# The impact of outside option saliency and product descriptions on consumer wine tasting behavior

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**Abstract**
Consumer choice of differentiated products, such as wine, depends on the composition of the choice set consumers are choosing from. However, choice sets are often situationally defined through wine-tasting lists or displayed wines in a particular tasting and sales environment. In this paper, we use an experiment to explicitly modify the saliency of wine options available outside the tasting room choice set and the amount of sensory information available about the wines before wine tasting. We explicitly test whether consumer regret and fear of missing out on alternative options or consumer search costs are more likely to drive behavior around large choice sets. We find that increasing the saliency of outside options decreases one's propensity to taste the wines available for tasting and purchase immediately, while changing search costs through sensory descriptions does not affect tasting behavior. This provides support for the anticipated regret and fear of missing out motivations for behavior around large wine-tasting lists.

**Keywords:** choice paradox; regret; search cost; sensory products; wine tasting rooms
**JEL classifications:** D12; D91; M31

## I. Introduction

Consumers often have to make choices among an increasingly large number of options, particularly among such a highly differentiated product as wine. Some research suggests that extensive choices make people less satisfied and less likely to purchase items that are part of a larger selection, a pattern commonly referred to as the choice paradox or choice overload (Iyengar and Lepper, 2000; Malone and Lusk, 2019). Regret at making potentially suboptimal choices and difficulty with evaluating information about more options, or, in essence, higher consumer search costs, are the two explanations that have been proposed for this phenomenon (Malone and Lusk, 2019; Kuksov and Villas-Boas, 2010; Kamenica, 2008; Norwood, 2006; Taylor,

1997) in the economics literature. Our paper aims to separately identify and explicitly test the relative importance of these two potential drivers of choice paradoxes in a wine-tasting setting.

The basic premise of our research paper relies on separately manipulating the search costs associated with making a choice for tasting a particular bottle of wine and the likelihood of consumer regret and fear of missing out through outside option saliency, while keeping the effective choice set of wines available for tasting to our participants fixed. Specifically, we use a two-by-two experimental design with paid wine tastings and (1) vary the level of sensory descriptions and food pairing suggestions available for the wines, which we assume affects consumer search costs, and (2) include a number of comparable but unavailable for immediate tasting wines, which we assume affects consumer regret and fear of missing out by changing the saliency of outside options.

We find that the saliency of outside options plays a relatively stronger role in consumer propensity to pay for tasting any particular wine, compared to the inclusion of sensory notes and food pairing recommendations. Our findings provide some evidence that fear of missing out and ex-ante choice regret, rather than the changing search costs, are driving choice paradox behavior in wine consumers. Specifically, we find that seeing more wines on the overall tasting list, when some of them are not available for immediate tasting, decreases consumer propensity to taste any wine from the available set, independent of the level of detail provided in the sensory notes.

## II. Relevant literature

### A. Search costs and regret: Consumer behavior around large choice sets

Choice overload, or choice paradox, can be generally defined as the counterintuitive phenomenon of decreased consumer propensity to choose or buy any given product from a larger choice set. It has been identified in a range of settings, with some of the literature presented next.

Iyengar and Lepper's (2000) seminal paper studied the impact of choice overload on consumer behavior. Their results suggest that extensive choice is initially more attractive, but this attractiveness is not reflected in subsequent purchasing decisions. Consumers exposed to limited choices purchase considerably more and have higher purchase satisfaction than consumers exposed to extensive choice sets. The authors suggest search costs and regret explanations as possible drivers behind the observed behavior, but do not explicitly provide a formal model.

The search cost explanation for choice has been evaluated in many empirical settings (Gabaix, 2006; Reutskaja et al., 2011), with the implication that choice overload can be mitigated by reducing search costs. Behavioral nudges, advertising, expert scores, and reviews have all been proposed as ways of simplifying choices (Johnson et al., 2012; Nelson, 1974; Malone and Lusk, 2019). Boatwright and Nunes (2001) find that reducing the number of stock keeping units (SKUs) within a category in a grocery store leads to an overall increase in sales and higher consumer spending. The authors hypothesize that the removal of redundant items and "clutter" in the choice set reduces consumer search costs and is behind their results. Malone and Lusk (2017, 2019) look at how the number of options on a bar menu or in a choice experiment, along with information provision, might affect choice overload in food

and beverage markets. They find that choice overload is present but is remediated through the inclusion of expert rankings on the menu. They hypothesize that expert suggestions can reduce search costs by providing a reliable information signal about quality and a potential choice decision heuristic. Chernev (2003) also finds that making respondents rank the importance of various attributes before making a choice reduces the preference for small choice sets by simplifying consumer choice. Schwartz et al. (2002) conclude that choice overload can be moderated by the seller by lowering search costs and catering to specific target markets.

