewer reviews means that it is worse. However, Amazon does control which products participants see when searching on the platform, thereby potentially biasing purchases—and thus number of reviews—towards its own products. It can also solicit reviews for its own brands at a higher rate than the reviews of other brands, thereby letting its products accumulate reviews faster.[19]

3.2 Search Behavior

Even if participants find close substitutes to Amazon brands, the absence of these Amazon brands may still result in changes in search behavior. For example, if participants need to search for longer or click on more products to find a suitable substitute, this could be a sign that the absence of Amazon brands is harmful to the participant experience. One of the advantages of our setup is that we can observe all search behavior.

To measure the effect of the treatment on search behavior, we consider several outcomes. First, we look at the number of searches participants perform for each category of shopping task. We expect that if consumers are not able to find what they are looking for with an initial search, then they may refine the search in a variety of ways. Searches with different keywords are of particular interest.[20] Second, we look at the number of unique products participants visit. This is a measure of the consideration set. Third, we look at the total number of product pages participants visit (including duplicate visits to a specific product page). This is a measure of overall search effort and deliberation.

In order to map search terms and product pages to our categories in the incentivized shopping tasks, we need to map browsing behavior on Amazon to activity related to the incentivized tasks. We first restrict attention to website activity between the start and end times of the Qualtrics survey that participants fill out as they complete the incentivized shopping tasks. Then, we use OpenAI's gpt4 model to classify search terms (for searches) and product titles (for product pages) to the 23 categories from Table 1 (or to an "Other" category). With this mapping, for every category in the incentivized tasks we can compute the number of search terms, the number of product pages visited, and the number of unique ASINs (Amazon product identifiers) visited. We test whether these outcomes are different between Hide Amazon and

[19] Using data from Keepa, we have analyzed the review accumulation pattern of Amazon branded products compared to other similar products, and we find that Amazon brands show a steeper adoption rate in every period, from first review to the most recent time.

[20] In about 15% of searches, participants use search filters, such as price or brand filters that are commonly available on Amazon.

Table 5: Effects on Search

	Number of URLs (1)	Number of ASINs (2)	Number of Product Page Visits (3)
Hide Amazon	-0.092	-0.070	-0.108
	(0.084)	(0.086)	(0.112)
R^2	0.058	0.151	0.128
Observations	5,260	5,260	5,260
Mean of Y	1.685	1.621	2.068
Category fixed effects	Yes	Yes	Yes

Notes: This table presents regressions of search outcomes on treatment status (Hide Amazon or control). The number of search pages refers to the number of distinct search pages visited (URLs), number of ASINs visited is the unique number of products visited, and number of product pages is the number of product pages visited, including duplicates. $p * ** < 0.001$; $**p < 0.01$; $*p < .05$.

the control group.

Table 5 displays the results. We find no statistically significant differences in the number of searches, unique products visited, or total product pages visited across the treatment groups. The absence of Amazon brands does not lead to meaningful changes in search behavior. The point estimates are all small in size and statistically indistinguishable from zero. When Amazon products are not available, people search similarly, indicating that they find suitable substitutes without much additional effort.

3.3 Cross-Platform Effects

The presence of private label brands may attract consumers to Amazon instead of other websites, even when a consumer ultimately purchases another product. In this way, private label brands can play an important role in increasing overall demand for all products on a platform, and this could drive cross-platform competitive effects.

To assess whether Amazon brands affect cross-platform consumer behavior, we use the URLs visited by participants during the 8-week organic shopping period, after the incentivized shopping task. During this window, participants are not asked to complete any task; the Webmunk extension collects data on shopping behavior passively. However, the randomization into three conditions: Hide Amazon, Hide Random, and Control, persists during this period.

For each participant, we calculate the share of URL visits that belong to the Amazon.com domain out of the all retail websites.[21] The full list of tracked domains is in Appendix B. We then regress these shares on treatment indicators to determine whether removing Amazon brands has an influence on cross-platform activity.

[21] Since we observe participant activity in sequence, we determine new website visits based on whether it a different URL from the one that was previously visited. Thus, a specific URL, such as the Amazon home page, may count as multiple webpages for a single participant on a given day.

Table 6: Effects on Amazon Traffic Share

	Amazon vs. All (1)	Amazon vs. Target and Walmart (2)	Amazon vs. eBay (3)
Constant	0.529***	0.783***	0.919***
	(0.014)	(0.013)	(0.008)
Hide Amazon	0.002	0.000	-0.004
	(0.019)	(0.019)	(0.012)
Hide Random	0.004	-0.003	0.002
	(0.020)	(0.019)	(0.012)
R^2	0.000	0.000	0.000
Observations	1,237	1,237	1,237

Notes: This regression presents treatment effect regression about participants' satisfaction with price, product quality, and overall (on a scale from 1 to 5). $p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table 6 reports the results. The Constant coefficient in column (1) indicates that Amazon.com accounts for 53 percent of all retail URLs visits tracked by our extension. The near-zero coefficients on Hide Amazon and Hide Random (which should be interpreted as marginal effects compared to the Control group) indicate that neither treatment group saw meaningful changes in the share of website visits to Amazon. The standard errors allow us to reject the hypothesis that the presence of Amazon brands have a moderate effect on Amazon's website traffic, relative to other retailers.

We consider specific platform substitution channels in columns (2) and (3). For column (2), we construct the share of Amazon URL visits out of a narrower set of domains: Amazon.com, Target.com, and Walmart.com. For column (3), we construct the share of Amazon URL visits out of visits to Amazon and eBay. Amazon has a 78 percent share of webpage visits out of the group that includes Target and Walmart, and it has a 92 percent share of out Amazon and eBay. As in column (1), we do not find evidence that either treatment affected Amazon's website traffic relative to these other retailers, and the standard errors are precise enough to reject moderate decreases in traffic.

Additionally, we provide corroborating evidence using survey responses about whether participants would shop again on Amazon. Table 7 presents the results for each of the 6 product categories. The outcome is the participant's answer to the following question: "If you had to buy products in these categories again, would you shop for them again on Amazon.com?" There were five possible answers, from "Definitely not on Amazon.com" to "Definitely yes." We convert the 5 categories to a Likert scale where 5 is definitely yes. While the propensity to shop on Amazon for these products varies by categories, with the lowest for apparel and the highest for electronics, there is no differential effect of removing Amazon brands—as indicated by the Hide Amazon coefficients—from the choice set.

Our results suggest that Amazon private label brands do not play a large role in steering consumers to the Amazon platform in the short run. It may well be the case that, over a horizon

Table 7: Effects on Shopping Again on Amazon – Survey Evidence

	Personal Care (1)	Electronics (2)	Apparel (3)	Household Items (4)	Paper Products (5)	Health (6)
Constant	4.192***	4.302***	3.801***	4.178***	3.900***	4.050***
	(0.044)	(0.038)	(0.049)	(0.043)	(0.052)	(0.046)
Hide Amazon	-0.062	-0.009	-0.063	-0.053	-0.041	-0.012
	(0.062)	(0.054)	(0.069)	(0.060)	(0.073)	(0.065)
R^2	0.001	0.000	0.001	0.001	0.000	0.000
Observations	1,037	1,037	1,037	1,037	1,037	1,037

Notes: This table presents regressions of the answer to the following question: "if you had to buy products in these categories again, would you shop for them again on Amazon.com?" There were five possible answers, from "Definitely not on Amazon.com" to "Definitely yes." We convert the 5 categories to a Likert scale where 5 is definitely yes. $p * ** < 0.001$; $**p < 0.01$; $*p < .05$.

longer than the 8 weeks in our study, the absence of Amazon brands may have a larger effect.

3.4 Consumer Satisfaction and Additional Survey Evidence

Although we find no differences in search behavior across treatment groups, it is possible that participants are less satisfied with the products they choose when Amazon brands are not available. To study this, in the final survey, we asked a variety of questions about participant satisfaction with the products they purchased on Amazon (including, when applicable, the product we purchased from their wishlist), their preferences towards Amazon brands, and their general shopping behavior.

First, for those who received an item from the incentivized shopping tasks, we asked how they would rate the product, overall and separately for price and quality.[22] Table 8 displays the results of regressions to compare satisfaction (on a scale from 1 to 5) across treatment conditions. Note that the number of observations is substantially lower since a) only a third of the participants received an item from their wishlist, and b) there was substantial attrition between milestone 1 and milestone 2 (see Table 2). We find no differences in participant satisfaction, overall nor for price or quality separately. Even if the statistical power of this analysis is limited due to small sample size, the estimates exclude large changes in satisfaction.

Next, we analyze a set of survey questions designed to assess participants' preferences for Amazon brands such as Amazon Basics, Presto!, and Solimo. Half of the participants were asked how much they would be willing to pay for an Amazon-branded product with the same characteristics as a product they desired. To account for reference price effects, the price of the desired product was randomly set at either $10 or $25 with equal probability. The other half of the participants were asked the reverse question–how much they would be willing to pay for

[22]Delivery speed is an important aspect of product quality that consumers value. However, it is not directly relevant in the context of the incentivized shopping tasks, as the products were purchased on their behalf with a delay after participants made their selection.

Table 8: Effects of Treatment on Participant Satisfaction

	Price (1)	Product Quality (2)	Overall Rating (3)
Constant	4.039***	4.416***	4.364***
	(0.095)	(0.078)	(0.074)
Hide Amazon	-0.002	0.152	0.093
	(0.132)	(0.109)	(0.103)
R^2	0.000	0.012	0.005
Observations	158	158	158

Notes: This regression presents treatment effect regression about participants' satisfaction with price, product quality, and overall (on a scale from 1 to 5). $p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

a non-Amazon product that matched all the characteristics of an Amazon-branded item they wanted.

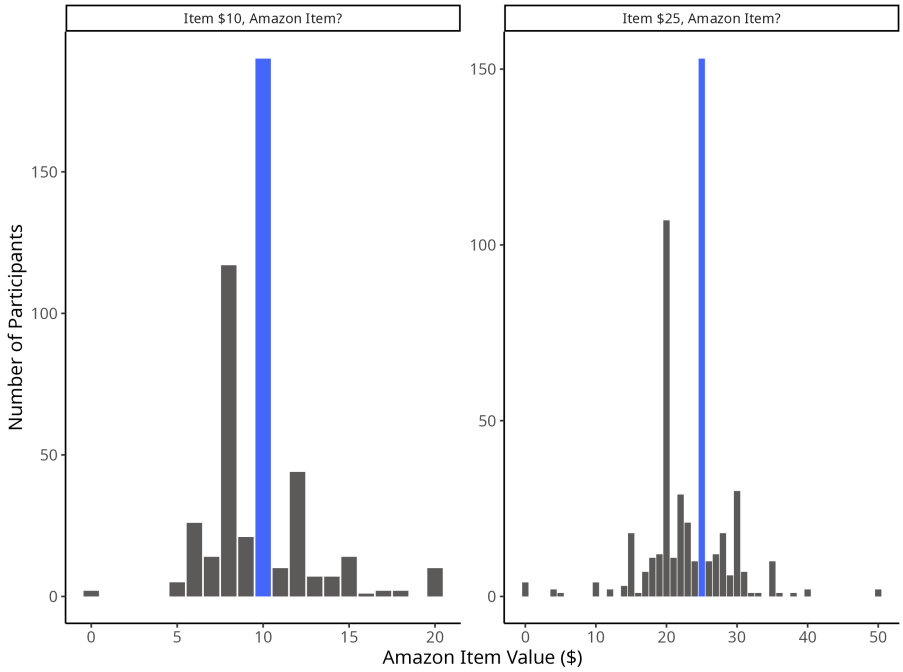
Figure 2 displays the distributions of these responses. The left panel plots willingness to pay for the Amazon product when the reference item costs $10. The right panel is analogous for a $25 reference item. A large share of respondents value an Amazon branded product exactly the same as another product. Yet, there is large heterogeneity above and below the reference value. On average, participants are willing to pay less for an Amazon brand than a comparable alternative. When the alternative costs $10, participants value Amazon items -$0.20 less. When the alternative costs $25, participants value Amazon brands -$1.75 less. We obtain similar results for the alternative question wording, in which people are asked their willingness to pay for a non-Amazon item when an Amazon product is the one they want (Appendix Figure C.6).

These preferences are greatly affected by slight changes in ratings and delivery characteristics. To test this, we asked participants how they may trade off Amazon brand with ratings and delivery speed. We first consider the trade off between Amazon brand and ratings. We asked the willingness to pay for an Amazon brand if it had 0.5 lower star rating than the alternative product (4 versus 4.5 stars). We find that consumers are highly sensitive to the rating difference. In particular, for a $10 reference item, their value for the Amazon branded product drops from $9.80 when star ratings are the same (Figure 2) to $8.25 when ratings are 0.5 stars lower. For a $25 reference product, the difference decreases from -$1.75 to -$5.49.

We find that participants also care about delivery speed, but less so than ratings. We asked how much they would be willing to pay for an Amazon product with a faster delivery speed (1 day vs 3 days for the alternative product). Participants were willing to pay $0.59 more for the Amazon product in the $10 condition, and -$0.49 less in the $25 condition.

To finish, we asked individuals to list the three most important factors when shopping online. Figure 3 displays the distribution of responses. Price and value for money were the most important, with more than 50% of respondents listing them as a top factor. Delivery speed, quality, and ratings were chosen by almost 40% of respondents, which corroborates the results on willingness to pay between Amazon and non-Amazon brands described above. Easy returns

Figure 2: Willingness to Pay for Amazon Branded Products



Notes: This plot presents the distribution of participants' responses to hypothetical questions in which they are asked their willingness to pay for an Amazon branded product, if a similar non-Amazon branded product they want costs either $10 (left) or $25 (right).

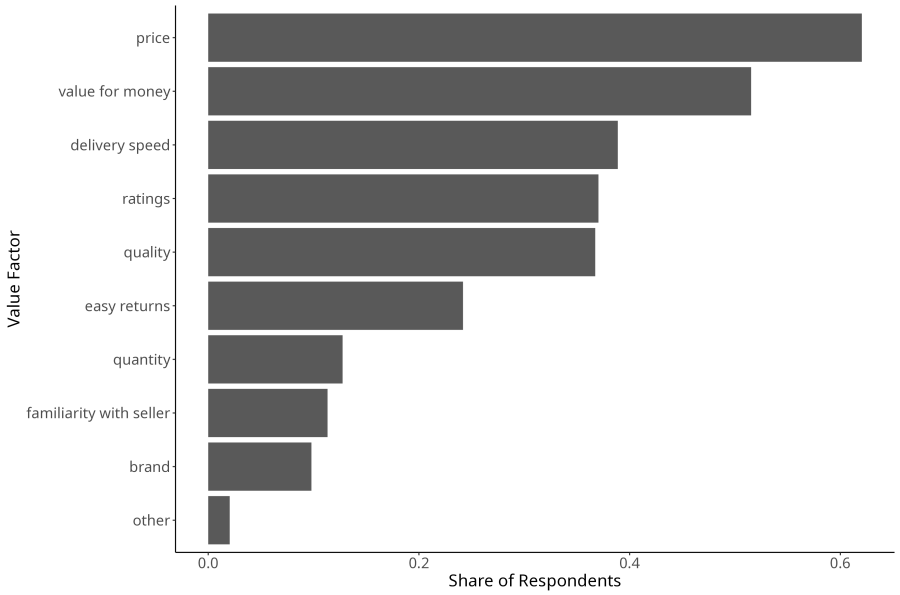
was also important for more than 20% of respondents. Lastly, quantity, familiarity with seller, and brand were the least important product features.

The survey results provide additional evidence that Amazon branded products are not much worse than alternative products on average, but that there is large heterogeneity around that mean. A sizable group of people is willing to pay more for Amazon brands than similar alternatives. We also find that relative preferences for Amazon brands versus other products can be offset by differences in delivery speed and ratings, which is consistent with our findings on substitution patterns described in Section 3.

4 Model and Counterfactuals

We develop a model of demand and supply that will allow us to estimate potential welfare effects of private labels. In our model, consumers have heterogeneous preferences and choose among differentiated goods. Suppliers set prices to maximize profits conditional on the set of competing products observed by the consumer and how the products appear in search (i.e., the search rankings). We use the estimated demand model along with the supply-side assumptions

Figure 3: Share of Respondents Valuing Each Factor



Notes: This plot presents the share of respondents indicating that a given factor was one of the ones they valued the most when making purchasing decisions.

to calculate counterfactual equilibrium prices and consumer choice probabilities, allowing us to assess the welfare effects of private labels and separate these effects into changes in product assortment and changes in pricing pressure.

4.1 Demand and Supply

We assume that consumers make a discrete choice over the options they observe while searching for a product in a category. These products could be observed either on search results pages or on product pages. For a given product category from the incentivized shopping tasks, consumer i's consideration set J_i includes all ASINs appearing on search results pages, product pages (including recommended alternatives below the main product), and the chosen product. We define the sequence of pages visited in a category before selecting a product as a single "search", even if, for example, the consumer enters multiple distinct search terms in this sequence of pages.

For a given search s, consumer i's utility for product j is given by:

$$u_{ijs} = \alpha_i p_{js} + \mathbf{x}_{js}\beta_i + \ \zeta_i A_j + \gamma r_{js} + \epsilon_{ijs}$$

where p_{js} is price, $\mathbf{x}_{js}$ is a vector of observed product characteristics, A_j is an indicator for whether or not the product is an Amazon brand, and r_{js} is the log search rank observed by the consumer when selecting options, which accounts for the fact that consumers are more likely

to buy products near the top of search results. We allow preference parameters $(\alpha_i, \beta_i, \zeta_i)$ to vary across individuals by demographic characteristics. ϵ_{ijs} is distributed Type I extreme value, and independent on product characteristics, rank, and price. We also assume that consumers can choose an outside option with mean utility of 0. This formulation yields the standard mixed logit choice probabilities.

Our demand model abstracts away from the details of the search process. For the purposes of the counterfactuals we consider (removing products), we think this assumption is reasonable since our experimental results yielded precise null treatment effects on measures of search behavior (i.e., clicks on product pages, number of searches).

