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A European Quality Term for Mountain Wines? An Online Experimental Auction with Italian Consumers

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Promoting the consumption of mountain products could contribute to the sustainable development of mountain areas, as it enables the preservation of traditional production methods while yielding positive socioeconomic outcomes. Labeling is an important marketing tool that supports mountain food supply chains and sustainable mountain development, since it guarantees the origin and specific quality attributes of the mountain product to consumers and thereby supports producers in marketing mountain food products. The European Union (EU) quality term "mountain product" was created for these reasons. However, so far, using this new labeling scheme for wine has not been allowed. The aim of this study is to contribute to the ongoing debate surrounding the possible extension of the EU quality term to the wine sector from a consumer perspective. An online auction was conducted to identify whether Italian consumers are willing to pay more for a wine with an EU mountain product logo on the label. Furthermore, a cluster analysis was run to segment the market of potential customers of mountain wine based on the "greenness" of their lifestyle. While the results of the online experiment did not indicate any significant difference between the prices paid in presence or in absence of the mountain product logo, our findings revealed the existence of clusters of consumers characterized by a green lifestyle who value mountain wines and are willing to pay a price premium for the EU mountain product logo. This is an encouraging signal for wine growers in the mountains who have already started investing in wines that are produced in a more sustainable way and who want to stay competitive.

Keywords: *mountain area; mountain product; quality term; wine consumption; willingness to pay (WTP); experimental auction; nudging.*

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Introduction

Promoting the consumption of mountain products can contribute to the sustainable development of mountain areas. Mountain agriculture has the potential to preserve traditional production methods while yielding positive socioeconomic outcomes and providing ecosystem services, such as the preservation of biodiversity and natural landscape (McMorran et al 2015; Bentivoglio et al 2019). The findings of the literature review by Santini et al (2013) align with this, highlighting the significant role of mountain agriculture and food products in fostering sustainable development across the 3 pillars of ecosystem services, economic development, and sociocultural values.

In the context of globalization, agricultural markets have witnessed an influx of abundant and standardized food and wine products, leading to a perceived lack of distinctiveness and individuality. In response to this phenomenon, alternative local and regional markets have emerged, placing a strong emphasis on products that are deeply rooted in their territories. These goods are crafted through traditional production processes and characterized by scarcity (Gori and Castellini 2023), a phenomenon particularly notable in mountainous regions.

Branding and certification strategies tailored to regional and mountain contexts present a promising opportunity to foster the growth of supply chains for mountain foods (McMorran et al 2015; Bentivoglio et al 2019). This is why the European Union (EU) legislature introduced a labeling scheme in 2011 through Regulation (European Commission) 1151/2012 and the Delegated Act (EU) 665/2014. Referred to as the "quality pack," these regulations emphasize the unique characteristics of various products originating from mountain regions, encompassing dairy, meat, honey, and vinegar, among others (Santini et al 2013).

Compared to other EU food quality schemes, the literature on consumer preferences for the EU "mountain product" quality term is rather scarce. Research studies have found that attitudes toward mountain agriculture (Pagliacci et al 2022) and mountain products are generally positive (Schjøll et al 2010; Brun et al 2020; Bassi et al 2021, 2022; Bonadonna et al 2022). Consumers associate attributes such as purity, authenticity, and simplicity (Schjøll et al 2010) and safeness and tastiness (Bassi et al 2022) with mountain

products in general. The study by Mazzocchi et al (2021) revealed that consumers with "green values" are more inclined to opt for mountain cheese products. Regarding beef, Resano and Sanjuán (2018) showed that the mountain origin enhances consumers' hedonic valuations and boosts acceptability. Additionally, a plethora of studies provide evidence of consumers' tendency to associate mountain products with healthiness: for instance, Italian consumers expect mountain products to be healthier than lowland products (Zuliani et al 2018), whereas Oliveira, Sidali, Fischer, Gauly, and Busch (2022) discovered that consumers link mountain beef with perceptions of both healthiness and animal welfare. Finally, Sidali and Scaramuzzi (2014) showed that highland products score better than lowland products in the mindset of Parmigiano Reggiano cheese consumers, and mountain producers were able to capitalize on this dichotomy to reduce free riding on quality by lowland producers.