In general, search costs have been successfully used in the theoretical modeling of consumer behavior in relation to choice set size. Kamenica (2008) uses choice overload as an example of contextual inference in markets, with theoretical model results showing that generally consumers who are less informed about a particular product will prefer a brand with a smaller product line (choice set) to maximize preference matching. Kuksov and Villas-Boas (2010) explicitly model the impacts of search costs and preferences for variety on consumers decisions to conduct a search or to avoid a purchase altogether. The modeling results suggest that both too many and too few alternatives can lead to a decreased propensity for any choice among alternatives. The authors suggest that too many choices might overwhelm consumers with high search or evaluation costs, while too few choices reduce the likelihood of a preference match. This suggests that modeling choices can lead to different predictions on the impact of the number of options in the choice set, highlighting the need for empirical work.

In addition to search costs, regret theory has also been proposed as an explanation for the choice paradox. Consumers might avoid an attractive ex-ante choice out of fear of being disappointed with it after the fact. In other words, consumers tend to include expectations of ex-post choice dissatisfaction in their decision making (Taylor, 1997). Comparatively fewer papers have focused on the impact of regret on consumer decision making.

Irons and Hepburn (2007) develop a theoretical economic model to frame regret theory in making choices over different size choice sets. They find that after a particular threshold, a higher number of choices decreases utility for agents that experience regret. Regretful agents are also less likely to engage in a product search when the number of choices is large. On the other hand, non-regretful agents benefit from more choices. Sarver (2008) incorporates anticipated regret over ex-post consumer dissatisfaction with their choice into a theoretical model of choice over lottery menus. He shows that ex-post regret leads to agents limiting their choices ex-ante. Gourville and Soman (2005) suggest that, for some assortment types, a larger variety increases both the regret and difficulty of comparison. They find that variety can backfire and decrease brand market share.

While most economic regret-based models imply ex-post dissatisfaction with one's choice, research in psychology suggests that consumers might experience disutility from forgoing some options even when ex-post satisfied with their initial choice. This disutility can be framed as fear of missing out (or anticipated regret) on forgone alternatives (Milyavskaya et al., 2018; Solt, Rixom, and Taylor, 2018; Zeelenberg, 2018). In this framing, a larger choice set carries a larger penalty, as more choices are foregone by the consumer, which leads to higher levels of fear of missing out ex-ante and thus a reduced likelihood of any choice.

As the literature suggests, proposed explanations for choice overload can be widely described as the ones that focus on cognitive costs of decision making (Kamenica, 2008; Kuksov and Villa-Boas, 2010; Malone and Lusk, 2017, 2019; Iyengar and Kamenica, 2010; Chernev, 2003) and the ones that focus on consumer potential regret minimization, or "fear of missing out" (Iyengar and Lepper, 2000; Sarver, 2008; Irons and Hepburn, 2007; Milyavskaya et al., 2018). Overall, the literature on the impact of search costs and regret on consumer choice behavior highlights its complexity and the need for further investigation. For example, Chernev, Böckenholt, and Goodman (2015) use a meta-analysis of 99 studies and find that choice set complexity, decision task difficulty, preference uncertainty, and decision goals can all moderate the effects of choice overload. Research also suggests that contextual factors like time constraints can be a leading factor in choice and search behavior (Caplin, Dean, and Martin, 2011).

The question of whether search costs or regret are driving the choice overload effects is often hard to address, as information provision can minimize both search costs and the possibility of ex-post regret. For example, the most effective informational treatment for reducing choice overload in Malone and Lusk (2017, 2019) is the provision of expert ratings for available beers. Such ratings, however, both reduce search costs and minimize the potential for feeling regret at the same time (as experts support consumer choice). Arunachalam et al. (2009) show that in a setting where participants are allowed to voluntarily reduce their choice set size, only a small portion of respondents prefer to choose from a small choice set, suggesting that consumers themselves might either not consider large choice sets to be a problem or be unaware of their own pattern of behavior.

We contribute to the literature by explicitly testing the relative importance of regret and search costs in consumer wine choices. Manipulating the saliency of options outside the actual available choice set induces consumer regret through the feeling of missing out while keeping the actual search costs for the available choice set unchanged. On the other hand, by modifying wine sensory descriptions and food pairings suggested by wine reviewers, we affect consumer search costs but keep anticipated regret over the number of forgone options stable.

In the rest of this section, we discuss existing literature on tasting menu design and wine choice that is useful in the applied design of our experiment.