On the supply side, we assume that multi-product brands (e.g., Amazon, Duracell) set prices to maximize profits separately for each search, while treating the consumer demographics as unobserved. This assumption reflects the fact that sellers cannot generate search-specific prices on Amazon, and instead sellers treat each possible search as drawn at random.[23] We use this assumption to back out marginal costs for each product when simulating counterfactual equilibrium prices.

For search ranks, we assume that when products are removed, remaining products slide up to fill in the missing search result slots, mirroring the behavior of our web extension. A key consideration that we do not account for in our counterfactuals is the role of the platform in ordering products for consumers to see. In theory, the platform's ranking policies can have equilibrium effects on pricing decisions by the suppliers, and prices and ranks would both be endogenously determined in equilibrium. Our current specification does not explicitly account for this, but Amazon's existing ranking strategies will determine whether we find that removing Amazon brands is beneficial—which could arise if they receive preferential placement over better alternatives—or harmful, if they exert beneficial pricing pressure and their ranking aligns with consumer preferences.

4.2 Empirical Specification and Estimation

In addition to price and log search rank, the product characteristics we include in estimation are the average star rating, log number of reviews, and indicators for Amazon brand, major brand, Prime eligibility, fast delivery (within one day), and whether the listing is sponsored. We also include an indicator for whether the product appears on a search page (some product pages may be navigated to from another product page) and whether the search rank is missing, which occurs for a small fraction of products that appear on a search page.[24] We construct each of these variables by identifying the window in which a consumer was searching for a

[23] This assumption is equivalent to one in which a population of consumers all make identical searches and search results are not personalized. With our estimates, we are able to test whether search results are indeed personalized according to user demographics, and we do not find any evidence of this personalization, in line with public statements by Amazon.

[24] We code missing search ranks with a value of 0, and we construct r_{js} as $\ln(\text{search rank} + 1)$.

given product category and the eligible products in the category, and then aggregating over instances in which an ASIN is observed in this search to obtain a unique consumer-search-ASIN combination.

To account for the fact that products that show up higher in search rankings may be of higher quality in ways that we do not observe, we exploit variation introduced by our experiment. We include in $\mathbf{x}_{js}$ the search rank that a product was initially assigned, before the browser extension intervened to hide products. After controlling for the initial assigned rank, the coefficient on the search rank shown to the consumer r_{js} (realized rank), provides an estimate of the causal effect of search rank on utility, γ. We interpret γ as capturing the search cost of considering products lower on the page.[25] The difference between assigned and realized rank is due to products being hidden for our treatment groups, and the coefficient on the assigned rank allows us to control for the correlation between rank and unobserved quality.[26]

To select our estimation sample, we begin with 1,157 consumers who were assigned to one of our three experimental treatment groups.[27] We include the following consumer characteristics to construct individual preference parameters: log household income, presence of children at home, Amazon Prime membership, and whether the participant had purchased an Amazon brand prior to the experiment. We allow price, Amazon brand, and star rating coefficients to vary with all of these demographics, we also allow utility for Prime eligible products to vary with Prime subscriber status. We also include two "unobserved" demographics that are drawn independently from a standard normal distribution and influence the price and Amazon brand coefficients, respectively. In the current specification, we restrict the rest of the demographic interactions to zero.

We make some additional data cleaning steps to generate our estimation data. We drop products that are missing price or star ratings, and, due to our experimental design, we drop products with prices less than \$2 and greater than \$50. Finally, we keep searches for which the consumer observes at least 5 product options, the consumer sees products from multiple brands, and the consumer makes a single product selection in our wishlist experiment. After these steps, we obtain a mean of 5.5 searches per consumer, with a median of 67 products in the consideration set per search.

Conditional on the vector of 28 demand parameters $(\alpha_i, \beta_i, \zeta_i, \gamma)$, we construct choice prob-

[25] For the purpose of welfare calculations, this interpretation implies that we include γr_{js} in consumer utility in all of our counterfactuals.

[26] We note that, because we observe many products in search and only have a limited sample size, we are unable to use fixed effects to account for product-level unobserved heterogeneity. Instead, in addition to assigned rank, we rely on the observed product characteristics (including measures of quality) to capture how buyers value products on Amazon.

[27] The number of participants included in the estimation sample is lower than the number of participants who completed milestone 1 from Table 2. This is because for some participants, our extension did not track any data, either because they turned it off or because they used a different electronic device from the one where they installed Webmunk. Appendix Table A.4 shows that the rate at which participants are tracked is not different across treatment conditions.

abilities for each individual for each product in each realized search, and we use these choice probabilities to form a empirical likelihood. We solve for the parameters that maximize the sum of the log likelihood, subject to two constraints that we introduce to address limitations in our experimental data. First, we do not have an instrument for price. To address potential price endogeneity, we calibrate the mean elasticity to a value of -5, which we set from survey-based estimates of seller margins obtained by Scout (2022) and similarly used by Yu (2024). We implement this constraint by penalizing deviations from the calibrated value in the optimization routine.

A second limitation of our data is that all experiment participants had to make a choice among the products from Amazon, so we cannot directly measure substitution to the outside option from the wishlist data. Instead, we use our eight-week observational period to measure website traffic to Amazon and other retailers, as shown in Table 6, and we use the share of URL visits to other retailers as a proxy for the outside option share (i.e., 0.47). We constrain our estimates to hit this target by imposing a penalty in the estimation objective function if the implied outside option share deviates from this value. We include a constant in $\mathbf{x}_{js}$, which allows our demand estimates to hit this calibrated value exactly.

Estimated Demand Parameters

Table 9 reports the estimated point estimates and standard errors. Column (1) shows the mean effects of the covariates. The coefficients on price and realized search rank are negative, as expected. The coefficient on assigned search rank is also negative, indicating that products that are initially assigned higher search rankings yield greater utility (separately from the realized rank on a page). Average star rating, log number of reviews, Prime eligibility, and fast delivery have positive effects on utility. Our estimates yield a negative effect of Amazon brand and a smaller negative effect on major brand. One note is that these values are conditional on other characteristics. Amazon brands may still yield higher mean utility on average if they have higher average star ratings and a greater number of reviews.

Columns (2) through (5) report interactions between observed consumer characteristics and covariates. We see moderate variation in price and star rating coefficients across consumers, with the largest coefficients on the indicator for Prime subscriber. The coefficients on Amazon brand also varies across individuals, with higher valuations of the brand for consumers with children and those that had bought an Amazon brand previously. We find small coefficients on the unobserved demographics interacted with price and Amazon brand in columns (6) and (7), which suggests that our observed demographics may capture a reasonable amount of the variation in preferences across consumers.

Table 9: Demand Estimates

Variable	Mean	Interactions with Demographics					
		ln(Income)	Children	Prime Subscriber	Prior AB	Unobs. 1	Unobs. 2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Price	-0.2593	0.0093	0.0247	0.0487	0.0155	-0.0014	-
	(0.0046)	(0.0054)	(0.0095)	(0.0146)	(0.0100)	(0.0023)	
Constant	-3.2505	-	-	-	-	-	-
	(0.4785)						
Stars	0.8965	-0.0173	-0.0766	-0.2646	-0.0402	-	-
	(0.1041)	(0.0145)	(0.0265)	(0.0425)	(0.0268)		
ln(Reviews)	0.0778	-	-	-	-	-	-
	(0.0089)						
Prime	0.7682	-	-	0.5922	-	-	-
	(0.0918)			(0.1818)			
Fast Delivery	0.7055	-	-	-	-	-	-
	(0.0470)						
Amazon Brand	-1.0853	-0.1182	0.4359	0.0941	0.8518	-	-0.0814
	(0.0951)	(0.1033)	(0.1910)	(0.2753)	(0.2317)		(0.0867)
Major Brand	-0.3614	-	-	-	-	-	-
	(0.0459)						
Sponsored	-3.6720	-	-	-	-	-	-
	(0.1004)						
In Search Results	1.5529	-	-	-	-	-	-
	(0.0820)						
ln(Rank Realized)	-1.0206	-	-	-	-	-	-
	(0.1530)						
ln(Rank Assigned)	-0.5909	-	-	-	-	-	-
	(0.1511)						
Search Rank Missing	0.8235	-	-	-	-	-	-
	(0.3482)						

Notes: Table presents parameter estimates for our demand model. Column (1) presents the mean coefficients, while columns (2) through (7) present interactions of participant demographics with product characteristics. Prior AB indicates that the consumer had previously purchased an Amazon Brand. The final two columns represent unobserved demographics, which are drawn independently from a standard normal distribution.

Elasticities and Marginal Costs

Because the realized ranks in our treatment groups diverged from the ranks normally seen by consumers on the platform, we use only data from the 388 consumers in our control group for subsequent results on elasticities and marginal costs. Integrating across consumers, we obtain a mean elasticity of -4.91, which is similar to the calibrated mean own-price elasticity for consumer specific realized searches of -5.0. Our estimates provide variation in own price elasticities across products: the 10th and 90th percentiles of the own price elasticity are -8.22 and -2.14, respectively.

We estimate marginal costs by inverting the profit maximizing first-order conditions for each (multi-product) brand. For Amazon, we assign all of Amazon's brands to a single brand/firm. For other products, we obtain brand information from Keepa for about 95 percent of the ob-

Table 10: Estimated Marginal Costs and Own-Price Elasticities

Variable	Mean	Percentiles				
		10^{th}	25^{th}	50^{th}	75^{th}	90^{th}
Price ($)	19.41	8.45	11.99	17.97	24.99	32.99
Marginal Cost ($)	15.17	4.09	8.09	13.83	21.02	28.94
Own-Price Elasticity	-4.91	-8.22	-6.32	-4.59	-3.11	-2.14

Notes: Table displays the estimate marginal costs and own-price elasticities for products in the 2133 searches from the 388 consumers in our control group. We integrate over consumer demographics when calculating elasticities and marginal costs.

servations, and we assume the other products are owned by single-product firms. We do not model the commission rate structure or other features of the Amazon platform.

The mean marginal cost is $15.17, as compared with a mean price of $19.41. This implies a mean margin of $4.24, or Lerner index of 0.22. Summary statistics for the estimated marginal costs and own-price elasticities are displayed in Table 10.

4.3 Counterfactuals and Welfare

We use the model to consider counterfactuals in which products are no longer available. In our main counterfactual, we remove all Amazon brands. We adjust search rankings for the remaining products by moving them up into vacated slots. Given the adjusted consideration set, the new search rankings, and the estimated marginal costs, we re-compute equilibrium prices without Amazon brands.

We construct the average consumer surplus by integrating over the demographics of all 388 consumers in the control group across all searches. We start with the 2,133 consumer-category searches from the control group, and narrow our focus to the 1,770 searches where Amazon brands are present. In the placebo meta-category of personal care, where Amazon had not yet widely introduced its own brands, effects are near-zero by design. Within the non-placebo categories in this sample, 4.8 percent of products are Amazon brands. In each case, we compute consumer surplus in dollar terms following Small and Rosen (1981).

Table 11 presents estimates of consumer surplus across scenarios.[28] In the baseline, across the 19 product categories with Amazon brands, we estimate that consumers receive an average of $3.12 in consumer surplus per completed search. Removing Amazon products reduces consumer surplus by 3.8 percent while increasing prices by 0.6 percent, as shown in the second row. This implies that Amazon's presence contributes to lower equilibrium prices. For comparison, we present an alternative scenario where Amazon brands are removed and search ranks adjust, but prices are unchanged (third row). In this case, consumer surplus would decline by 2.96 percent. Thus, price effects accounts for 22 percent of the total benefits that Amazon products

[28] In our current results, 11 searches with an unusually large number of products (mean of 789) did not converge, leaving us with 1,759 searches in our analysis.

Table 11: Counterfactual Welfare Effects

Scenario	Consumer Surplus ($)	% Change in CS	% Change in Prices	Inside Share
Baseline	3.12	—	—	0.488
Remove Amazon	3.00	-3.80	0.61	0.475
Remove Amazon (No Price Adj.)	3.03	-2.96	0.00	0.478
Remove Random	3.05	-2.29	0.00	0.480

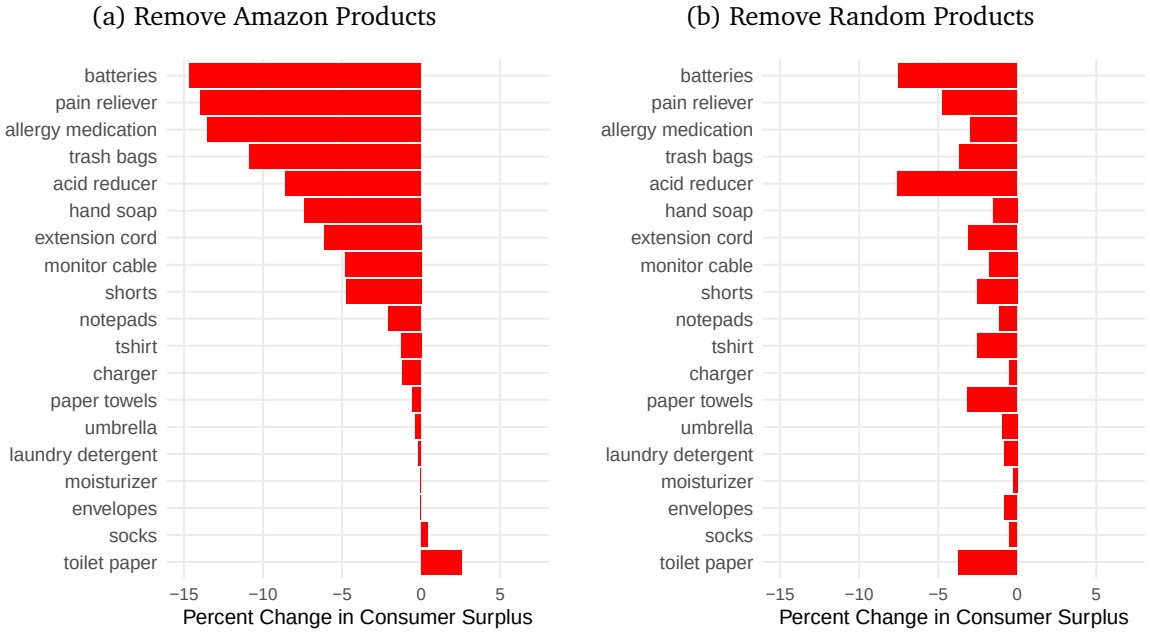
Notes: This table reports the effects of removing products on consumer welfare, excluding placebo personal care categories (nail clippers, deodorant, toothpaste, and comb/brush). The second row reports the impacts of removing Amazon products, adjusting search ranks, and computing equilibrium prices. Impacts without equilibrium price adjustments are reported in the third row. For comparison, the impacts of removing products at random and re-computing equilibrium prices are reported in the fourth row. Consumer surplus is calculated following Small and Rosen (1981). Percent changes are reported relative to the baseline scenario. Price changes are weighted by choice probabilities (shares). Inside share represents the total probability of purchasing any product within the choice set.

provide to consumers in our sample. While the average 0.6 percent price increase from removing Amazon products is small, higher-ranked products do experience larger effects. Products in the top eight realized search position see an average price increases of 1.0 percent. Finally, the removal of Amazon-branded products results in a small shift toward the outside option.

As a benchmark, we also conduct a counterfactual in which we remove products at random (fourth row in Table 11). Specifically, we identify the number of Amazon brands observed in each search, and we remove an equal number of products at random from that search (which may include some Amazon brands). We then adjust search ranks and compute new equilibrium prices in the same manner as above. On average, the removal of random products reduces consumer surplus by 2.3 percent, or about 60 percent of the impact of removing Amazon products. This implies that Amazon branded products provide greater consumer surplus than a random set of products.

The aggregate results mask sizable heterogeneity across product categories. Figure 4 reports the category-level changes in consumer surplus from removing Amazon products (panel (a)) and removing random products (panel (b)). Removing products at random consistently results in small to moderate consumer welfare reductions, ranging from 0 to 7.6 percent. By contrast, removing Amazon products yields substantially larger reductions in consumer surplus for some categories, while in others it yields lesser effects than removing products at random. For two categories, removing Amazon brands yields increases consumer surplus. For batteries, pain relievers, allergy medications, and trash bags, the counterfactuals imply that Amazon brands increase consumer welfare by over 10 percent. For laundry detergent, moisturizer, and envelopes, we estimate that the presence of Amazon products has a neutral effect on consumer surplus. For socks and paper towels, we estimate that consumer surplus increases when Amazon products are removed. This increase occurs despite higher prices in these categories following the removal of Amazon brands. It is driven by higher-quality products moving up in search results, which more than compensates for the price increase.

Figure 4: Category-Level Effects on Consumer Surplus



Notes: Figure reports the percent change in consumer surplus from removing Amazon products (panel (a)) and random products (panel (b)). Consumer surplus is calculated following Small and Rosen (1981) after search ranks are adjusted and new equilibrium prices are computed. Categories are sorted in ascending order based on the impact from the removal of Amazon products.

These results imply that the value of Amazon products are heterogeneous across categories. In categories such as pain relievers and batteries, Amazon products are valued more by consumers than the average third-party product, and their removal yields consumer harms substantially greater than removing random products. In categories like socks and toilet paper, Amazon products are not valued as much as rival third-party products. Removing Amazon products in these cases moves the third-party products higher up in the search rankings, causing consumers to choose them more often, and increasing consumer surplus. In all categories, the presence of Amazon brands reduces equilibrium prices, but this effect does not offset the quality effect in every category.

These results suggest that policymakers should exercise caution when assessing the role of vertically integrated products on consumer welfare. Our counterfactuals imply that consumer surplus effects cannot easily be predicted by the number of such products in a category. Batteries, pain relievers, and allergy medications all have a substantial number of vertically integrated products (13 percent, 11 percent, and 9 percent of observed products in a search, respectively), and these products yield substantial benefits to consumers. But categories like envelopes (8 percent) and toilet paper (7 percent) also have a substantial amount of Amazon products, and their presence (especially, their positioning in search results) may steer consumers away from preferred products and possibly hurt consumer welfare. We are able to provide an assessment

of the benefits by estimating underlying utility parameters and simulating counterfactual prices and choices.