Positive perceptions and attitudes toward mountain products do not necessarily translate into the purchase of these products and the willingness to pay (WTP) higher prices. A possible explanation is the close competition with other regional or national products (Stiletto and Trestini 2022). A number of studies have addressed the question of whether consumers would pay more for products with a mountain product logo and have come to different conclusions. Consumers are willing to pay a price premium for the EU mountain product logo on lamb meat (Cei et al 2023), milk (Staffolani et al 2022; Zanchini et al 2023), and cheese (Stiletto and Trestini 2022). However, Santini et al (2013) suggest that, while consumers may exhibit a WTP a premium for mountain products, this willingness is comparatively less pronounced than for other product attributes. In the same vein, Sanjuan and Khliji (2016) revealed that urban consumers have a rather low WTP for mountain beef; an indication of the breed seems to be more important. In addition to these issues, many researchers emphasize low consumer awareness when it comes to the EU mountain product quality term (Bassi et al 2022; Pagliacci et al 2022) and the low availability of mountain products in stores (Santini et al 2013).

To exacerbate the situation, not all products from mountain areas are protected by the EU labeling scheme. Wine is excluded from the list of products eligible for this designation, even though such an indication could be an opportunity for producers to differentiate their products based on their mountain origin (Oliveira et al 2021). In light of consumer preferences for natural and sustainable wines and corresponding quality associations (Schäufele and Hamm 2017), a marketing strategy focused on the mountain origin of the wine could be appreciated at least by a subgroup of consumers. Moreover, because many mountain products, such as dairy, meat, and (wine and apple) vinegar, have used the mountain product logo since 2012, it is likely that at least some consumers are already acquainted with this quality term, at least in a passive way.

This research aimed to explore the potential implications of the EU legislation including wine within the scope of this labeling scheme. The aim of the study was twofold: First, to survey the potential of the EU mountain product logo to influence consumers' purchase decision compared to a generic nonvisual indication of mountain wine. The theoretical foundation for examining such an effect originates from behavioral economics, which asserts that everyday decisions are often rapid and intuitive and take place outside the realm of conscious cognitive awareness. Minor changes in the decision-making architecture have the potential to nudge people toward making "better choices," that is, socially or environmentally advantageous decisions (Thaler and Sunstein 2009). One type of nudging intervention is simple labeling, which minimizes information overload (compared to conventional information provision) as it provides a clear and easy information cue that is quick to process (Ölander and Thøgersen 2014; Slapø and Karevold 2019). In this study, we tested the effect of the logo of the EU quality term compared to more conventional information provision in order to examine the effectiveness of the labeling nudge at the point of choice. Second, since the literature on mountain products seemed to indicate a correlation between environmentally aware consumers and consumption of mountain products, we ran a subsequent cluster analysis to segment the market of potential mountain wine aficionados based on the "greenness" of their lifestyle.

Material and methods

We performed an experimental online auction with a sample of Italian consumers of a well-known consumer panel provider specializing in online auctions. Based on our instructions, the auction provider recruited the sample respondents from its consumer panel and conducted the online experiment for us on its platform (www.veylinx.com). Veylinx panel members take part in online binding auctions on a regular basis, and, as such, their participation fee is comparatively small. This is important to avoid endowment effects caused by large participation fees (Lusk and Shogren 2007).