## B. Wine tasting literature and drivers of consumer demand for wine

In wine-tasting rooms, printed sensory descriptions (tasting notes) are commonplace (LaTour, LaTour, and Feinstein, 2011). The addition of sensory information has been alternatively shown to both facilitate choice and increase consumer demand, and to complicate choice and confuse consumers. Lockshin and Corsi (2012) show that printed, elaborate taste descriptions improve the consumer's probability of choosing a wine. Bender (2008) and Ramirez (2010) also show that sensory descriptors that consumers relate to have more influence than objective information about grape varieties, geographic denominations, etc. However, other research suggests that sensory descriptions are ambiguous and represent a recreational art with highly individualistic improvisatory elements (Quandt, 2007; Dilworth, 2008), with consumers likely disregarding sensory descriptors and relying more on product information such as vintage, variety, and region (Thomas et al., 2014). A recent study (Li, Predic, and Gómez, 2020) also found that

employing objective, rather than sensory, tasting notes are associated with better sales performance in winery tasting rooms. This suggests that expanding sensory descriptions and information about food pairings may both increase and decrease consumer search costs; either way, additional information should affect cognitive search costs.

In terms of tasting list composition, some tasting rooms create a specific wine-tasting menu that only includes wines in a flight or available for tasting, while others include more wines, highlighting the wines that are available to taste. Gómez and Kelley (2013) show that consumer flexibility in the choice of wines tasted and the variety of wines available for tasting have a high impact on winery performance. A study by Shapiro and Gómez (2014) further suggests that the variety of the wines tasted, number of wines tasted, and other factors are important factors in consumer satisfaction in winery tasting rooms.

## III. Methodology

### A. Experimental design

The lab experiment took place in an experimental economics lab at a large Pacific Northwest university. We recruited participants over 21 years old who were regular wine drinkers and had visited winery tasting rooms before. All participants received a $35 endowment that they could spend in the experiment or take home as a participation payment in its entirety if no purchases were made during the experiment.

Each session of the experiment for this study consisted of a wine-tasting stage, followed by an extended socio-demographic and wine consumption habits survey. The same six wines were presented for tasting across all treatment groups. Participants were randomly assigned to one of the four treatment groups (summarized in Table 1), and each experimental session included at most six participants, all in the same treatment. Once participants arrived in the lab, they read and signed the experimental instructions and the consent forms and were endowed with $35.

The tasting stage started when participants were presented with a tasting sheet on their screen. The participants were told that they could select any, none, or all of the available wines, provided they paid $1 for each wine tasted. Once the tasting selections of all participants were submitted, the experimenter served the participants

**Table 1.** Experimental design and treatment group description

| Saliency of outside wine options / Search costs via information provision | Only objective wine descriptors included in tasting list: vintage, variety, winery name, geographical provenance | Objective + sensory descriptions (tasting notes) as well as food pairing suggestions included |
|---|---|---|
| Only 6 wines immediately available for tasting included on the tasting list | Treatment group 1 | Treatment group 2 |
| 6 wines available for immediate tasting + 12 comparable wines available for tasting and purchase in local stores | Treatment group 3 | Treatment group 4 |

with the wines they had selected for tasting. Participants were told they should taste and expectorate the wines, but expectoration was not enforced. Participants were provided with two wine glasses (one for red and white wines each), water to rinse the glasses after each tasting, and spittoons for wine waste.

The tasting sheets varied according to one of the four experimental treatment groups presented in Table 1. (1) Tasting list included only the six available wines for immediate tasting during the experiment, and presented only basic objective descriptors of the wine, such as brand, vintage, varietal, and geographical appellation on the tasting list; (2) tasting list included only six wines, but provided both basic descriptors and extended wine sensory descriptions, known as tasting notes, and food pairing recommendations; (3) tasting list included basic descriptions for both the six wines available for immediate tasting and 12 comparable wines available for tasting and purchase in local stores, but not the experiment itself; and (4) tasting list provided both basic and extended wine descriptors for both the six available and 12 comparable wines.

This approach to experimental design allows us to have treatments that would only modify either the saliency of wine options outside the immediate choice set, thus affecting consumer ex-ante regret and fear of missing out, or consumer information availability, affecting search costs and the cognitive load of selecting between wine options with either scant or detailed descriptions. This way, treatment groups (3) and (4) increase outside option saliency relative to groups (1) and (2), respectively; similarly, treatment groups (2) and (4) change the search costs and cognitive load by introducing additional information, compared to treatment groups (1) and (3), respectively.