Our welfare analysis is subject to caveats. We consider short-run effects where only prices can adjust. We do not address how non-price characteristics might change in response to these policies, and we do not address how new products might enter in response to the removal of products. Other supply-side features that we abstract away from and may influence short-run welfare are the determination of sponsored products, adjustments to the order of search results in response to changing consideration sets and prices, and strategies that Amazon might use to incentivize sellers to adjust prices in ways that fall outside of the Bertrand-Nash assumption we maintain here.

5 Conclusion

In this paper, we explore the effects of removing Amazon brands from the choice set of Amazon consumers using a field experiment. We find that participants have ample choices in categories where Amazon brands exist. As a result, removing Amazon branded products leads participants to select substitutes with fairly similar characteristics, from price to ratings to delivery speed. A notable exception is that in the absence of Amazon brands, the alternative selection has a lower number of accumulated reviews. Survey evidence from our experiment supports this interpretation. Consumers typically care most about price, quality, and delivery speed. Their stated preference for Amazon branded products is typically slightly lower than their preference for non-Amazon branded products, with a large amount of heterogeneity across participants.

In addition, we find that removing Amazon brands does not lead to significant changes in consumer search behavior. The number of searches performed, the number of unique products viewed, and the total number of product pages visited remain largely unchanged, suggesting that participants can find alternative products without additional search effort. Furthermore, we observe no increase in shopping at other retailers, indicating that consumers remain within Amazon's ecosystem even when its private labels are unavailable, at least within a couple of months since intervention. Our survey evidence also confirms that consumer satisfaction with purchased products does not differ meaningfully between treatment groups, reinforcing the conclusion that substitutes are perceived as largely comparable.

Motivated by these reduced-form findings, we estimate a structural demand model to quantify the equilibrium effects of Amazon brands on consumer welfare. Our counterfactual simulations indicate that removing Amazon products results in a 3.8 percent decrease in consumer surplus. Roughly one quarter of this effect stems from the price pressure Amazon brands exert on their competitors. However, we observe significant heterogeneity across product categories: while removing Amazon brands leads to substantial consumer surplus losses in categories such as pain relievers, batteries, and allergy medications, two categories, socks and toilet paper,

experience modest increases in consumer surplus. In these cases, substitute products taking the place of Amazon brands in search results are perceived as better by consumers, and their improved position offsets the price increase.

These findings highlight the complex trade-offs involved in platform vertical integration strategies. While Amazon's private labels generally enhance competition and provide price benefits, their impact varies across categories. Our study underscores the importance of empirical analysis in evaluating policies toward vertically integrated platforms, as blanket restrictions on private labels may have unintended consequences for consumer welfare.

Our analysis is subject to limitations. We evaluate only the short-term effects of removing Amazon brands, meaning we do not capture how vertical integration influences third-party sellers' long-term pricing strategies, advertising decisions, innovation efforts, or market entry and exit. The effects we observe are also shaped by the types of categories Amazon chooses to enter with its private labels. These tend to be well-established product categories, such as toilet paper or batteries, where numerous alternatives already exist. In these cases, the benefits of entry stem less from product innovation and more from economies of scale and fast delivery—advantages that Amazon leverages to offer lower prices and faster shipping, benefiting consumers. However, if these advantages are accompanied by self-preferencing, the net effect on consumers may not always be positive. In contrast, for categories such as designer handbags or specialty cameras, product differentiation and innovation may play a more critical role than cost reductions or delivery speed, making the competitive dynamics fundamentally different.

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A Additional Data Details

A.1 Balance Checks

Table A.1: Covariate Balance—Demographics

	White (1)	Income Code (1-7) (2)	Household Size (3)	Spend Share Code (1-4) (4)	Prime Member (5)	Ad Blocker (6)
Constant	0.744***	4.139***	2.426***	2.829***	0.828***	0.242***
	(0.019)	(0.076)	(0.055)	(0.037)	(0.017)	(0.019)
Hide Amazon	-0.018	0.096	-0.042	-0.066	0.001	-0.003
	(0.027)	(0.106)	(0.076)	(0.052)	(0.023)	(0.026)
Hide Random	-0.014	-0.054	0.127	-0.031	0.005	0.003
	(0.028)	(0.108)	(0.078)	(0.054)	(0.024)	(0.027)
R^2	0.000	0.001	0.003	0.001	0.000	0.000
Observations	1,549	1,359	1,549	1,549	1,549	1,549

Notes: This table presents regressions where the outcome variable is regressed on treatment assignment. An observation is a participant who answered these questions in the intake survey. Restricting attention to participants who successfully completed the incentivized shopping tasks or milestone 1 does not change the results.
$^{***}p < 0.01$; $^{**}p < 0.05$.

We perform three sets of checks to verify that: 1) demographics are balanced across the treatment groups; 2) there is no differential attrition across the treatment groups; and 3) since we rely on the extension collecting participant data, there is no differential tracking across treatment groups.

We confirm that participants across the treatment groups have similar demographics and shopping behavior by running linear regressions of participant characteristics on treatment dummies. The constant term refers to the control group, so the coefficient estimates on Hide Amazon and Hide Random are tests for differences in average outcomes between each of the treatment groups and the control. Table A.1 presents the results for consumer demographics, based on participants' survey answers. The table confirms that on all demographic dimensions—race, income, household size, online spending, whether they are Prime members, and whether they have an ad blocker installed—participants are statistically indistinguishable across experimental conditions. Note that the share of participants with a Prime membership is high, at 82% in the control group and the share of participants who have an ad blocker is 24%.

Similarly, participants are comparable across treatment conditions in their shopping behavior on Amazon. Table A.2 uses data collected by the browser extension about participants' Amazon orders from the beginning of 2022 until enrollment in the study. Participants have a comparable number of past orders (around 160), spending (around $5,000), average item price ($23), share of sales by Amazon (42%), and share of Amazon branded items (2.5%). One notable exception is in column (2), where participants in the Hide Amazon condition purchase a slightly larger number of items for each order compared to the control group, although the difference is less than 4%. Note that the average share of items sold by Amazon roughly matches

Table A.2: Covariate Balance—Shopping Behavior on Amazon

	N. Orders (1)	Items per Order (2)	Spending (3)	Avg Item Price (4)	Share 1P Items (5)	Share Amazon Branded Items (6)
Constant	159.456***	1.411***	4,960.817***	23.331***	0.416***	0.025***
	(7.628)	(0.013)	(238.535)	(0.394)	(0.008)	(0.002)
Hide Amazon	4.658	0.052**	26.039	-0.403	-0.003	-0.004
	(10.293)	(0.023)	(314.596)	(0.531)	(0.011)	(0.002)
Hide Random	15.658	0.028	208.480	0.232	-0.012	0.000
	(10.967)	(0.022)	(328.453)	(0.783)	(0.011)	(0.003)
R^2	0.002	0.003	0.000	0.001	0.001	0.002
Observations	1,463	1,463	1,463	1,460	1,463	1,463

Notes: This table presents regressions where the outcome variable is regressed on treatment assignment. $^{***}p < 0.01$; $^{**}p < 0.05$.

publicly available figures on the share of first-party sales on Amazon.[29]

Since participants' browsing experience on Amazon is manipulated in the treatment groups, one may worry that such manipulation may worsen participants' browsing experience enough to lead to differential attrition across experimental conditions. To test for this, we run linear probability models of study completion (i.e., completing milestone 2) on treatment dummies. Of all participants who installed the extension, 44% successfully completed the study, and this rate was not impacted by the assigned treatment condition (column (1) of Table A.3). Results remain similar if we focus on the 1,255 participants who completed milestone 1 (column (2)).

Before concluding this section, we need to check whether participants in the treatment groups were less likely to be tracked by Webmunk. Note that participants had the possibility to uninstall the extension or turn it off temporarily. Such actions would limit our ability to manipulate and track participants' browsing behavior for the duration of the interruption. For every item included in a participant's wishlist, we verify whether that item's product page was tracked on Webmunk. Table A.4 displays results of linear probability models. On average, just over 75% of items were tracked through Webmunk, and this share was not significantly lower in either of the treatment conditions. The point estimates are small and statistically indistinguishable from zero.[30]

[29] `https://www.statista.com/statistics/1309709/amazon-e-commerce-retail-sales-business-models/`.

[30] Table C.1 performs a similar test for whether products in the wishlist are found in search results tracked by Webmunk.

Table A.3: Study Completion Rate

	Milestone 2 (1)	Conditional Milestone 2 (2)
Constant	0.435***	0.729***
	(0.019)	(0.022)
Hide Amazon	0.011	-0.031
	(0.027)	(0.031)
Hide Random	0.010	0.001
	(0.027)	(0.031)
R^2	0.000	0.001
Observations	2,063	1,255

Notes: This table regresses whether an individual finished the study on the treatment assignment. In column (2), the regression is only for the set of individuals who completed milestone 1. ***$p < 0.01$; **$p < 0.05$.

Table A.4: Webmunk Tracking Rate of Product Pages

	Tracked Through Webmunk (1)	Tracked — M1 (2)
Constant	0.757***	0.781***
	(0.018)	(0.019)
Hide Amazon	-0.006	-0.010
	(0.025)	(0.027)
Hide Random	-0.001	0.000
	(0.025)	(0.028)
R^2	0.000	0.000
Observations	9,883	7,723

Notes: This table regresses whether a product in the wishlist was tracked through Webmunk on treatment assignment. Column (2) limits to only those who completed milestone 1. ***$p < 0.01$; **$p < 0.05$.

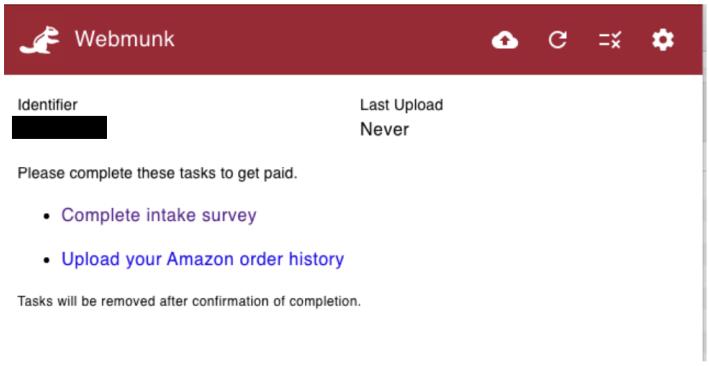
B List of Tracked Domains

During the experiment, the Webmunk extension tracked a list of top retail domains. The list is as follows:

anthropologie.com apple.com barnesandnoble.com bathandbodyworks.com bestbuy.com bhphotovideo.com birchbox.com bodybuilding.com boxed.com chewy.com costco.com cvs.com dillards.com dollargeneral.com ebay.com etsy.com forever21.com gamestop.com gap.com gnc.com hm.com homedepot.com hsn.com iherb.com ikea.com warbyparker.com johnlewis.com kohls.com kroger.com lego.com lordandtaylor.com nyxcosmetics.com lowes.com macys.com microsoft.com neimanmarcus.com newegg.com nike.com nordstrom.com overstock.com qvc.com rakuten.com riteaid.com samsclub.com sephora.com shop.app staples.com target.com vitaminshoppe.com ulta.com urbanoutfitters.com victoriassecret.com walgreens.com walmart.com wayfair.com yoox.com zappos.com zulily.com shop.app

C Additional Figures and Tables

Figure C.1: Webmunk Tasks



Notes: This figure presents a snapshot of the Webmunk browser extension popup with a list of tasks (with links) for the participant.

Table C.1: Webmunk Tracking Rate Based on Search Data

	Tracked Through Webmunk (1)	Tracked — M1 (2)
Constant	0.605***	0.617***
	(0.015)	(0.017)
Hide Amazon	0.018	0.016
	(0.021)	(0.023)
Hide Random	0.013	0.007
	(0.022)	(0.024)
R^2	0.000	0.000
Observations	11,288	8,884

Notes: This table presents estimates of linear probability models as a function a treatment condition dummies. The outcome is equal to 1 if the selected product is tracked in search results through Webmunk. Otherwise, the table is identical to Table A.4.

Table C.2: Summary Statistics Based on Search Data

	Meta-Categories with Amazon Brands			Meta-Categories without Amazon Brands		
	Control	Hide Random	Hide Amazon	Control	Hide Random	Hide Amazon
	(1)	(2)	(3)	(4)	(5)	(6)
Amazon Brand	0.09	0.09	0.01	0	0	0
Price ($)	20.5	19.8	19.91	16.02	15.52	15.6
Average Star Rating	4.63	4.63	4.63	4.53	4.54	4.55
Nr. Reviews	29,578	30,065	21,670	13,119	13,666	13,679
Prime Eligible	0.75	0.75	0.73	0.7	0.74	0.72
Free Delivery	0.85	0.86	0.85	0.84	0.85	0.86
Fast Delivery	0.16	0.15	0.13	0.14	0.15	0.11
Sponsored	0.31	0.29	0.29	0.3	0.26	0.32
Best Seller	0.08	0.09	0.06	0.03	0.05	0.06

Notes: This table is the same as Table 3 except that the wishlist products have been matched to products in search data.

Table C.3: Treatment Effect Regressions – Personal Care Category

	Price	Reviews	Stars	Major Brand	Prime Eligible	Sponsored
	(1)	(2)	(3)	(4)	(5)	(6)
Hide Amazon	-0.803	1,594.037	0.049	0.001	-0.017	0.031
	(0.577)	(1,178.242)	(0.026)	(0.026)	(0.031)	(0.036)
R^2	0.046	0.019	0.030	0.346	0.008	0.005
Observations	1,033	1,040	1,045	971	968	770
Mean of Y	16.693	12802.945	4.483	0.429	0.662	0.399
Category fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

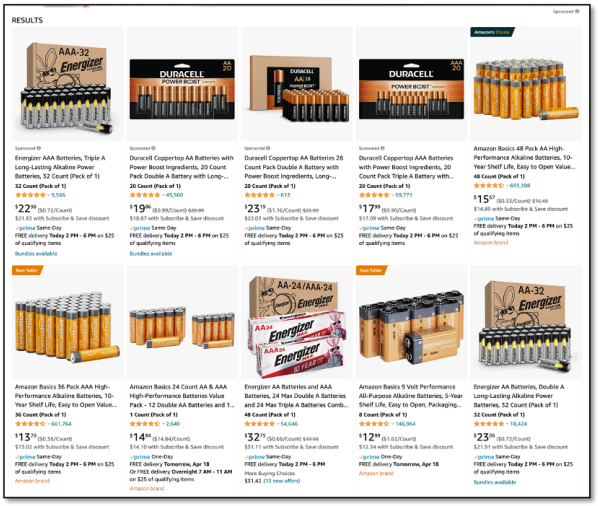
Notes: $p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Table C.4: Treatment Effect Regressions – Difference-in-Differences

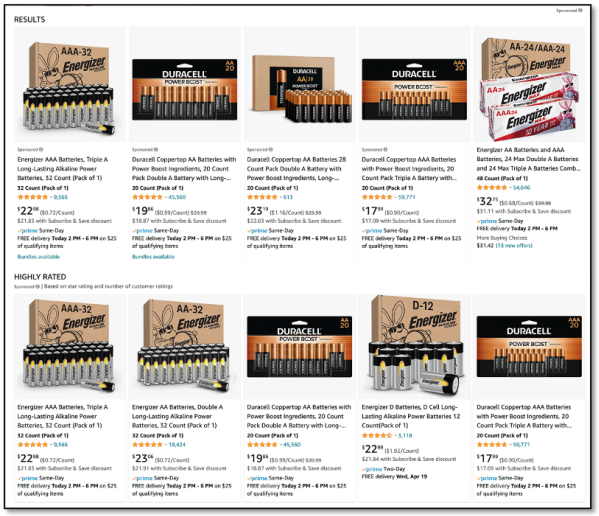
	Amazon Brand	Price	Reviews	Stars	Major Brand	Prime Eligible	Sponsored
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Hide Amazon	-0.076***	0.081	-10,604.613***	-0.015	0.039	0.015	-0.062
	(0.007)	(0.553)	(2,005.129)	(0.029)	(0.027)	(0.025)	(0.039)
R^2	0.278	0.473	0.273	0.252	0.457	0.541	0.307
Observations	6,245	6,153	6,175	6,238	5,760	5,702	4,252
User fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Category fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: $p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