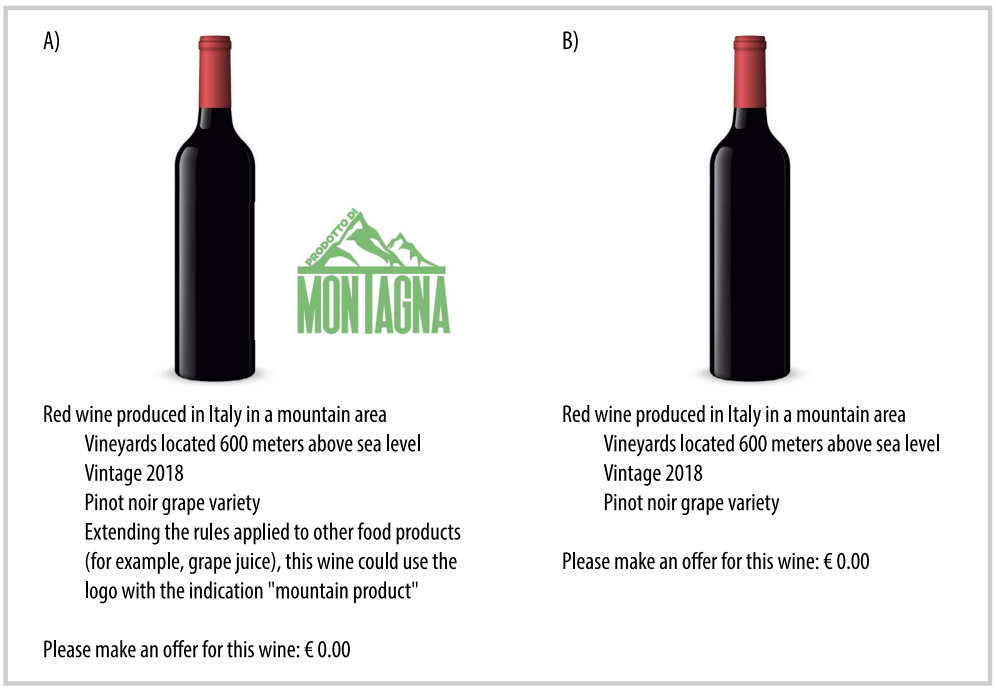
Experimental auctions are a family of procedures and methods aimed at measuring the monetary value people place on nonmarket goods. Unlike many other available techniques, experimental auctions do not rely upon asking individuals hypothetical questions about intended behavior. The mechanism of the auction is such that participants who overbid or underbid compared to their truthful evaluation incur a loss; this incentivizes bids coherent with actual preferences and avoids strategic bidding, meaning that the method is incentive compatible (Lusk et al 2004). This represents a promising tool in both applied economic and marketing research, since the elicitation of WTP is usually more accurate and realistic compared to stated preference methods. Moreover, the experimental setting of the auction puts the researchers in control of the experimental conditions, enabling them to test specific effects.

The addition of a short survey questionnaire to the auction allowed us to collect sociodemographic, behavioral, and attitudinal information about the respondents that would not be available with market data.

Study design

We designed our experiment to evaluate the effect of the EU mountain product logo on the WTP for mountain wine. In order to reveal the true WTP of respondents, we conducted an online binding Becker–DeGroot–Marshak

FIGURE 1 Conditions of the experiment. (A) Treatment condition; (B) control condition.



(BDM) auction (Becker et al 1964) with a sample of 273 participants from Italy (after cleaning). The online auction provider conducted quota sampling, aligned with the age distribution of the Italian population. The pretest and the auction took place in January and February 2020.

In more detail, in a BDM auction all participants bid simultaneously. In our case, the bids were not actually simultaneous, as it was an online auction subject to recruitment; but it was as if they were simultaneous in the sense that each respondent made their bid without knowing what the other participants were bidding. Participants could bid any price they wanted, including a bid of €0 to indicate they were not interested in buying the product. All participants who bid more than the market price were asked to buy the wine at the market price. Those who bid less were not able/required to buy the wine.

Before bidding for the mountain wine, each respondent of the sample was randomly assigned either to a treatment group (bottle of wine with the EU mountain product logo) or to the control group (bottle of wine without the specific EU mountain product logo). Immediately after the auction, respondents were asked to answer a short survey, which was identical for the 2 subsamples. In the following, both the auction and the survey questionnaire will be briefly described.

The treatment group of the experiment was exposed to the green EU mountain product logo and a brief description, namely: "Extending the rules applied to other food products (for example, grape juice), this wine could use the logo indicating 'mountain product'" (Figure 1A). The control group was asked to bid for a bottle of wine without any graphic logo but that was identical in all other cues to the one in the treatment group, namely regarding the location of the vineyards, the grape variety, and the year of harvest (Figure 1B).

The survey that followed the auction included questions about individual characteristics, behavior, and attitudes of the respondents based on standard sociodemographic questions and previously validated items on perceptions of mountain products. Table S1 (see *Supplemental material*, https://doi.org/10.1659/mrd.2023.00030.S1) provides information on the literature and the questionnaire items used to build the perceptual constructs. In order to measure the respondents' perception of mountain wines, we included the ranking of mountain wine attributes developed by Oliveira, Sidali, Fischer, Bossi Fedrigotti, et al (2022), with a modification as follows. We split one of the items into 2 questions to make sure that each item of the adapted scale covered only one concept. In this way, we built a scale consisting of 9 attributes. Green behavior was measured by a well-known scale, namely the Green Behavior Scale developed by Haws et al (2014) which consists of 6 items (Table 1). Finally, the questionnaire also included an item directly eliciting the degree of acceptance of an extension of the EU quality term to mountain wines, followed by questions on sociodemographic characteristics.