The long wine-tasting sheet included 18 wines altogether, three of each varietal used in the study: Pinot Noir, Cabernet Sauvignon, and Syrah among red wines, and Pinot Gris, Chardonnay, and Riesling among white wines. Only one wine from each variety was available for immediate tasting. Participants in treatments (1) and (2) were presented with a short tasting of one wine from each of the aforementioned varieties. Having the same wines available in all treatments effectively limits the relevant choice set, while the inclusion of unavailable wines on the list increases the saliency of outside options. If all 18 wines were available for tasting, search costs and the fear of missing out are both likely to increase, making their impact impossible to identify separately.

Participants in all treatments saw winery names, grape varieties, regions, and vintage (basic objective descriptors) for all wines on their sheets; participants in treatments (2) and (4) were additionally provided with sensory description information and food pairing recommendations. Sensory wine descriptions were sourced from the following wine review websites: WineEnthusiast, wine.com, Cellar 503-An Oregon wine club, Portland wine company, and A-Z Wine Works.

An extensive socio-demographic and wine consumption survey was administered to all participants at the end of the experiment. A copy of the survey instrument and an example of the wine-tasting list selection sheet are provided in Appendices B and C.

## IV. Data description and analysis

Participation in our experiment consisted of 189 adult wine drinkers. Some of the demographic characteristics of our sample overall and in each treatment are provided

in Table 2. In our sample, 63% were female, 35 years old on average, with 39% of participants attaining at least a bachelor's degree. Thirty-nine percent of our sample earned less than $24,999, 21% made between $25,000 and $49,999, 24% made between $50,000 and $99,999, and 16% made over $100,000 a year. Seventy-nine percent of the respondents in the sample were primary wine shoppers, and 89% of the respondents did not have children under 18 years of age.

Among the wines selected for tasting, 55% were red, implying that overall consumers were more interested in reds than whites. The Pinot Noir on offer in the experiment was the most popular wine, and the Chardonnay on offer was the least popular, possibly reflecting a regional preference for Pinot Noir. In addition to consumption habits and socio-demographic questions, we have included a short wine knowledge quiz to independently gauge consumer wine knowledge. The highest recorded score was 67%, and 42% of the respondents in the sample scored 4 points or above out of 9 total possible points. The average score was 3.3 (37%) out of 9 total points; 2% of the sample scored zero points. While the average wine test scores were not extremely high, more than half of the sample said that they do have considerable experience and knowledge of wine. This is in line with Aqueveque (2018), who shows that wine consumers with low levels of knowledge overestimate their knowledge and consumers with high levels of knowledge underestimate their knowledge.

On average, our participants had 14 years of wine-drinking history (a standard deviation of 12.20). This information reflects that our respondents have pre-existing knowledge about wine and an established understanding of their preferences. The proportions of wines tasted in each treatment out of all wines available for tasting varied considerably by treatment. Treatments 1 and 2 have higher levels of taste, while treatments 3 and 4 have lower levels of taste. This provides some preliminary support for outside option saliency affecting consumer propensity to taste the wines. A simple test of proportions confirms that tasting levels are significantly different between high and low outside option saliency conditions (0.0012 significance level); however, they are not significantly different between basic and extensive sensory note conditions.

## A. Econometric model specifications

We use a Probit model[1] to understand the probability of tasting any given wine and the impact of increased outside option saliency and extended sensory and food pairing notes. The estimated model is:

$$Tasted_{ijt} = \alpha_0 + \alpha_1 saliency_t + \alpha_2 extended\ notes_t + \alpha_3 bottle_j + \alpha_l x_{li} + \alpha_k z_{ki} + \epsilon_{ijt}$$

$$Tasted_{ijt} = \begin{cases} 1\ if\ individual\ i\ in\ treatment\ t\ choose\ to\ taste\ wine\ j \\ 0\ otherwise \end{cases} \quad (1)$$

Here, subscript $i$ refers to the subject, $j$ to the wine bottle (1–6), and $t$ to the treatment. Variable "*saliency*" is a dummy equal to 1 when participants see 18

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[1]We have also estimated Poisson and Negative Binomial models with count data on the number of wines tasted by each individual as a robustness check for the Probit model. Results remain similar and are in the Appendix.

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**Table 2.** Descriptive statistics: Means and standard deviations of demographic variables by treatment group