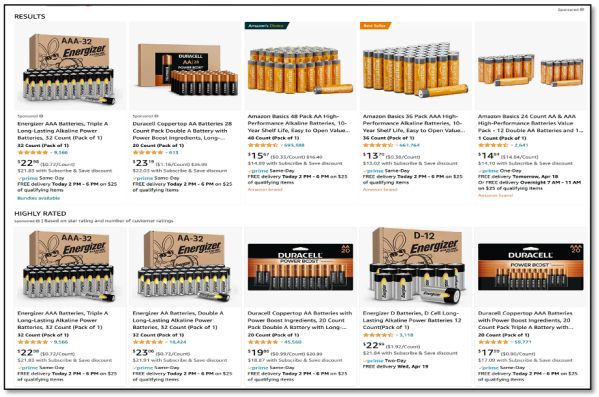
Figure C.2: Treatment Groups



(a) Control Group

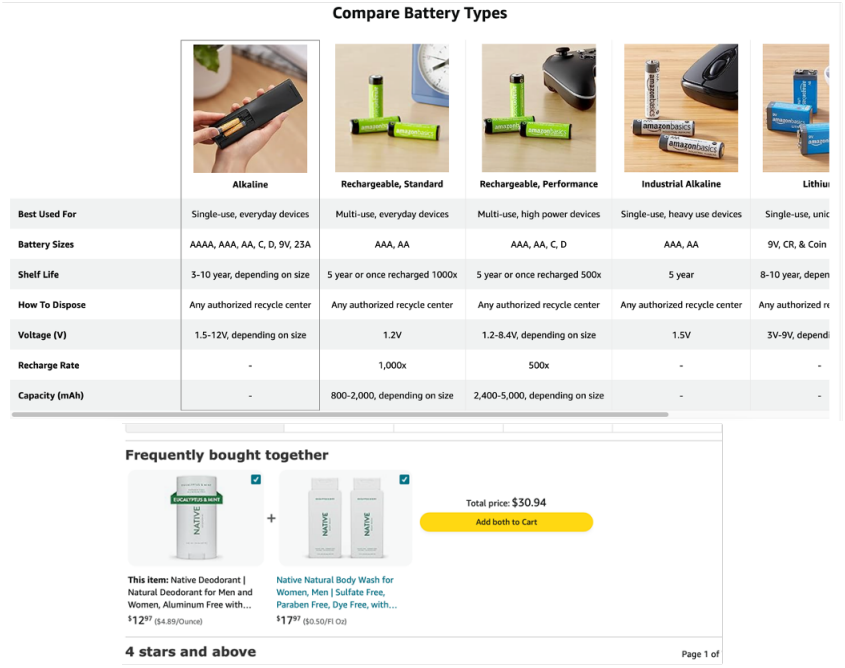


(b) Hide Amazon Treatment



(c) Hide Random Treatment

Figure C.3: Special Product Positioning



Compare Battery Types

	Alkaline	Rechargeable, Standard	Rechargeable, Performance	Industrial Alkaline	Lithiu
Best Used For	Single-use, everyday devices	Multi-use, everyday devices	Multi-use, high power devices	Single-use, heavy use devices	Single-use, unic
Battery Sizes	AAAA, AAA, AA, C, D, 9V, 23A	AAA, AA	AAA, AA, C, D	AAA, AA	9V, CR, & Coin
Shelf Life	3-10 year, depending on size	5 year or once recharged 1000x	5 year or once recharged 500x	5 year	8-10 year, depen
How To Dispose	Any authorized recycle center	Any authorized recycle center	Any authorized recycle center	Any authorized recycle center	Any authorized re
Voltage (V)	1.5-12V, depending on size	1.2V	1.2-8.4V, depending on size	1.5V	3V-9V, dependi
Recharge Rate	-	1,000x	500x	-	-
Capacity (mAh)	-	800-2,000, depending on size	2,400-5,000, depending on size	-	-

Frequently bought together

Total price: $30.94

Add both to Cart

This item: Native Deodorant | Natural Deodorant for Men and Women, Aluminum Free with... $12.97 ($4.89/Ounce)

Native Natural Body Wash for Women, Men | Sulfate Free, Paraben Free, Dye Free, with... $17.97 ($0.50/Fl Oz)

4 stars and above

Page 1 of

Figure C.4: Product Categories Selection

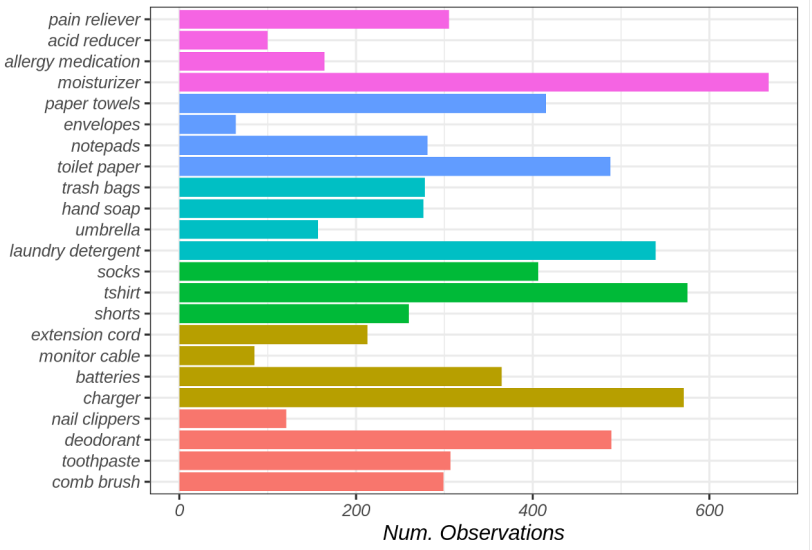


Figure C.5: Demographics Distribution of the US and the Study Population

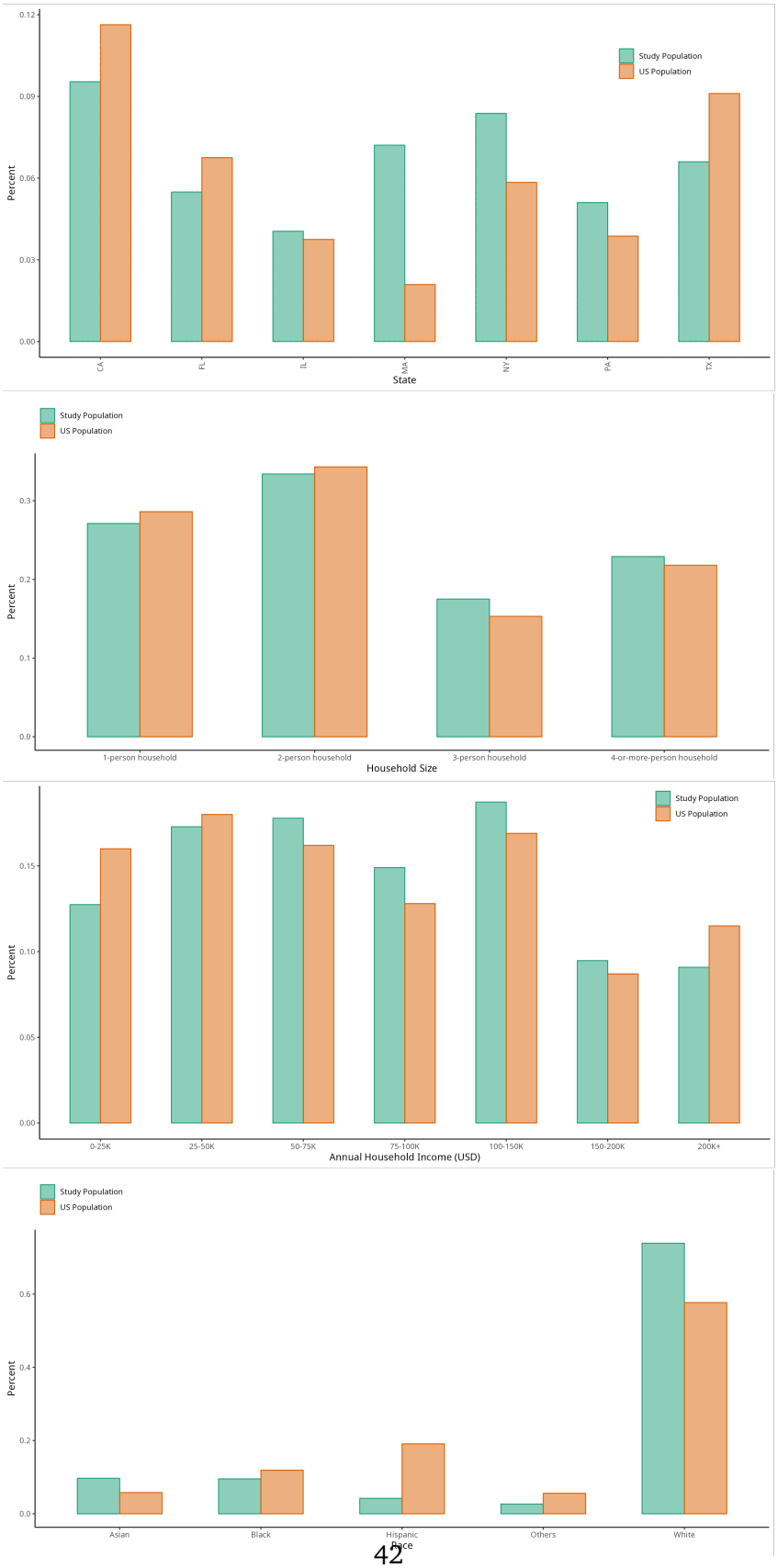
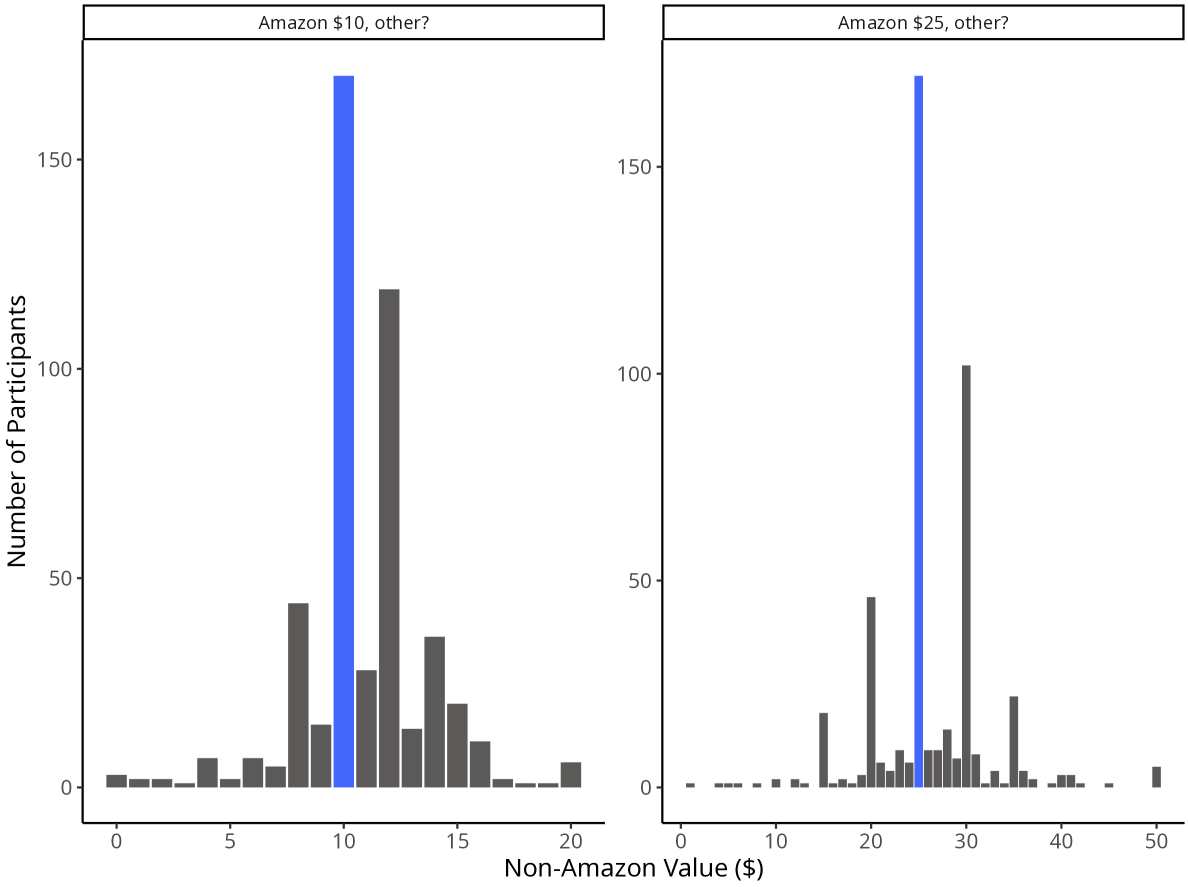


Figure C.6: Willingness to Pay for Non-Amazon Branded Products



D Surveys

This appendix presents the Qualtrics surveys used in the study:

- Eligibility: the eligibility survey contains the set of questions determining whether a study participant is eligible to take part in the study; the consent form; and initial instructions to install the web browser extension and enroll in the study.
- Intake: the intake survey contains a set of questions about the participant's demographics and shopping behavior. It also contains instructions on how to create a wishlist on Amazon, and instructs participants to search for products on Amazon and add them to the newly created wishlist.
- Outtake: the outtake survey contains a set of questions about the participants' shopping behavior during the eight weeks of our study, as well as questions related to consumer perception of Amazon brands.

Eligibility

0:00 / 0:32

Professor Farronato's Webpage

Would you like to help us understand online shopping behavior? We are a team of Harvard and Boston University researchers who study e-commerce and its value to consumers like you. We want to understand consumer shopping and how it is affected by the choices that e-commerce platforms make.

By fully completing this study, you will earn at least $30 and up to $180 if you also win lotteries throughout the study. We will ask you to complete two surveys: one now, which will take about 40 minutes to complete, and one in 8 weeks, which will take about 10 minutes. For the 8-week study period, we will also ask you to install a browser extension and to share information about your online shopping.

Click below if you want to know more and discover if you qualify!

We have a few quick questions before we start.

We would like to collect your answers to some questions about yourself and your shopping habits for the purposes of our research study. The information collected will be linked to research data only if you later decide to participate in the full study, otherwise these answers will remain anonymous and will not be linked to you in any way. It is your choice to participate.

Do we have your permission to collect your answers?

Yes
No

Do you live in the United States?

Yes
No

What is your age? Please type a number.

What gender do you identify with?

Male
Female
Non-binary / Third-gender
Prefer not to say

What is 12 minus 4? Please type a number.

What is the language you primarily speak? Select all that apply:

Spanish
English

Other [Which?]

How frequently do you shop on Amazon?

Never
Less than once a month
Once a month
Two to three times a month
More than three times a month

When shopping on Amazon, which device do you primarily use?

Laptop computer
Ipad or another tablet
Desktop computer
Phone
Other

When shopping on Amazon, which web browser do you primarily use?

Internet Explorer
Firefox
Chrome
Safari
Microsoft Edge
Other

Do other members of your household also use your primary device to shop online?

Yes
No

Do you currently work at one of these companies?

Facebook

Microsoft

Amazon

Apple

Google

None of these companies

Did you participate in a prior study with us in the past?

Yes

No

Not Eligible – Thanks

Thank you for your answers! Unfortunately, you do not qualify to participate in our study. Have a great day!

Consent

Congrats! You are qualified to participate.

Participants like you are crucial to the study. Together, we can understand and improve digital shopping!

If you complete the study, we'll pay you using gift cards that you can redeem at many retailers and buying products that you select.

Click "Next" to proceed.

Thanks!

Consent Form IRB21-1677

Study Overview

We're glad you want to know more about our study. The following is a summary with key information to help you decide whether you want to participate.

Why am I being invited to take part in a research study?
We invite you to take part in this research study because you are a frequent online shopper based in the United States.

Who is inviting you to take part in a research study?
We are a team of Harvard and Boston University professors who study the digital economy:

- Chiara Farronato, Associate Professor (Faculty Page)
- Andrey Fradkin, Assistant Professor (Faculty Page)
- Alexander J. MacKay, Assistant Professor (Faculty Page)

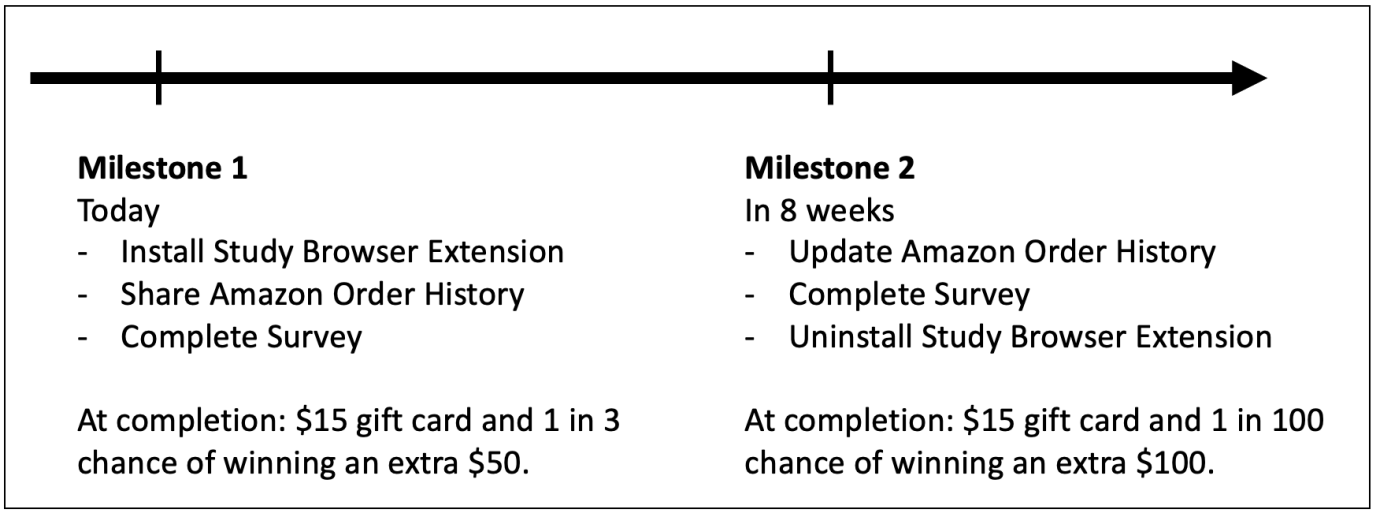
What should I know about a research study?
Research studies are conducted to better understand the choices we make. Whether or not you take part is completely up to you. Your decision will not be held against you. You can ask all the questions you want before you decide. You can even agree to take part and later change your mind.

Why is this research being done?
We want to understand consumer shopping behavior online and how it is affected by the choices that e-commerce platforms make. Not only this will allow us to understand how people like you and us shop online, but it will also help us understand whether and how we should limit the control that e-commerce platforms have over how they choose which products to show us.

How long will the research last and what will I need to do?
The study will last 8 weeks, but we will only ask you for at most 1 hour of your time. Everything we ask you to do can be done from the comfort of your home. If you choose to participate, we'll ask you to:

- Install the study browser extension, which is an application we developed for this study. We will have instructions for you on how to install the extension.
- Complete two surveys. We'll send you the first survey today (it will take about 40 minutes to complete) and the next survey in eight weeks (it will take about 10 minutes to complete). The first survey will ask you to create a wishlist on Amazon to which you can add products that you would like to purchase. Again, we will provide you with instructions on how to create an Amazon wishlist and share it with us.