Data analysis

We used the principal component factor method, which estimates communalities using squared multiple correlation coefficients, to build the latent constructs of "green behavior" and "perception of mountain wine." Furthermore, we applied multivariate statistical tools to analyze the effect of these latent constructs on the respondents' acceptance of the extension of the EU mountain product quality scheme to wine products and their WTP. In the last step, we performed a cluster analysis to identify groups of consumers on the basis of the 2 scales.

TABLE 1 Items included in the questionnaire for each construct.

Construct	Indicator[a]
Perception of mountain wines[b]	1. Wines from the mountains contain fewer additives
	2. Viticulture in the mountains is sustainable for the environment
	3. Wines from the mountains consist of local (indigenous) grapes
	4. Wines from the mountains have delicate flavors and aromas
	5. Wines from the mountains come from high elevations
	6. Wines from the mountains come from small farms
	7. Wines from the mountains are labor-intensive
	8. Wines from the mountains are scarce in production
	9. Wines from the mountains are cultivated in terraces
Green behavior[c]	10. It is important to me that the products I use do not harm the environment
	11. I consider the potential environmental impact of my actions when making many of my decisions
	12. My purchase habits are affected by my concern for our environment
	13. I am concerned about wasting the resources of our planet
	14. I would describe myself as environmentally responsible
	15. I am willing to be inconvenienced in order to take actions that are more environmentally friendly
Preference for an extension of the EU quality term to mountain wines	16. I am in favor of an extension of the EU quality term "mountain product" to wines from the mountains

[a] 5-point Likert-type scale: 1 = "totally disagree" to 5 = "totally agree."
[b] Developed by Oliveira, Sidali, Fischer, Bossi Fedrigotti, et al (2022) and partly modified by authors (items 5 and 9 originally merged).
[c] Developed by Haws et al (2014).

Results

Sample description

The sample was obtained from a professional panel company using quota sampling to ensure that it was representative of the age distribution in the Italian population (Table 2). A pretest was carried out in January 2020. We instructed the panel provider to filter out speeders, people who do not consume wine, and individuals under 18 years old (for ethical reasons). Consequently, the resultant sample was characterized by a higher representation of males (53.5%), higher formal education, and older age groups when compared to the broader Italian population. In essence, the final sample aligned more closely with the profile of the typical Italian wine consumer, predominantly characterized as a mature male consumer, as highlighted in a study by Castriota (2020). The proportions in the subgroups of respondents (control and treatment group) largely corresponded to the overall sample. An exception to this pattern was the minor underrepresentation of the youngest age group, amounting to 7.9% in the control group, leading to a relatively higher concentration of participants in the middle age groups.

WTP for mountain wine

A graphic exploration of the results on the WTP for mountain wine emerging from the BDM-based experimental auction suggests that, from a general population perspective, the distribution of the bids in the 2 subsamples is quite similar. This is further confirmed by the following results: the mean WTP was €1.88 for the sample treated without the EU mountain product logo and €1.95 for the sample treated with the logo (€1.00 amounting to about US$1.10 at the time of the auction); however, the 2 means were not significantly different (P value of the 2-sided Z-test = 0.889). This similarity between the 2 treatments suggests that, overall, the performance of the logo was not superior to that of the textual information provided. This may indicate that, when selecting wine, consumers tend to read labels in detail, given the complexity of the decision-making process (Mueller et al 2010; Lockshin and Corsi 2012). Therefore, a mere visual signal might not have the same impact as it would in other daily food choices, where the selection process is faster due to time constraints. Indeed, in this case, the visual nudge of applying the EU mountain product logo did not affect the WTP for the wine, supporting the fact that wine choices tend to be quite thoroughly considered, possibly using more cognitive resources than when buying other types of more habitual food products. However, we also need to consider the potential impact that the experimental conditions may have had on the results. Indeed, although the auction was not hypothetical, involving respondents making actual payments if they won, respondents were asked to make their choice in a setting different from that of a typical wine retail outlet. This could have had an impact on the level of

TABLE 2 Sample description.