| | All | Treatment 1: Short list and basic tasting notes | Treatment 2: Short list, extended tasting notes | Treatment 3: Long list, basic tasting notes | Treatment 4: Long list, extended notes |
|---|---|---|---|---|---|
| Wines tasted (%) | 47.88 | 49.64 | 55.33 | 42.75 | 43.26 |
| Age (years) | 35.36 (13.68) | 32.67 (11.97) | 35.84 (13.98) | 36.47 (16.16) | 36.40 (11.89) |
| Female (%) | 62.90 (0.48) | 66.66 (0.47) | 59.18 (0.49) | 66.66 (0.47) | 59.57 (0.49) |
| Education (%) | | | | | |
|   High school graduate | 0.53 | 0.00 | 0.00 | 2.17 | 0.00 |
|   Some college | 11.11 | 15.22 | 8.00 | 19.57 | 2.13 |
|   Associate degree | 4.23 | 4.35 | 2.00 | 6.52 | 4.26 |
|   Bachelor's degree | 39.15 | 41.30 | 40.00 | 41.30 | 34.04 |
|   Graduate degree | 44.97 | 39.13 | 50.00 | 30.43 | 59.57 |
| Income category (%) | | | | | |
|   Less than or equal $24,999 | 39.15 | 34.78 | 40.00 | 41.30 | 40.43 |
|   $25,000–$49,999 | 20.63 | 26.09 | 22.00 | 15.22 | 19.15 |
|   $50,000–$99,999 | 23.81 | 21.74 | 26.00 | 19.57 | 27.66 |
|   Greater than or equal $100,000 | 16.40 | 17.39 | 12.00 | 23.91 | 12.77 |
| Primary wine shopper (%) | 78.84 | 73.91 | 90 | 73.91 | 76.60 |
| No children under 18 age (%) | 89.42 | 91.30 | 86.00 | 97.83 | 82.98 |
| Number of subjects | 189 | 46 | 50 | 46 | 47 |

**Table 3.** Estimates for tasting behavior using a probit model, marginal effects

| | (1) Bottle FE only, (F) | (2) F + Demographic controls, (FD) | (3) FD + Wine habits, (FDW) |
|---|---|---|---|
| Saliency | −0.0985*** (0.0296) | −0.0991*** (0.0299) | −0.0865*** (0.0307) |
| Extended notes | 0.0324 (0.0296) | 0.0323 (0.0322) | 0.0241 (0.0327) |
| Bottle=2 (base: bottle 1) | −0.123** (0.0495) | −0.131*** (0.0502) | −0.132*** (0.0504) |
| Bottle=3 | 0.0638 (0.0481) | 0.0488 (0.0482) | 0.0488 (0.0484) |
| Bottle=4 | 0.171*** (0.0462) | 0.164*** (0.0467) | 0.164*** (0.0470) |
| Bottle=5 | 0.0317 (0.0541) | 0.0214 (0.0548) | 0.0207 (0.0551) |
| Bottle=6 | 0.0320 (0.0522) | 0.0270 (0.0532) | 0.0266 (0.0535) |
| Female | — — | −0.0524* (0.0298) | −0.0570* (0.0293) |
| Age | — — | −0.000721 (0.00130) | −0.00138 (0.00134) |
| Income (base: less than or equal $24,999) | | | |
| $25,000–$49,999 | — — | −0.0504 (0.0387) | −0.0625 (0.0393) |
| $50,000–$99,999 | — — | −0.0186 (0.0427) | −0.00621 (0.0424) |
| Greater than or equal $100,000 | — — | −0.0724 (0.0479) | −0.0571 (0.0513) |
| Education (base: high school/college) | | | |
| Associate degree | — — | −0.0537 (0.0968) | −0.0470 (0.102) |
| Bachelor's degree | — — | −0.0210 (0.0502) | −0.0201 (0.0492) |
| Graduate degree | — — | −0.0414 (0.0543) | −0.0335 (0.0544) |
| Primary_wine_shopper=1 | — — | — — | 0.0727** (0.0339) |
| Children_under18=1 (base=0) | — — | — — | −0.101 (0.0724) |
| Children_under18=2 | — — | — — | −0.0294 (0.0460) |
| Children_under18=3 | — — | — — | 0.0998 (0.0700) |

*(Continued)*

**Table 3.**  (*Continued.*)

|  | (1) | (2) | (3) |
|---|---|---|---|
|  | Bottle FE only, (F) | F + Demographic controls, (FD) | FD + Wine habits, (FDW) |
| Knowledge test score | — | — | 0.00131 |
|  | — | — | (0.00105) |
| Observations | 1,134 | 1,116 | 1,116 |

Notes: Standard errors in parentheses, clustered by respondent ID. *p < .10, **p < .05, ***p < .01

wines on their tasting sheet. Variable "*extended notes*" is a dummy equal to 1 when basic wine information is supplemented with sensory wine descriptions and food pairing recommendations. Variable "*bottle$_j$*" captures wine-specific characteristics for each bottle $j$. Variable $x_{li}$ is the demographic attribute $l$ for individual $i$. Variable $z_{ki}$ is the wine consumption habit attribute $k$ for individual $i$. We cluster errors by participant ID as the errors might be correlated within individuals who taste more than one wine.