Here is the timeline at a glance:



The study browser extension will record and may tweak your browsing experience on Amazon.com. The extension will also track whether you visit other e-commerce websites without tracking what you do on those websites. The extension will not record any of your activity outside of e-commerce websites. We'll ask you to keep this extension installed for eight weeks.

Will I be compensated for participating in this research?

Yes. We will pay you at least $30 for completing the two milestones presented in the timeline above. Payments will come in the form of gift cards sent to your email address. Some people will earn more because:

- At completion of milestone 1, in addition to the $15 payment, you will have a 1 in 3 chance to win an additional $50 in value divided in two parts:
  - We will buy a product from your wishlist for you;
  - We will send you the difference between $50 and the price of the purchased item as a gift card. For example, if you selected a product that costs $31.50 (tax + shipping included), we will purchase that product for you and send you a gift card for an additional $18.50.
- At completion of milestone 2, in addition to the second $15 payment, you will have a 1 in 100 chance to win an additional $100.

We will pay you with electronic gift cards that you can use at over 60 retailers, including Amazon, Starbucks, Target, and Walmart.

Is there any way being in this study could be bad for me?

There are some risks you might experience from being in this study. The study browser extension may tweak the information displayed to you while using certain e-commerce websites. This may change the products you purchase or how long you spend searching for products. If the products you purchase are worse, more expensive, or if you search more, then this may be bad for you. We do not know whether our tweaks to your shopping experience are good or bad for you. We will not compensate you for these differences.

Since we may collect personal information, there is a risk of breach of confidentiality. We have worked hard to minimize this risk. For example, we have ensured that we are not storing the name, mailing address, or payment information that you use on Amazon. We will encrypt any data before storing it. Before accessing the data for analysis, we will also permanently delete all personal information except for your email address, which will be stored separately from all other data.

Will being in this study help me in any way?
We cannot promise any benefits to you or others from your taking part in this research. It is possible, however, that our tweaks to your online browsing lead to a better (or worse) online shopping experience.

Detailed Information

Withdrawing from the Study.
You can leave the research at any time; your decision will not be held against you. We may use the data you have shared with us prior to withdrawing as part of the study. We will provide simple instructions for how you can withdraw. Researchers can remove you from the research study without your approval. Possible reasons for removal include not complying with instructions to install the study browser extension or intentionally avoiding data tracking through the extension.

Privacy.
Data security and privacy are important to us. We will ask for your email address to send you payments and other communications. During the course of the study we may collect other personal information. The personal information that we know we are collecting will be deleted immediately, except for your email address. Other personal information that we inadvertently collect will be stored but removed after we finish collecting data.

We cannot promise complete secrecy, although efforts will be made to limit the use and disclosure of your personal information. Data will be encrypted and stored on secure servers and cannot be accessed by anyone outside the research team. At no time will study information be available over any public or private network in an unencrypted state.

In the future, when we publish our research, we will post anonymized data from this study in a data repository so that other researchers can reproduce our results. By then, no information that can identify you personally will be available, to us or others. We will not sell data from the study or share data for any commercial or marketing purposes.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, do not hesitate to reach the research team at webmunk_study@hbs.edu.

This research has been reviewed and approved by the Harvard University Area Institutional Review Board (“IRB”). You may talk to them at (617) 496-2847 or cuhs@harvard.edu if your questions, concerns, or complaints are not being answered by the research team; you cannot reach the research team; you want to talk to someone besides the research team; you have questions about your rights as a research subject; you want to get information or provide input about this research.

Please indicate below whether you agree to participate in the study. Agreeing to participate means you are willing to install the study browser extension, provide your email address, and complete the surveys.

I agree to participate.

I do not agree to participate.

Not Consent – Thanks

Thank you for letting us know you do not want to participate. Have a great day!

Willingness

Thank you for your interest in participating in our study!

For this particular study, it is especially important to gather high-quality data. Will you do your best to carefully answer each question on our surveys?

Yes

No

Not Willing – Thanks

Thank you for your willingness to participate in this study. Since we need to be able to gather high-quality data, you do not qualify to participate. Have a good day!

Subject Info

Thank you for your willingness to carefully answer our questions!

What is your preferred email address? (We will use this email to send you payments.)

To confirm, please enter your email again:

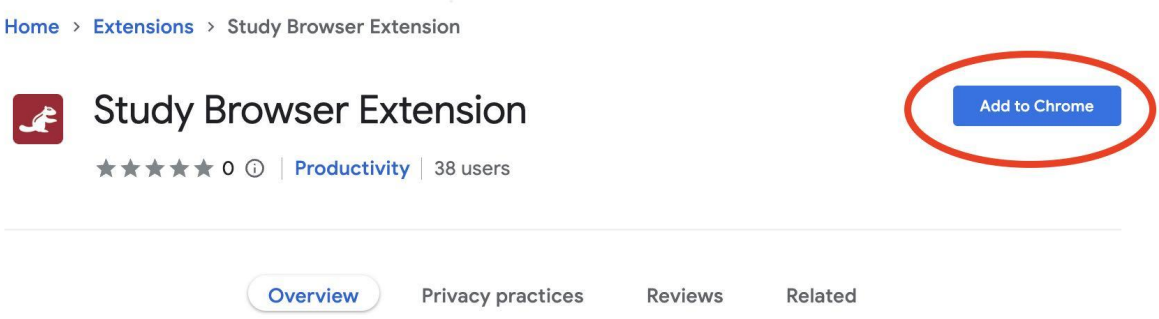
We'll ask you to install the study browser extension next.

App Installation

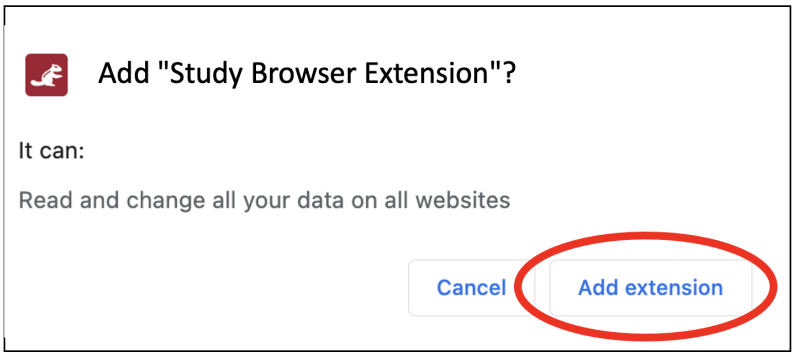
Study Browser Extension Installation Instructions.

To install the study browser extension, please **use Chrome** on the computer (or computers) that you use for online shopping:

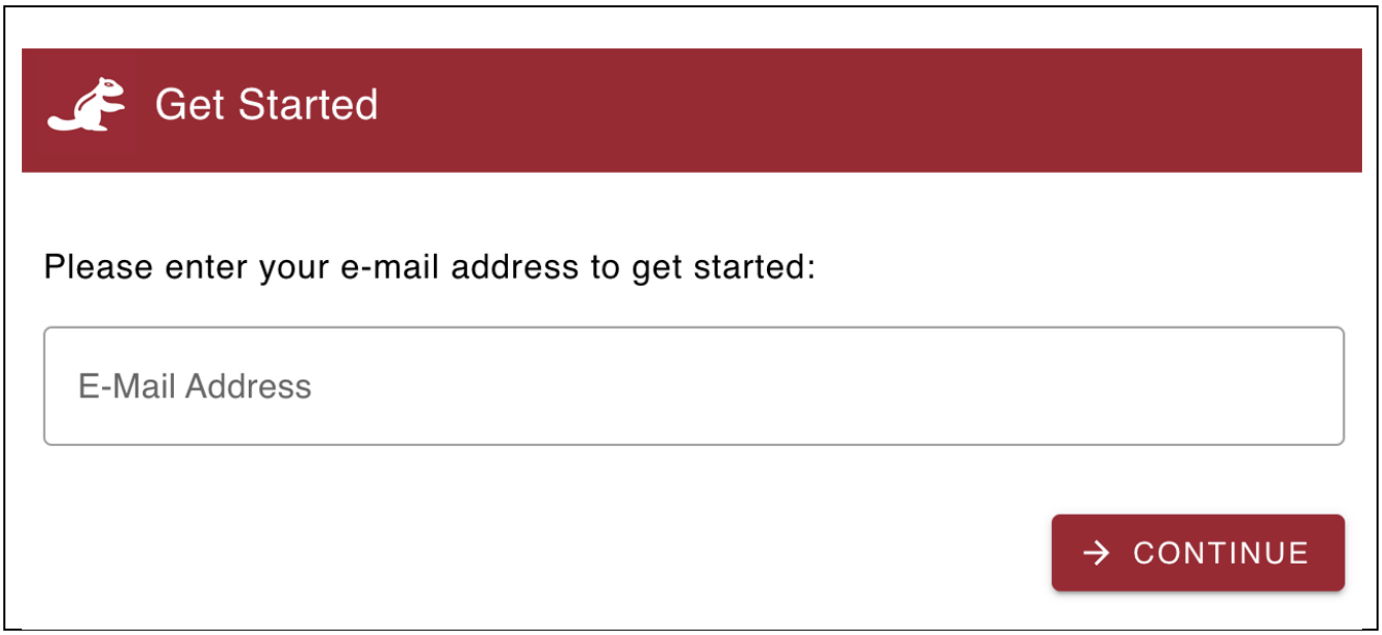
- Click here. This will open a new window from where you can install the browser extension.
- Click “Add to Chrome.”



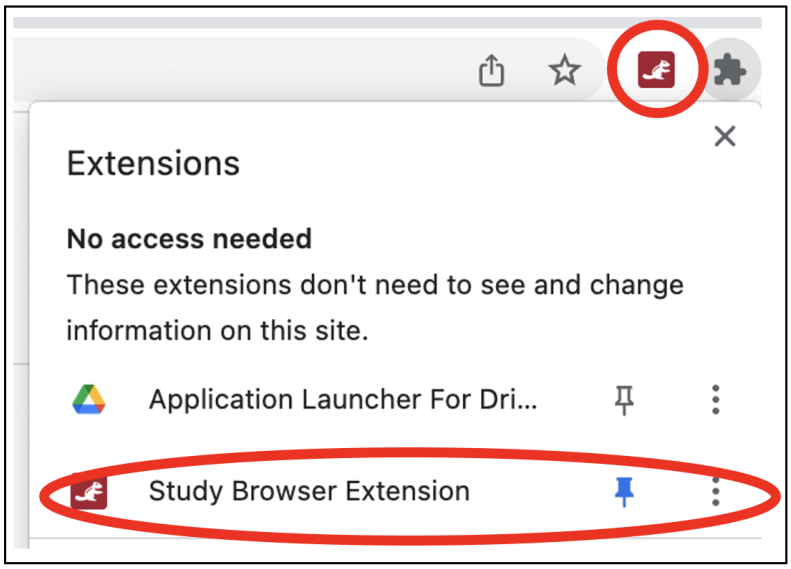
- When prompted, click “Add Extension.”



- You will be asked to add your email address. Please use the email address that you shared with us earlier.



- You should now see the browser extension icon on the top right corner of your browser. If you don't see it, it may be hidden under the puzzle icon, which is visible in the upper right corner of the screenshot below.



- You are all set.

If you have trouble installing the study browser extension, please email us at webmunk_study@hbs.edu and we will help you with additional instructions.

Were you able to successfully install the extension?

Yes

No, but I have emailed you

What difficulties have you encountered installing the extension?

Thank you! Please check the browser extension pop-up window for the next steps. A link to the initial survey will appear shortly.

If you have any questions in the meantime, or if the initial survey does not appear in the browser extension window within the next 15 minutes, please email us at webmunk_study@hbs.edu.

Please click the "Finish" button below to complete this part of the study.

We really appreciate you for participating in this research!

Intake Survey Intro

Welcome back to our study!

Please read the instructions below carefully before proceeding to the next screen. **To receive compensation, you must complete the task from the computer where you have installed the study browser extension.**

This task will take you about 40 minutes to complete. If you do not have 40 minutes right now or you're not at your computer, please come back later.

We will first ask you some basic questions about yourself and your online shopping behavior. Then, we will ask you to create an Amazon wishlist. You will search for products on Amazon and add them to your wishlist.

When you add products to your wishlist, make sure each of them costs $50 or less (tax+shipping included).

After completing milestone 1, you will receive $15. You will also have a 1 in 3 chance to receive additional compensation worth $50 that is made of two parts:

- We will pick one of the items you added to your wishlist, buy it, and ship it to the address you entered;
- We will also send you a gift card for the difference between $50 and the price of the product you selected.

For example, if you selected a product that costs $31.50 (tax+shipping included), we will buy that product for you and send you $18.50 as a gift card.

Therefore, **it is best for you to be truthful in selecting which products you like the most.**

Intake Survey

What is your race/ethnicity?

Hispanic or Latinx
White
Asian or Pacific Islander
American Indian or Alaska Native
Black or African American
Other

In what zip code do you currently live?

What was your total household income in 2022? Please include only employment income (wages, salary, bonuses, tips, and any income from your own businesses).

$0 to $24,999
$25,000 to $49,999
$50,000 to $74,999
$75,000 to $99,999
$100,000 to $149,999
$150,000 to $200,000
$200,000 and up

How many people live in your household?

Only myself
2 people
3 people
4 people
5 or more people

How many children under the age of 18 live in your household?

None
1 child
2 children
3 children or more

What is the highest level of school you have completed?

Some high school
High school degree
Some college
Associate's degree in college
Bachelor's degree in college (BA, AB, BS, ...)
Some graduate studies
Graduate degree (MA, MS, MBA, MD, JD, PhD, ...)

What portion of your shopping expenditures ($) do you do online?

0% - 25%
25% - 50%
50% - 75%
75% - 100%

At which retailers did you shop **in-store** over the past year? (Select all that apply)

Costco	Kohl's	Dollar Tree
Best Buy	Whole Foods	Macy's
CVS	Apple	Walgreens
Target	Kroger	Dollar General
Walmart	Sam's Club	Other (specify below):

At which retailers did you shop **online** over the past year? (Select all that apply)

- Target.com
- Wayfair.com
- Ebay.com
- Walmart.com
- Walgreens.com
- Shein.com
- Apple.com
- Bestbuy.com
- Kohls.com
- Amazon.com
- Macys.com
- Samsclub.com
- Costco.com
- Etsy.com
- Other (specify below):

Which of the following product categories have you shopped for **online** over the past year?

- Pet Supplies
- Sports and Outdoor
- Furniture
- Electronics
- Appliances
- Household Items
- Groceries
- Jewelry and Watches
- Personal Care
- Books
- Paper Products
- Toys
- Home, Garden, and Tools
- Shoes
- Health
- Beauty
- Apparel (Clothing)
- Other (specify below):

Are you the primary shopper for your household?

- Yes
- No

Are you an Amazon Prime member?

- Yes
- No

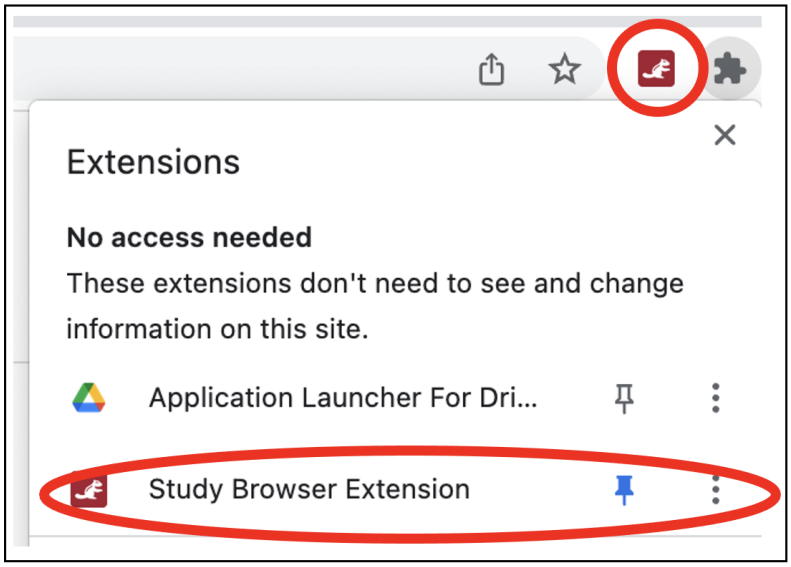
Do you use an ad blocker such as AdBlock or uOrigin?

- Yes. If so, which?

No

Install Question

Do you have the study browser extension installed on your Chrome browser? To check that, you should see the study browser extension icon on the top right corner of your browser. If you don't see the extension icon, it may be hidden under the puzzle icon, which is visible in the upper right corner of the screenshot below.



Yes, I have the study browser extension installed on my web browser.

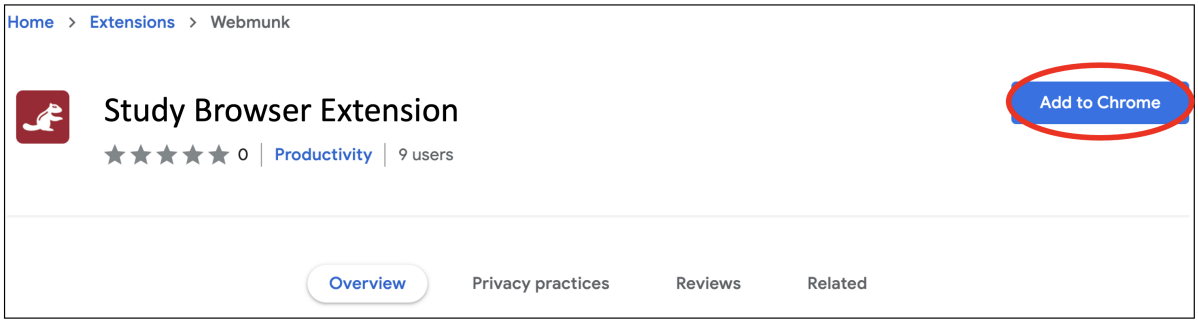
No, I do not have study browser extension installed on my web browser.