Variable	Italian population	Sample (n = 273)	Control group (n = 139)	Treatment group (n = 134)
Gender (%)				
Female	51.8[a]	46.5	45.3	47.8
Male	48.2[a]	53.5	54.7	52.2
Age group (%)				
18–29	14.4[a]	10.3	7.9	12.7
30–44	22.0[a]	24.2	25.9	22.4
45–59	28.8[a]	31.1	33.8	28.4
60+	35.4[a]	34.4	32.4	36.6
Education (%)				
High school degree	62.9[b]	60.1	59.7	58.3
University degree	20.1[b]	30.4	27.3	32.4

[a] Percentages indicate shares of adult population in 2020. Source: ISTAT (2020).
[b] Percentages indicate shares of adult population aged 25–64 in 2020. Source: ISTAT (n.d.).

attention respondents gave to the full description of the wine, reducing the impact of the visual cue.

Furthermore, in both samples there was a large group of respondents who did not want to buy the product and bid zero. Indeed, the probability of bidding zero or a positive value for the wine did not differ across the 2 samples (P value of the Pearson χ^2 test = 0.292). The maximum bid achieved was also similar between the 2 subsamples (€24 without the EU mountain product logo and €25 with the logo). These results suggest that, from a general population perspective, the presence of the EU mountain product logo does not make much difference in the WTP for the product. However, this might change if we segment the population based on attitudinal variables.

Resulting factors: "perception of mountain wine" and "green behavior"

As previously mentioned, the postauction survey included items of 2 established scales designed to assess respondents' perception of mountain wine and green behavior. Factor analysis was performed on the single item responses based on Kaiser's eigenvalue-greater-than-1 criterion. The results confirmed that both scales were measured with one unique factor each. The values of 0.86 of the Kaiser–Meyer–Olkin test indicate adequate sampling; that is, the proportion of variance among variables that might be common is high. Table 3 reports factor loadings and factor reliability on the basis of Cronbach's alpha. All constructs show acceptable internal consistency, with Cronbach's alpha values between 0.79 and 0.85 (Hair 2010).

Factor 1, labeled perception of mountain wine, contains all the 9 items included in the survey (Table 1, Items 1–9). As described above, these 9 items were built adapting the original 8 attributes conceptualized by Oliveira et al (2021) and Oliveira, Sidali, Fischer, Bossi Fedrigotti, et al (2022), and include the following: fewer additives, local grapes, delicate flavors and aromas, high elevations, small-sized farms, labor-intensive production, small-scale production, terraced vineyards, and preservation of the mountain setting. As indicated in Table 3, most items had relatively high factor loadings of over 0.5, whereas 2 items had lower factor loadings of around 0.3. According to Hair (2010), the recommended factor-loading threshold value can decrease as the factor dimensionality increases. Given that our scale comprises 9 items, indicating a relatively high dimensionality, we opted to retain these items in the factor analysis.

Factor 2 corresponds to the green behavior scale conceptualized and validated by Haws et al (2014), which surveys respondents' green consumption attitudes. All 6 items of the original scale were confirmed, namely, awareness of human impact on environment, environmentally friendly shopping, environmental responsibility, environmental concern, environmental social norm, and concern for waste of natural resources (Table 1, Items 10–15).

Influence of perception of mountain wine and green behavior on the extension of the EU mountain product quality term to high-elevation wines

In the next step, we used the 2 factors as independent variables in an ordered logit regression model where the dependent variable is the answer to the Likert-scaled item measuring agreement to the extension of the EU quality term to mountain wines (Table 1, Item 16). We also included sociodemographic variables as control variables in the regression model (Table 2). In this way, we could analyze whether individuals' assessment of the EU labeling scheme could vary based on their perceived lifestyle and mountain wine associations. Findings indicate that both factors display statistically significant positive influence on agreement about the possible extension of the EU mountain

TABLE 3 Factor analysis results.

Factor	Indicator[a]	Factor loadings	Reliability[b]
Perception of mountain wines	Local grapes	0.694	0.787
	Fewer additives	0.657	
	Small-sized farms	0.649	
	Preservation of mountain setting	0.609	
	Small-scale production	0.591	
	Terraced vineyards[c]	0.574	
	Labor-intensive production	0.528	
	High elevation[c]	0.322	
	Mountain aroma	0.283	
Green behavior	Environmental concern	0.752	0.847
	Environmental social norm	0.752	
	Environmental responsibility	0.717	
	Environmentally friendly shopping	0.717	
	Awareness of human impact on environment	0.615	
	Concern for waste of natural resources	0.570	