We check the robustness of our results by comparing different specifications, starting with including no demographic controls and gradually expanding the set.

## V. Estimation results

The results of the Probit model are presented in Table 3, and the estimated coefficients of interest for different specifications are illustrated in Figure 1. Our results suggest that the increased saliency of outside options significantly decreases the
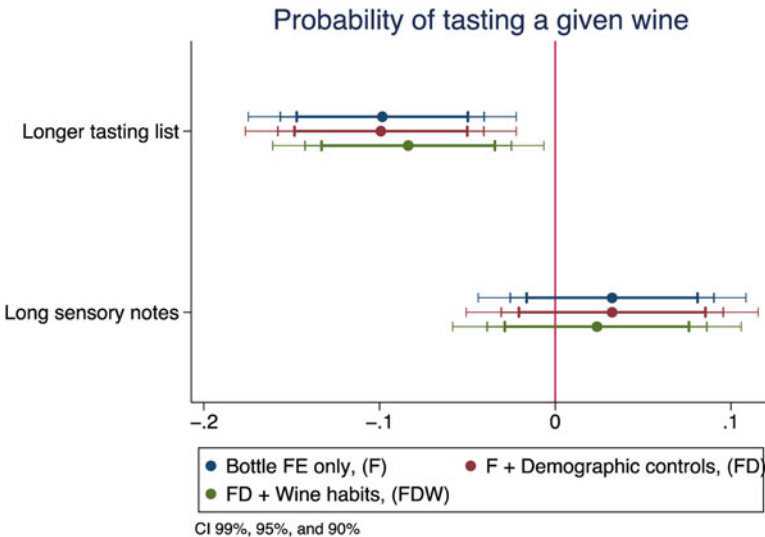


**Figure 1.** Estimated coefficients plot for the tasting behavior.

probability of tasting any wine by approximately 9%. The level of description detail, on the other hand, does not have a significant impact on a consumer's probability of tasting a wine.

Specifically, as seen in Figure 1, all three model specifications from Table 3, independent of the combinations of controls included in the estimation, suggest that, on average, seeing more wine titles on the wine-tasting list reduces the probability of tasting any given wine by around 9%. On the other hand, the effect of detailed sensory notes on the propensity to taste wine, is consistently insignificant, with the mean insignificant impact also consistently smaller than that of the tasting list length. The figure includes the 90%, 95%, and 99% confidence intervals for all of the estimates presented.

These results suggest that the saliency of outside options reduces the likelihood of tasting any given wine. The fear of missing out on potential experiences by committing to tasting a particular wine might be behind our observed reduced propensity to taste wine, in line with the regret theory proposed as an explanation for choice overload. We find no evidence to support the search cost mechanism behind consumer choice overload.

## VI. Conclusion

Our study focused on testing competing theories of different drivers behind the consumer choice paradox on individual's own paid wine-tasting choices, with a focus on changing search costs and experienced or anticipated consumer regret.

First, by looking at consumer tasting behavior, we find that the probability of tasting a wine is significantly decreased when outside wine options are more salient, which supports the regret theory (fear of missing out by forgoing options) explanation of choice overload. Second, we do not see any evidence for search cost manipulations impacting consumer probability of tasting. These results are robust to different specifications and inclusion of a wide range of controls. Our study provides evidence for the importance of a careful experiment when multiple complementary psychological models of behavior can explain observed socio-economic behavior.

Our results also provide important implications for the commercial design of wine tastings and direct-to-consumers sales experiences. Specifically, our results suggest that mentioning wines unavailable for immediate tasting might reduce the level of tasting participation. As tastings are often used as a promotional vehicle for direct-to-consumers sales, this is an important consideration for wineries.

The study has some limitations, stemming from its focus on tastings, where the environment might be especially targeted at discovering and trying new choices and where the expectation for variety can be set by consumer previous experiences. Future research should investigate the link of outside option saliency in other settings, for example in wine and liquor stores, and further deepen our understanding of how consumer characteristics such as neophilia and wine knowledge, among others, impact consumer choice behavior.

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# Appendix

## A. Comparison of probit model results for tasting behavior with Poisson and negative binomial models

In Poisson and Negative Binomial models, instead of *tasted* binomial dependent variable, we now use the number of wines tasted by an individual as the dependent variable (*count_tasted*). Negative binomial model facilitates the over-dispersed count data on tasting behavior. The results of the three models are consistent (note that in the text, marginal estimates for the probit model are provided). By looking at the coefficients in all three models, we can conclude that the saliency of outside options decreases the probability of tasting/ logs of expected counts of tasted wines by an individual.