App Installation

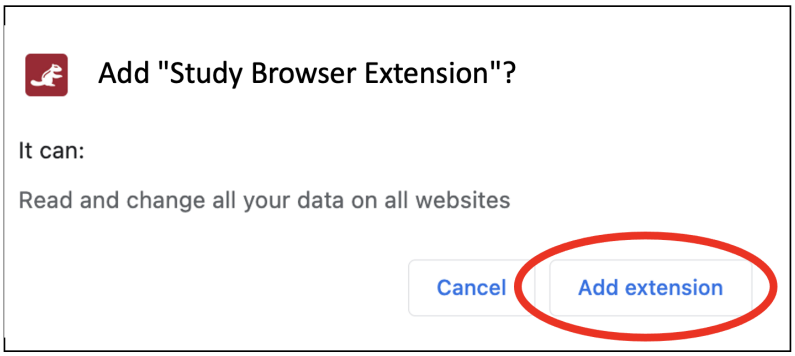
Study Browser Extension Installation Instructions.

To install the study browser extension, please **use Chrome** on the computer (or computers) that you use for online shopping:

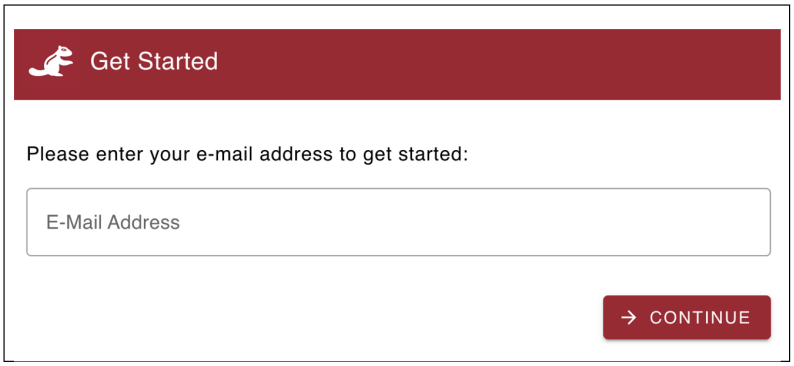
- Click here.
- Click "Add to Chrome."



- When prompted, click “Add Extension.”



- You will be prompted to add your email address. Please use the email address that you shared with us earlier.



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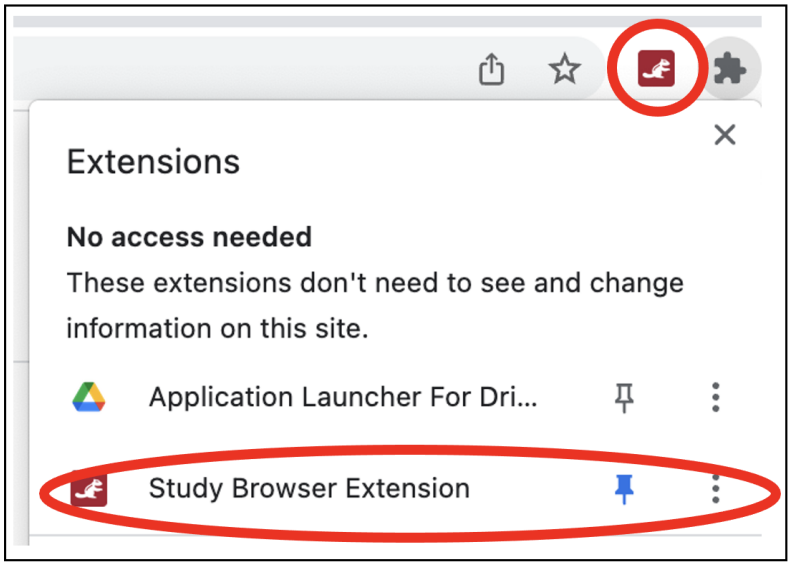


- You are all set.

If you have trouble installing the study browser extension, please email us at webmunk_study@hbs.edu and we will help you with additional instructions.

Were you able to successfully install the study browser extension?

Yes

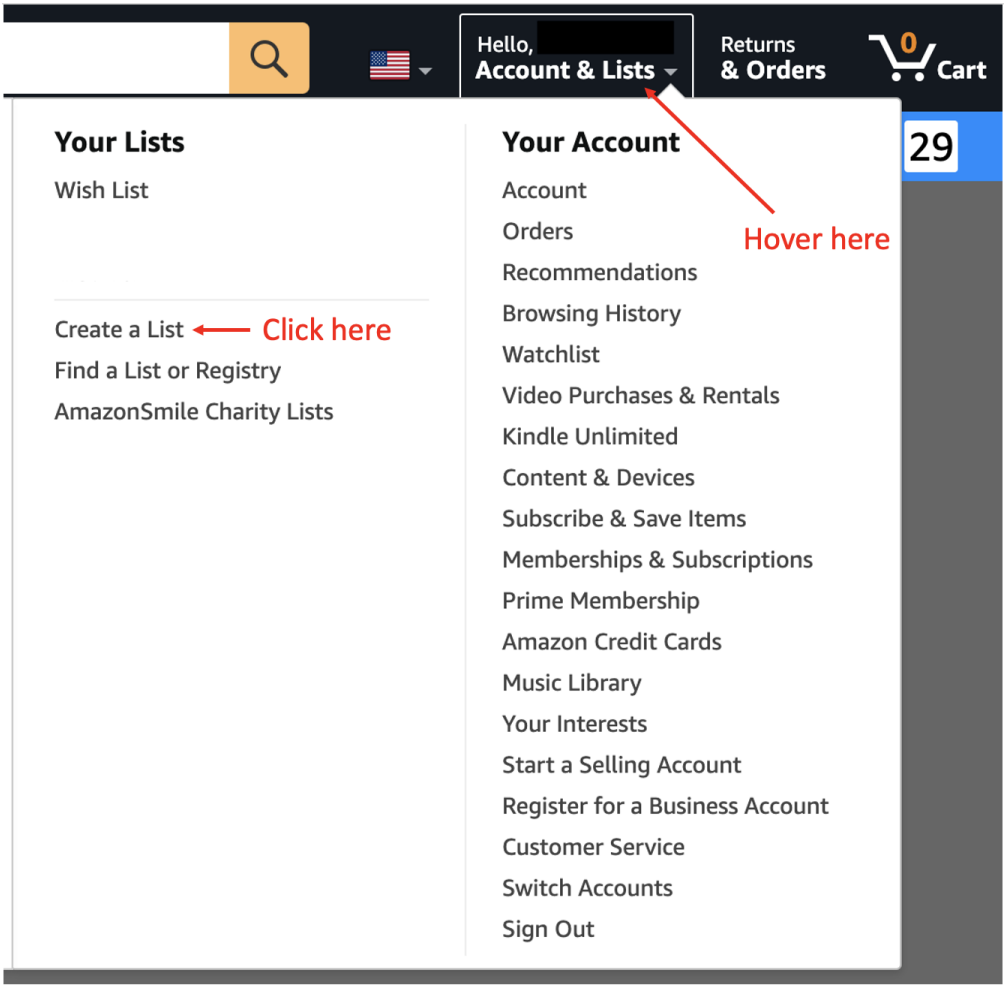
No, but I have emailed you

What difficulties have you encountered installing the extension?

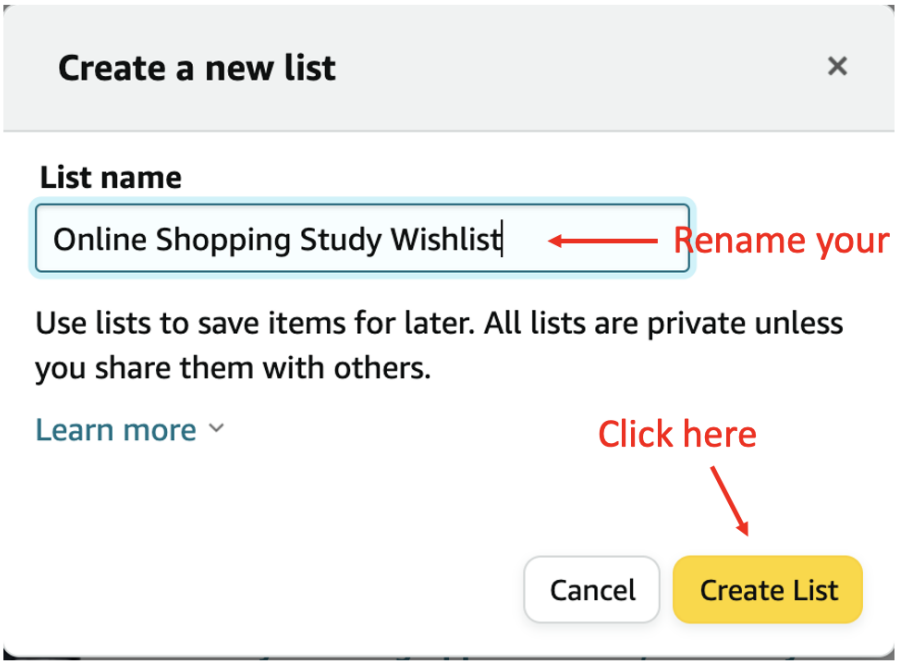
Introduction to the Wishlist Task

Below, we describe how to create an Amazon Wishlist and share it with the study researchers. Please follow these steps in order:

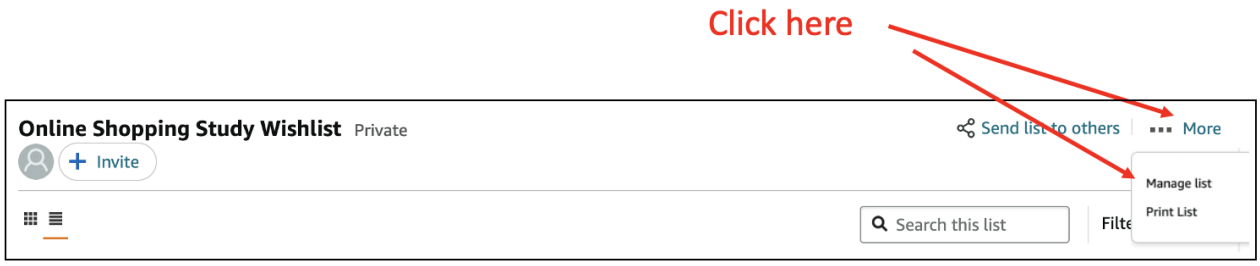
1. Go to amazon.com and log into your Amazon account.
2. On the top right side, hover on the tab titled "Account & Lists" and select "Create a List."



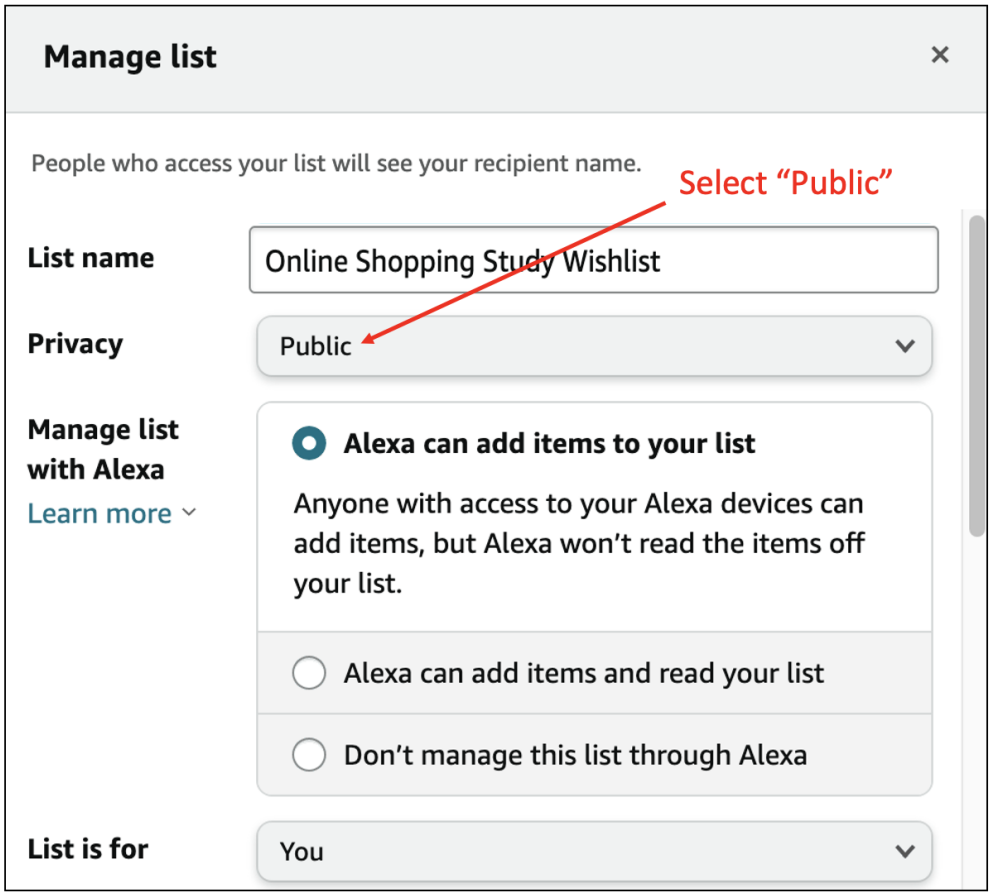
3. A new tab will pop up asking you to enter your list name. Please name it "Online Shopping Study Wishlist". The list will now appear empty.



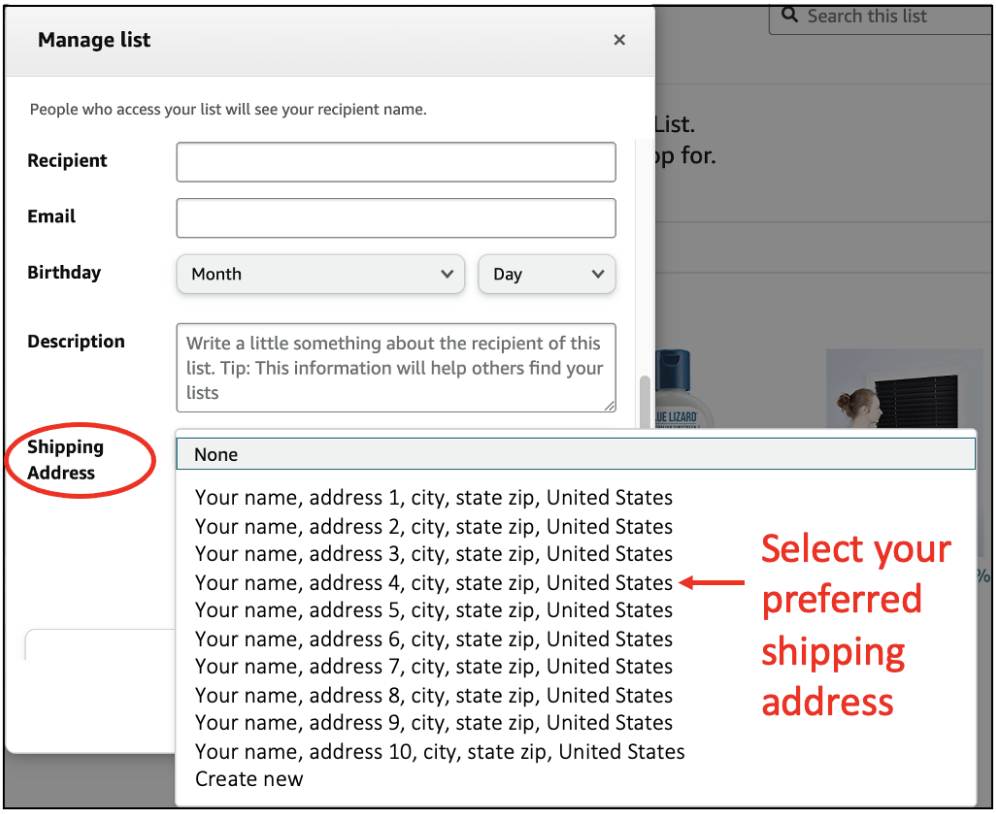
4. To add your shipping address, on the top right side of the list click on "More" and then "Manage List."



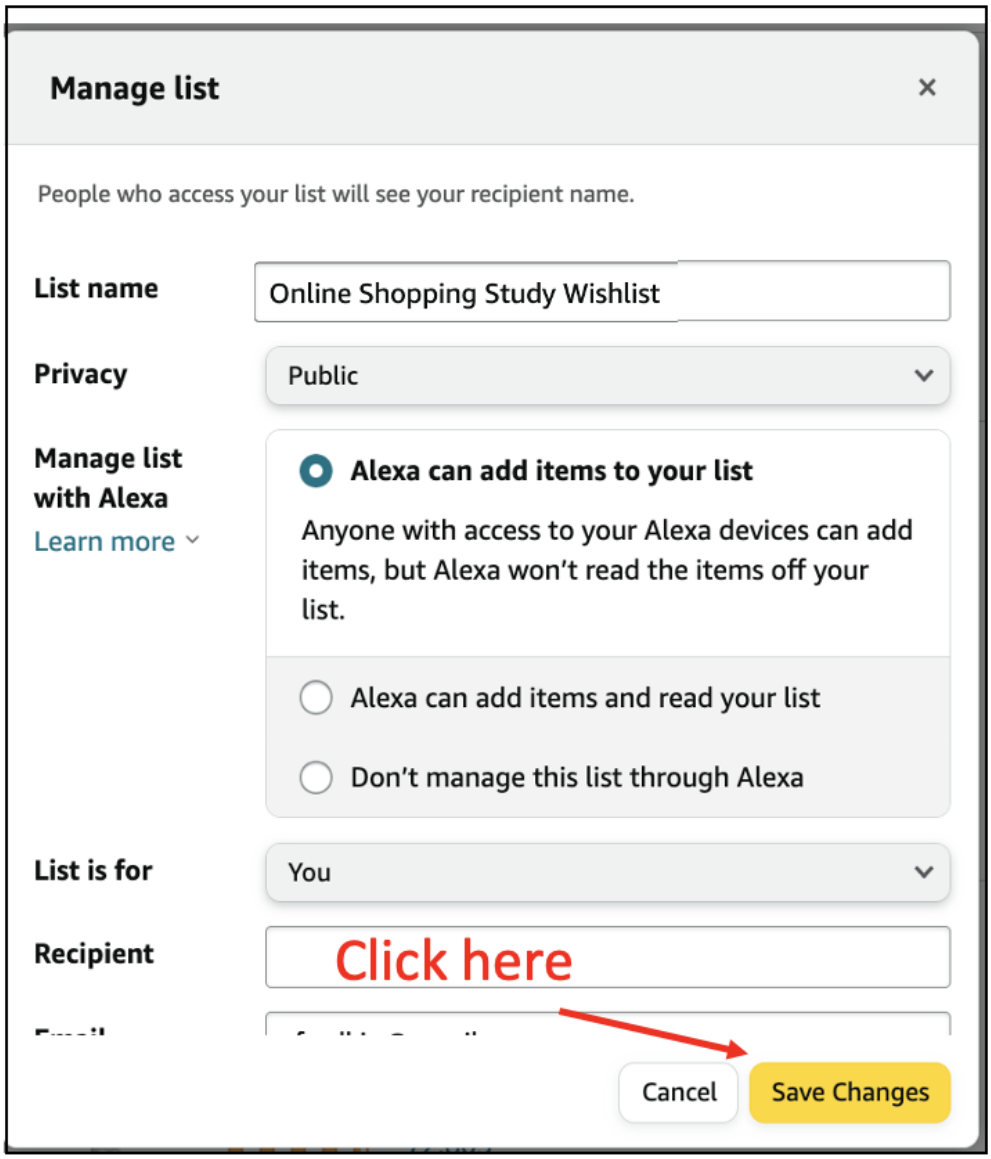
5. Click on the Privacy tab and select "Public". This will allow us to see your list.



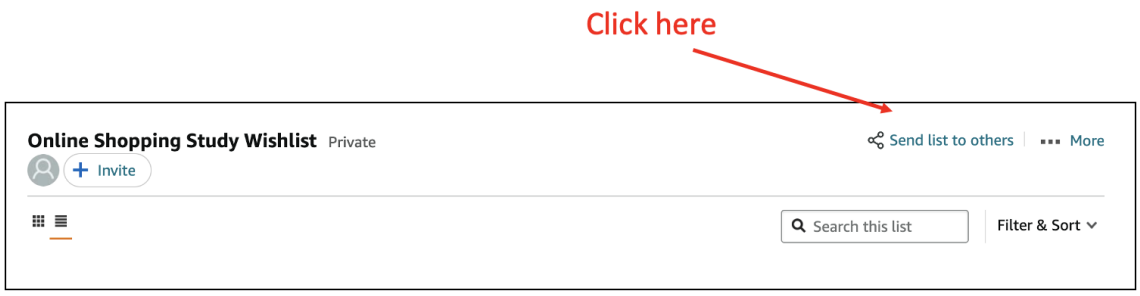
6. Scroll down to "Shipping Address" and enter the address you would like the product to be shipped to. Note, the study researchers will not be able to access your address.



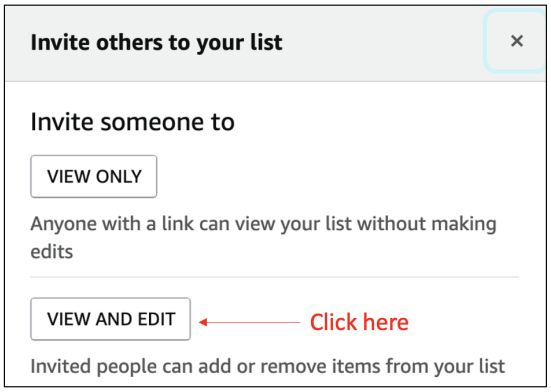
7. Click "Save Changes".

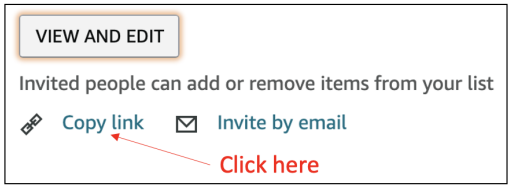


8. To share the list with study researchers, on the top right side of the list click on "Send list to others." It is next to the "More" button you clicked on before.



9. Select "VIEW AND EDIT" and "Copy link" to copy the link to your clipboard.





Please paste the link you just copied into the text form below. We will use this list to reward you for completing the study.

To paste the link, right click in the text box below and select "Paste."

Select product categories

Please select one product that you would like to purchase in each of the following categories:

Personal Care (Select one):

Nail clippers
Deodorant
Comb / brush
Toothpaste

Electronics (Select one):

Batteries

Phone charger

Monitor cable (HDMI, USB-c)

Extension cord

Apparel (Select one):

Socks

Shorts

T-shirt

Household Items (Select one):

Umbrella

Hand soap

Trash bags

Laundry detergent

Paper Products (Select one):

Toilet paper

Notepads

Envelopes

Paper towels

Health (Select one):

Allergy medication

Moisturizer

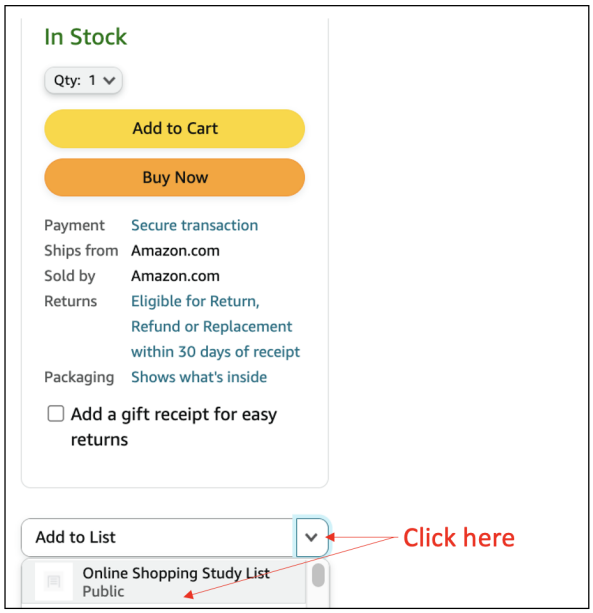
Acid reducer

Pain reliever

Personal Care

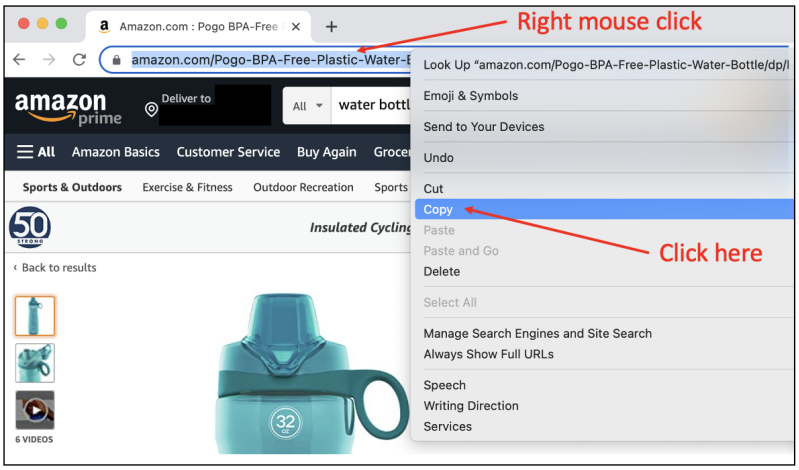
You have selected **${q://QID47/ChoiceGroup/SelectedChoices}** in the Personal Care category. Please search on Amazon for the product you would like to purchase. Make sure the product you select costs less than $50 (taxes+shipping included).

Once you find the product you'd like, please add it to the "Online Shopping Study List" wishlist. You can do this by clicking the arrow next to "Add to List" and select "Online Shopping Study List," as shown below. Please make sure you add the product to the "Online Shopping Study List" rather that adding it to your cart or to another list.



Please copy the URL of the product you selected and paste it below.

To copy the URL, right click with your mouse on the address bar, then select "Copy."

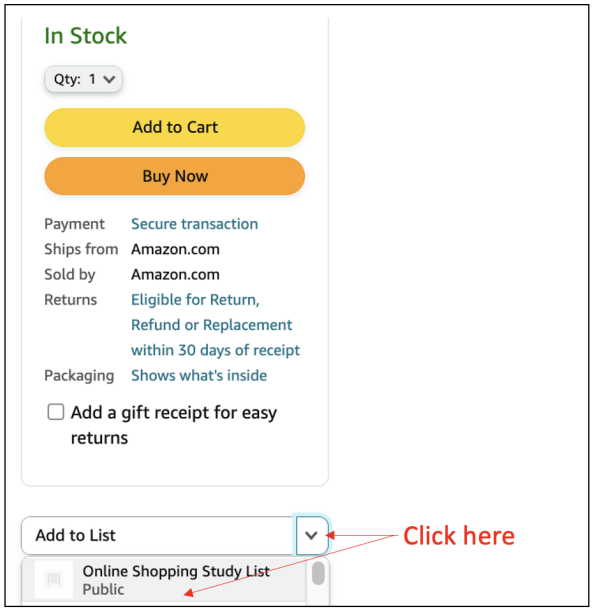


To paste the URL, right click in the text box below and select "Paste."

Electronics

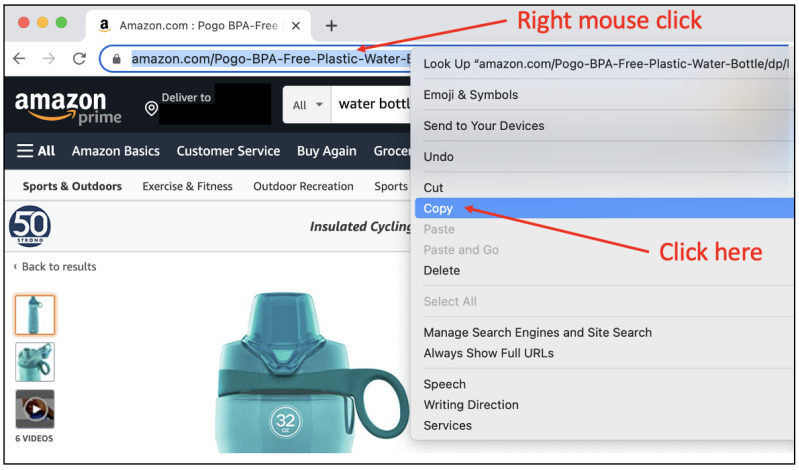
You have selected **${q://QID1/ChoiceGroup/SelectedChoices}** in the Electronics category. Please search on Amazon for the product you would like to purchase. Make sure the product you select costs less than $50 (taxes+shipping included).

Once you find the product you'd like, please add it to the "Online Shopping Study List" wishlist. You can do this by clicking the arrow next to "Add to List" and select "Online Shopping Study List," as shown below. Please make sure you add the product to the "Online Shopping Study List" rather that adding it to your cart or to another list.



Please copy the URL of the product you selected and paste it below.

To copy the URL, right click with your mouse on the address bar, then select "Copy."

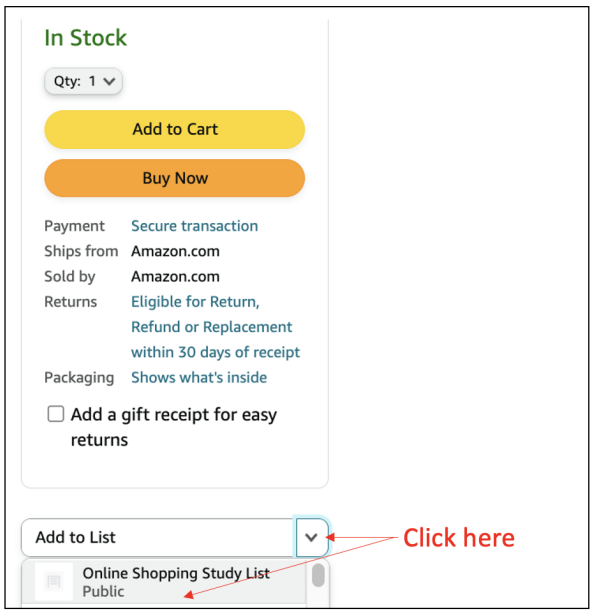


To paste the URL, right click in the text box below and select "Paste."

Apparel

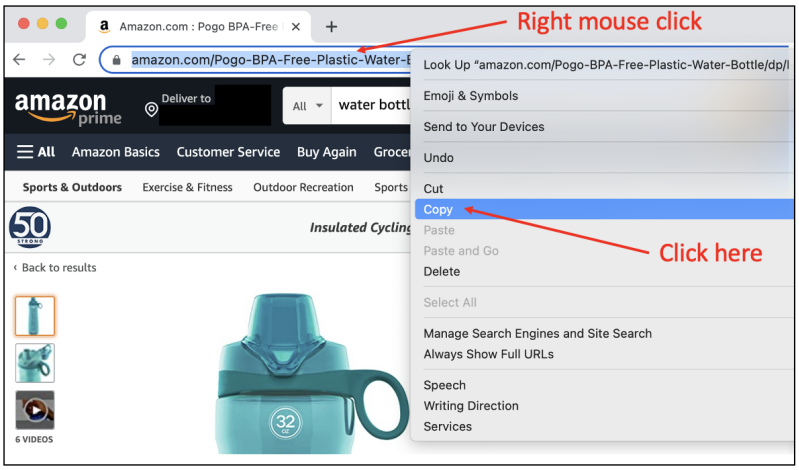
You have selected **${q://QID3/ChoiceGroup/SelectedChoices}** in the Apparel category. Please search on Amazon for the product you would like to purchase. Make sure the product you select costs less than $50 (taxes+shipping included).

Once you find the product you'd like, please add it to the "Online Shopping Study List" wishlist. You can do this by clicking the arrow next to "Add to List" and select "Online Shopping Study List," as shown below. Please make sure you add the product to the "Online Shopping Study List" rather that adding it to your cart or to another list.



Please copy the URL of the product you selected and paste it below.

To copy the URL, right click with your mouse on the address bar, then select "Copy."

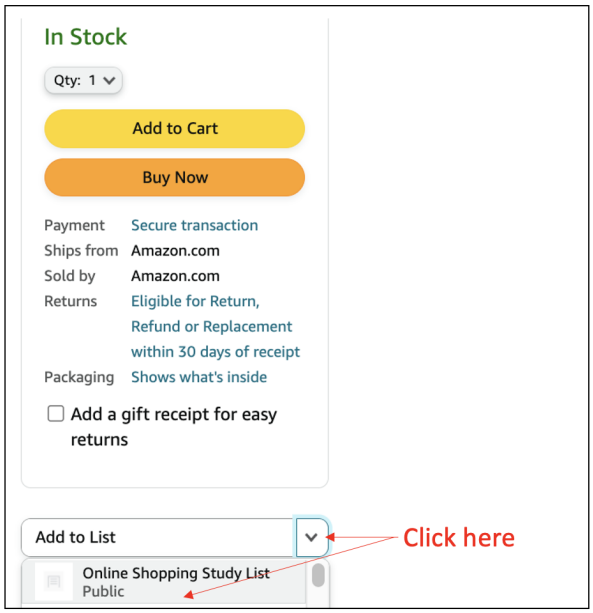


To paste the URL, right click in the text box below and select "Paste."

Household Items

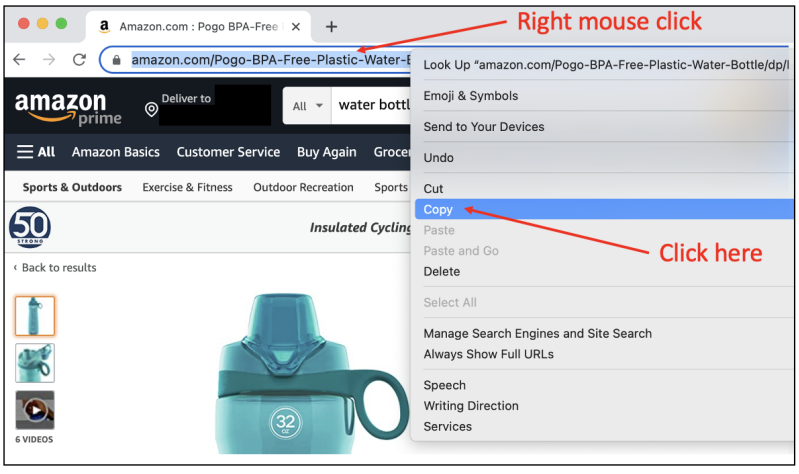
You have selected **${q://QID4/ChoiceGroup/SelectedChoices}** in the Household Items category. Please search on Amazon for the product you would like to purchase. Make sure the product you select costs less than $50 (taxes+shipping included).

Once you find the product you'd like, please add it to the "Online Shopping Study List" wishlist. You can do this by clicking the arrow next to "Add to List" and select "Online Shopping Study List," as shown below. Please make sure you add the product to the "Online Shopping Study List" rather that adding it to your cart or to another list.



Please copy the URL of the product you selected and paste it below.

To copy the URL, right click with your mouse on the address bar, then select "Copy."

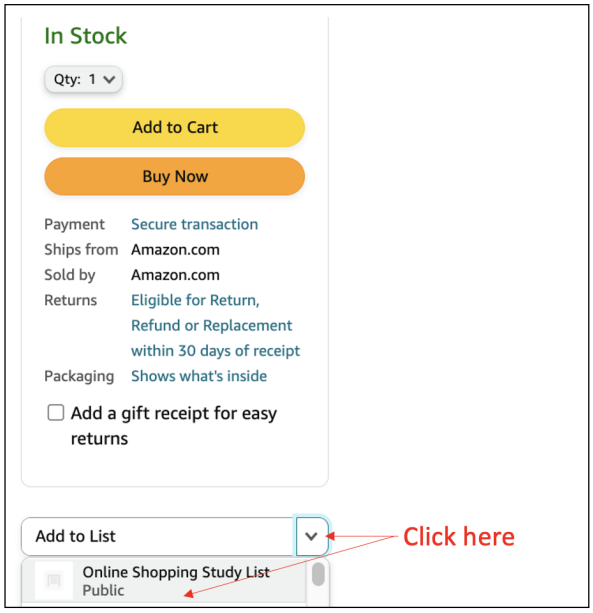


To paste the URL, right click in the text box below and select "Paste."