**Table A.** Comparison of marginal probit, Poisson and negative binomial models on tasting behavior

|  | (1) | (2) | (3) |
|---|---|---|---|
|  | Probit model | Poisson model | Negative binomial model |
|  | tasted | count_tasted | count_tasted |
| Saliency | −0.249*** | −0.200*** | −0.200*** |
|  | (0.0751) | (0.0605) | (0.0605) |
| Extended notes | 0.0814 | 0.0647 | 0.0647 |
|  | (0.0810) | (0.0651) | (0.0651) |
| Constant | 0.307* | 1.386*** | 1.386*** |
|  | (0.166) | (0.117) | (0.117) |
| Observations | 1,116 | 186 | 186 |

*Notes:* Standard errors in parentheses. *p < .10, **p < .05, ***p < .01

## B. Survey instrument

1. *How often do you drink wine?*
   - ☐ Never          ☐ On special occasions          ☐ Only on weekends
   - ☐ Once a week    ☐ 3–5 times a week               ☐ Everyday

2. *How much experience do you feel you have with wine?*

   1     2     3     4     5     6     7

   Not much                                    A lot

3. *How many years have you been drinking wine?_____*

4. *Where do you most often drink wine?*
   - ☐ Home          ☐ Restaurant          ☐ Bar/Club
   - ☐ Party/Gathering with friends, other

5. *What types of wine do you typically consume?*
   - ○ Red wines       ○ White wines         ○ Rose wines
   - ○ Sweet wines     ○ Sparkling wines     ○ Fruit-based wine

6. *On average, how frequently do you drink wine?*
   - ○ A couple times a year/Never       ○ Less than once a month
   - ○ One to three times a month        ○ Once a week
   - ○ More than once a week             ○ Daily

7. *What is your favorite RED WINE varietal?*
   - ○ Cabernet Franc.       ○ Cabernet Sauvignon   ○ Gamay
   - ○ Grenache/Garnacha     ○ Malbec               ○ Merlot
   - ○ Mourvedre/Mataro      ○ Nebbiolo             ○ No preference

8. *What is your favorite WHITE WINE varietal?*
   - ○ Pinot Gris            ○ Chardonnay
   - ○ Riesling             ○ Sauvignon Blanc
   - ○ Semillon             ○ Moscato
   - ○ Gewürztraminer       ○ Bergerac Blanc
   - ○ Fume Blanc           ○ No preference

9. *Which wine growing areas in the United States are you familiar with or intrigue you the most?*
   - ○ California     ○ New York        ○ Washington
   - ○ Oregon        ○ Pennsylvania    ○ Other states

10. *What do you typically spend for a regular (750mL) bottle of wine?*
    - ○ Less than $10     ○ $10 - $15     ○ $15 - $20
    - ○ $20 - $25         ○ $25 - $30     ○ More than $30

11. *How do you typically learn about wine products that you may end up purchasing?*
    - ☐ Recommendation by family or friends     ☐ Sales person's introduction
    - ☐ Advertisements on TV, newspapers and magazines ☐ In store promotion
    - ☐ Internet          ☐ Wine magazines          ☐ Other (please specify)

12. *How important are the following wine attributes to you? (on a scale of 1 to 7)*
    - Price: ☐                      Winery Name: ☐
    - Varietal: ☐                   Year: ☐
    - Label: ☐                      Expert Opinion/Score: ☐
    - Production Region: ☐          Recommendation from family/friend: ☐
    - Specific Appellation or AVA: ☐

13. *Do you grow your own food?*
    ○ Yes          ○ No
14. *Have you taken any wine classes?*
    ☐ No ☐ Yes, please indicate the classes _____
15. *More about wine:*
    a. Which of the following is a red wine?
        ☐ Riesling ☐ Chardonnay ☐ Merlot ☐ Sauvignon Black ☐ Not sure
    b. A peppery character is most associated with which wine?
        ☐ Merlot ☐ Shiraz/Syrah ☐ Semillon ☐ Pinot Noir ☐ Not sure
    c. Which grape are never used to make Champagne?
        ☐ Chardonnay ☐ Riesling ☐ Pinot Noir ☐ Pinot Meunier ☐ Not sure
    d. Which is not a famous French wine region?
        ☐ Bordeaux ☐ Champagne ☐ Rheingau ☐ Alsace ☐ Not sure
    e. Which is the name of New Zealand's famed Sauvignon Blanc region?
        ☐ Kapiti ☐ Hawkes Bay ☐ Waipara ☐ Marlborough ☐ Not sure
16. *How often do you come into any wine store, but leave without finding a bottle that you'd want to buy?*
    ○ never   ○ sometimes   ○ regularly   ○ most of the time
    ○ always
17. *How often do you buy wine?*
    ○ never   ○ sometimes   ○ regularly   ○ most of the time
    ○ always
18. *How often do you drink wine?*
    ○ never   ○ sometimes   ○ regularly   ○ most of the time
    ○ always
19. *How difficult was it to select the wine to taste?*
    ○ Very hard   ○ Hard   ○ Moderately hard   ○ Easy
    ○ Very easy
20. *What wines do you prefer?*
    ○ Red          ○ White          ○ Rose
21. *How often do you try/purchase a new type/brand of wine?*
    ○ never   ○ sometimes   ○ regularly   ○ most of the time
    ○ always
22. *How often do you purchase the same wine?*
    ○ never   ○ sometimes   ○ regularly   ○ most of the time
    ○ always
23. *When you buy wine, how many bottles on average do you purchase at one time?*
    _____
24. *When picking a wine to purchase, how important is varietal of wine to you?*
    ○ Not important   ○ Somewhat important   ○ Important
    ○ Very important   ○ Extremely important
25. *When picking a wine to purchase, how important is region to you?*
    ○ Not important   ○ Somewhat important   ○ Important
    ○ Very important   ○ Extremely important