Paper and Wipes

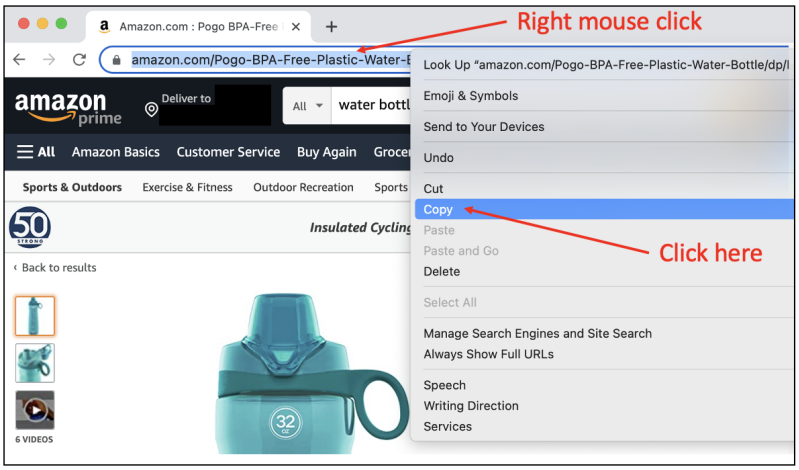
You have selected **${q://QID5/ChoiceGroup/SelectedChoices}** in the Paper and Wipes category. Please search on Amazon for the product you would like to purchase. Make sure the product you select costs less than $50 (taxes+shipping included).

Once you find the product you'd like, please add it to the "Online Shopping Study List" wishlist. You can do this by clicking the arrow next to "Add to List" and select "Online Shopping Study List," as shown below. Please make sure you add the product to the "Online Shopping Study List" rather that adding it to your cart or to another list.



Please copy the URL of the product you selected and paste it below.

To copy the URL, right click with your mouse on the address bar, then select "Copy."

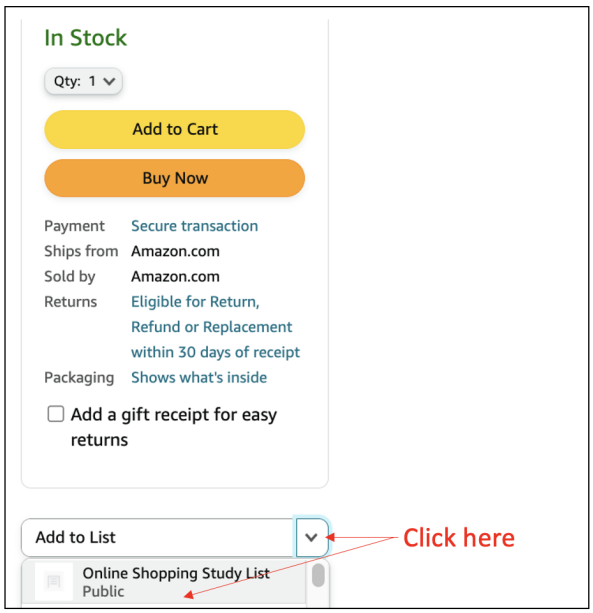


To paste the URL, right click in the text box below and select "Paste."

Health

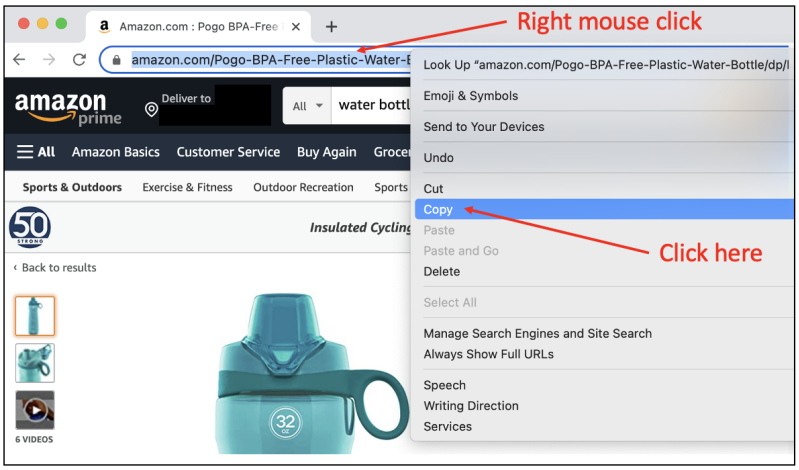
You have selected **${q://QID6/ChoiceGroup/SelectedChoices}** in the Health category. Please search on Amazon for the product you would like to purchase. Make sure the product you select costs less than $50 (taxes+shipping included).

Once you find the product you'd like, please add it to the "Online Shopping Study List" wishlist. You can do this by clicking the arrow next to "Add to List" and select "Online Shopping Study List," as shown below. Please make sure you add the product to the "Online Shopping Study List" rather that adding it to your cart or to another list.



Please copy the URL of the product you selected and paste it below.

To copy the URL, right click with your mouse on the address bar, then select "Copy."



To paste the URL, right click in the text box below and select "Paste."

Upload data

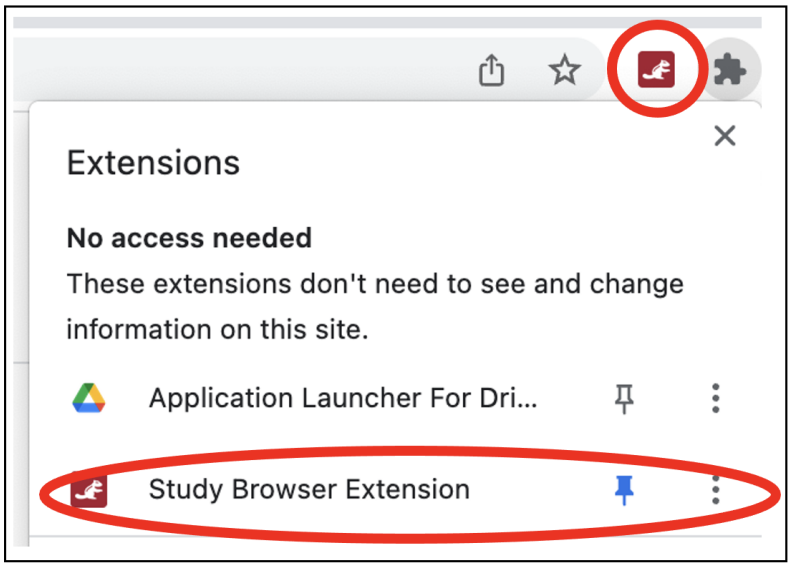
We're almost at the end of this survey.

Let's make sure you have added 6 items to your Online Shopping Study Wishlist:

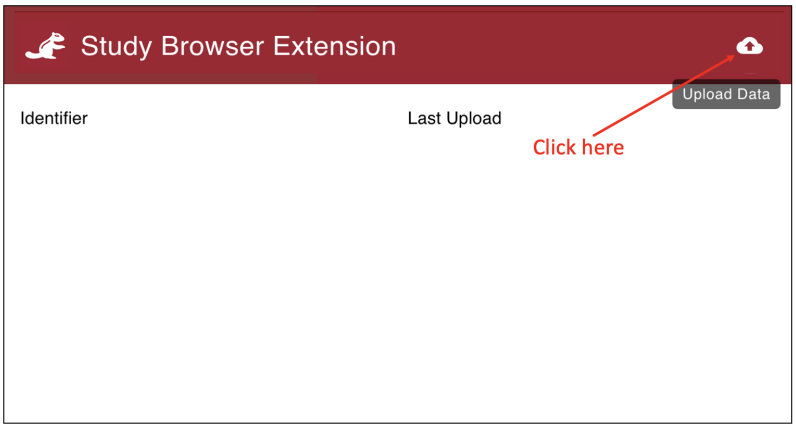
- Navigate to your wishlist. Here's the link that you shared earlier that you can copy and paste into your browser: ${q://QID1714808541/ChoiceTextEntryValue}
- **Check that you have 6 items on the list**, one per category you selected. Note: you will need to have these items in the list in order to receive compensation. If you do not, please go back and add products in the remaining categories.

It is now time to upload data to the study browser extension:

- To do that, click on the extension icon on the top-right corner of your browser. If you don't see it, it may be hidden under the puzzle icon, which is visible in the upper right corner of the screenshot below.



- A pop-up window should appear. If it does not, it may be hidden behind another browser window. Click on the "Upload Data" icon, as in the screenshot below.



The data upload may take a while. Please do not close Chrome. If you need to close it, the data upload will restart automatically the next time you open Chrome.

If you encounter any trouble, please email us at webmunk_study@hbs.edu.

In the meantime, **click below to answer the last few questions in this survey**.

Final Questions

What were the most important factors to you when shopping for the items for your wishlist? Select up to three factors:

Familiarity with Seller	Quality
Delivery Speed	Easy Returns
Value for Money	Quantity of Product
Price	Ratings/Reviews
Brand	Other Product Features

If you had to buy products in these categories again, would you shop for them again on Amazon.com?

	Definitely not on Amazon.com	Likely not	Unsure	Likely yes	Definitely yes on Amazon.com
Personal care	○	○	○	○	○
Electronics	○	○	○	○	○

	Definitely not on Amazon.com	Likely not	Unsure	Likely yes	Definitely yes on Amazon.com
Apparel	○	○	○	○	○
Household items	○	○	○	○	○
Paper products	○	○	○	○	○
Health	○	○	○	○	○

How satisfied are you with your online shopping experience during this survey?

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied

Now that you've completed the shopping tasks, do you have any feedback for us about the task or the survey?

You have answered all of the questions in the initial survey. Please be sure to complete other tasks remaining in the browser extension window, including uploading your Amazon order history.

In 8 weeks, the browser extension will automatically prompt you to complete the final survey.

Please click the arrow below to complete this task.

Default Question Block

Welcome back to our study!

Today we'll ask you some final questions about your recent online shopping experience. After you complete it, we will provide you with instructions on how to uninstall the study browser extension from your browser. This step will conclude your participation in the study and you will receive the second payment.

Please complete this survey on the computer where you have the study browser extension installed.

Block 3

Which of these statements do you agree with the most?

Over the last couple of months, I primarily shopped for myself and my family.
Over the last couple of months, I primarily shopped for myself and my partner.
Over the last couple of months, I primarily shopped for myself.

At which retailers did you shop **in-store** over the past two months? (Select all that apply)

Best Buy	Whole Foods	Dollar General
Walmart	Dollar Tree	Walgreens
CVS	Costco	Macy's
Apple	Sam's Club	Kohl's
Target	Kroger	Other (specify below):

At which retailers did you shop **online** over the past two months? (Select all that apply)

Apple.com	Ebay.com	Etsy.com

Samsclub.com	Target.com	Wayfair.com
Kohls.com	Amazon.com	Shein.com
Walgreens.com	Walmart.com	Costco.com
Macys.com	Bestbuy.com	Other (specify below):

Which of the following product categories have you shopped for **online** over the past two months?

Shoes	Personal Care	Home, Garden, and Tools
Appliances	Sports and Outdoor	Electronics
Jewelry and Watches	Health	Household Items
Furniture	Groceries	Toys
Pet Supplies	Books	Beauty
Paper Products	Apparel (Clothing)	Other (specify below):

What were the most important factors to you when shopping for items online over the past two months? Select up to three factors:

Value for Money	Easy Returns
Quality	Delivery Speed
Ratings/Reviews	Price
Familiarity with Seller	Quantity of Product
Brand	Other Product Features

How satisfied are you with your online shopping experience during this study?

Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied

Was your Amazon.com shopping experience similar or different compared to before the start of the study?

Similar

Different

What was different? Please describe.

wishlist product

We bought the following product from your Amazon wishlist:

${e://Field/wl_product}

Have you received it?

Yes

No

How would you rate this product based on the following aspects?

	Very bad	Bad	Average	Good	Very good
Price	○	○	○	○	○
Quality of product	○	○	○	○	○
Overall rating	○	○	○	○	○

product1

In this page we will ask you to review products that you purchased on Amazon in the past couple of months.

Have you received the item below?

${e://Field/product1}

I have not received it yet

I have received it

I bought it for somebody else

Somebody else bought it

How would you rate this product based on the following aspects?

${e://Field/product1}

	Very bad	Bad	Average	Good	Very good
Price	○	○	○	○	○
Quality of product	○	○	○	○	○
Delivery speed	○	○	○	○	○
Overall rating	○	○	○	○	○

Product 1 and 2

In this page we will ask you to review products that you purchased on Amazon in the past couple of months.

Have you received the item below?

${e://Field/product1}

I have not received it yet

I have received it

I bought it for somebody else

Somebody else bought it

How would you rate this product based on the following aspects?

${e://Field/product1}

	Very bad	Bad	Average	Good	Very good
Price	○	○	○	○	○
Quality of product	○	○	○	○	○
Delivery speed	○	○	○	○	○
Overall rating	○	○	○	○	○

Have you received the item below?

${e://Field/product2}

I have not received it yet

I have received it

I bought it for somebody else

Somebody else bought it

How would you rate this product based on the following aspects?

${e://Field/product2}

	Very bad	Bad	Average	Good	Very good
Price	○	○	○	○	○
Quality of product	○	○	○	○	○
Delivery speed	○	○	○	○	○
Overall rating	○	○	○	○	○

Product 1, 2 and 3

In this page we will ask you to review products that you purchased on Amazon in the past couple of months.

Have you received the item below?

${e://Field/product1}

I have not received it yet

I have received it

I bought it for somebody else

Somebody else bought it

How would you rate this product based on the following aspects?

${e://Field/product1}

	Very bad	Bad	Average	Good	Very good
Price	○	○	○	○	○
Quality of product	○	○	○	○	○
Delivery speed	○	○	○	○	○
Overall rating	○	○	○	○	○

Have you received the item below?

${e://Field/product2}

I have not received it yet

I have received it

I bought it for somebody else

Somebody else bought it

How would you rate this product based on the following aspects?

${e://Field/product2}

	Very bad	Bad	Average	Good	Very good
Price	○	○	○	○	○
Quality of product	○	○	○	○	○
Delivery speed	○	○	○	○	○
Overall rating	○	○	○	○	○

Have you received the item below?

${e://Field/product3}

I have not received it yet

I have received it

I bought it for somebody else

Somebody else bought it

How would you rate this product based on the following aspects?

${e://Field/product3}

	Very bad	Bad	Average	Good	Very good
Price	○	○	○	○	○
Quality of product	○	○	○	○	○
Delivery speed	○	○	○	○	○
Overall rating	○	○	○	○	○

Amazon Questions (Group A)

The following questions pertain to shopping on Amazon.com. Amazon sells its own lines of products, which we refer to as "Amazon-branded" products. These products include brands such as Amazon Basics, Presto!, and Solimo.

Suppose an Amazon-branded product you want is selling on Amazon for $10, and there is a similar product available (not Amazon-branded) with the same rating and delivery options.

What is the most you might be willing to pay for the other product?

Price of the Other Product (not Amazon-Branded) ($)

0 2 4 6 8 10 12 14 16 18 20

Suppose a product you want is selling on Amazon for $25, and there is a similar Amazon-branded product available with the same rating and delivery options.

What is the most you might be willing to pay for the Amazon-branded product?

Price of the Amazon-Branded Product ($)

0 5 10 15 20 25 30 35 40 45 50

Suppose a product you want is selling on Amazon for $25, and there is a similar Amazon-branded product available with the same delivery options.

However, the Amazon-branded product has a **lower rating.** It has 4 stars, compared to 4.5 stars for the other product. What is the most you might be willing to pay for the Amazon-branded product?

Price of the Amazon-Branded Product ($)

0 5 10 15 20 25 30 35 40 45 50

Suppose a product you want is selling on Amazon for $25, and there is a similar Amazon-branded product available with the same rating.

However, the Amazon-branded product has a **faster delivery time**. It offers 1-day delivery, compared to 3-day delivery for the other product. What is the most you might be willing to pay for the Amazon-branded product?

Price of the Amazon-Branded Product ($)

0 5 10 15 20 25 30 35 40 45 50

Amazon Questions (Group B)

The following questions pertain to shopping on Amazon.com. Amazon sells its own lines of products, which we refer to as "Amazon-branded" products. These products include brands such as Amazon Basics, Presto!, and Solimo.

Suppose an Amazon-branded product you want is selling on Amazon for $25, and there is a similar product available (not Amazon-branded) with the same rating and delivery options.

What is the most you might be willing to pay for the other product?

Price of the Other Product (not Amazon-Branded) ($)

0 5 10 15 20 25 30 35 40 45 50

Suppose a product you want is selling on Amazon for $10, and there is a similar Amazon-branded product available with the same rating and delivery options.

What is the most you might be willing to pay for the Amazon-branded product?

Price of the Amazon-Branded Product ($)

0 2 4 6 8 10 12 14 16 18 20

Suppose a product you want is selling on Amazon for $10, and there is a similar Amazon-branded product available with the same delivery options.

However, the Amazon-branded product has a **lower rating.** It has 4 stars, compared to 4.5 stars for the other product. What is the most you might be willing to pay for the Amazon-branded product?

Price of the Amazon-Branded Product ($)

0 2 4 6 8 10 12 14 16 18 20

Suppose a product you want is selling on Amazon for $10, and there is a similar Amazon-branded product available with the **same rating**.

However, the Amazon-branded product has a **faster delivery time**. It offers 1-day delivery, compared to 3-day delivery for the other product. What is the most you might be willing to pay for the Amazon-branded product?

Price of the Amazon-Branded Product ($)

0 2 4 6 8 10 12 14 16 18 20

End of Survey

Thank you for completing the final survey.

After completion, you will be prompted to uninstall the study browser extension from the extension pop-up window.