26. *What is your current age (years)?*_____

27. *What is your gender?*
    _ Male          _ Female

28. *How many people live in your household? Include yourself, your spouse and any dependents. Do not include your parents or roommates unless you claim them as dependents.*
    _1    _2    _3    _4    _5    _6    _7    _ 8+_

29. *Are you:*
    ○ Politically liberal          ○ Politically moderate
    ○ Politically conservative     ○ Other (please specify)

30. *Which category best describes your household income (before taxes) in 2015?*
    ☐ Less than $10,000    ☐ $10,000–$14,999    ☐ $15,000–$24,999
    ☐ $25,000–$34,999      ☐ $35,000–$49,999     ☐ $50,000–$74,999
    ☐ $75,000–$99,999      ☐ $100,000–$149,999   ☐ $150,000–$199,999
    ☐ $200,000–$249,999    ☐ $250,000 and above

31. *What is the highest level of education that you have completed?*
    ○ Some high school  ○ High school graduate  ○ Some college
    ○ Associate degree  ○ Bachelor's degree
    ○ Graduate degree/Professional

32. *How many children under the age of 18 years old do you have in your household?*
    _____

33. *Are you the primary WINE shopper in your household? Yes/No*

34. *How many meals do you purchase from a restaurant or a cafeteria?_____times per week*

35. *Are you:*
    ☐ Single ☐ In a relationship, but not living together (including married)
    ☐ In a relationship, living together (including married) ☐ Other

*C. Wine tasting list selection interface, short wine tasting list with extended sensory tasting notes. Specific wine brand details were obscured for publication*

**Oregon State University** | **Applied Experimental Economics Lab** **AEELab**

Step 1: Wine Tasting

Below is our wine tasting list.

Please take your time to select the wines that you would like to taste today.

☐ ███████████████████Round and fruity Pinot Gris, packed with peach and pear fruit, ripe and forward. It's simple, fresh and easy-drinking. FOOD & WINE PAIRING: Barbecue, Seafood, Pork, Roast vegetables, Asparagus.

☐ ███████████████Fruit driven Chardonnay bursting with ripe green apple, pear and stone fruit. It has good texture and clean rich flavors that is balanced with bright acidity, minerality and light oak. FOOD & WINE PAIRINGS: Pork, Rich fish, Vegetable and mushroom dishes, Poultry

☐ ███████████████This Riesling is juicy, focused and light on its feet, offering citrus and orchard fruit flavors. Finishes silky and long, with lingering pear nectar and honeysuckle and a snap of tangy acidity. FOOD & WINE PAIRINGS: Shellfish, Oysters, Ceviche, Sausages, Pickled vegetables

☐ ███████████████This Pinot Noir starts with a bright nose of currants and cherry, which continue on the palate along with spice and earthy smokiness. Smooth tannins and balanced acidity. FOOD & WINE PAIRINGS: Mushrooms, Cured meats, Game meats, Duck, Sea food.

☐ ███████████████Refreshingly bright, this spicy Syrah has light, earthy tannins that lend the red fruit a salty, savory edge. Follows through to a medium to full body, firm tannins and a fresh finish. FOOD & WINE PAIRINGS: Roast lamb, Barbecue, Hard aged cheeses, Grilled vegetables, Duck.

☐ ███████████████ This Cabernet offers aromatics of cassis, blackberry liqueur, and cedar. The intriguing palate delivers plenty of black and purple fruit with supple tannins, good acidity, and a lingering finish. FOOD & WINE PAIRINGS: Grilled steaks, Leaner meats, Roast chicken, Chorizo, Braised vegetables.