[a] 5-point Likert-type scale.
[b] Cronbach's alpha.
[c] Merged into one item in the original ranking presented in Oliveira, Sidali, Fischer, Bossi Fedrigotti, et al (2022).

product quality term, with the perception of mountain wine factor having a greater effect (Table 4). In contrast, most of the control variables (sociodemographics) did not have an effect, with the exception of age. Indeed, older respondents were associated with higher probabilities of agreeing with the extension of the EU quality term to mountain wines. All in all, we can state that there was a general positive agreement on the extension of the EU quality term to mountain wines motivated by attitudinal factors. However, if we recall the analysis of the online auction, we saw no significant effect of the EU mountain product logo on the WTP for a bottle of mountain wine at the sample level. These results motivated us to further look for subgroups of potential consumers of mountain wines by means of a cluster analysis.

Cluster analysis

The emerging factors were used to identify homogeneous consumer groups regarding the 2 factors green behavior and perception of mountain wine. We employed a blend of hierarchical and nonhierarchical cluster analysis methods (*K*-means clustering) through the statistical software R. The optimal number of clusters was determined by checking the dendrogram derived from the hierarchical cluster analysis, conducting a scree test, and taking into account plausibility considerations. Subsequently, this identified number of clusters was input into the *K*-means cluster analysis to derive the conclusive 4-cluster solution. Ultimately, the clusters were examined for statistically significant variations in purchase behavior (bids), the impact of the logo, and sociodemographic factors using a 1-way analysis of variance, *t*-test, and pairwise comparisons of column proportions (*Z*-test). Based on the 2 factors, 4 clusters were identified. The largest segment, "green mountain wine consumers," represents 35% of the sample. People of this cluster showed very high knowledge of and preferences for mountain wines and a high sense of responsibility for the environment and green behavior (Figure 2).

In contrast, a smaller cluster of consumers with highly negative attitudes to green and mountain produce was found and consequently named "unconcerned consumers" (20%). Furthermore, 2 clusters that lie between these 2 rather distinct clusters were found: "potential mountain wine consumers" (30%) and "green-inclined consumers" (15%). When asked about their green concerns, the former paid more attention to mountain wines than to a green lifestyle, while for the latter the opposite held true. As detailed in Table 5, the potential mountain wine consumers displayed the highest average bid (€2.81) for the auctioned mountain wine. The average bid of the green mountain wine consumer cluster was remarkably lower (€1.98), but not on a statistically significant level. However, the bids of both clusters were significantly higher compared with the unconcerned consumers, who gave the lowest bid (€0.59).

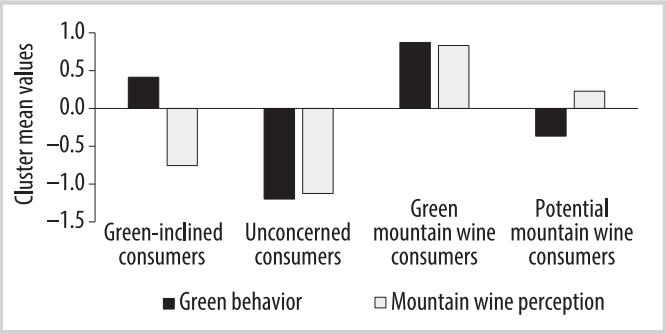
TABLE 4 Results of the regression analysis.

Variable	Ordered logistic regression			
	Coefficient		Standard error	*P* value
Explanatory variable				
Perception of mountain wine	1.40	***	0.19	0.000
Green behavior	0.42	**	0.17	0.013
Control variables				
Age	0.02	**	0.01	0.013
Gender	0.16		0.26	0.528
Income dummy	−0.18		0.25	0.478
Education level				
2	0.21		0.65	0.744
3	0.14		0.45	0.754
4	−0.10		0.48	0.834
Dependent variable	Preference for an extension of the EU quality term to mountain wines: 5-point Likert-type scale item "I am in favor of an extension of the EU quality term 'mountain product' to wines from the mountains"			

Note. Goodness-of-fit indices: probability $> \chi^2 = 0.000$, pseudo-$R^2 = 0.21$.
* $0.05 \leq P \leq 0.1$; **$0.01 \leq P < 0.05$; ***$P < 0.01$.

Since each cluster consisted of both respondents that were exposed to the EU mountain product logo and those who were not, we looked further for significant differences in the general bid behavior of each group of respondents within their cluster. The analysis revealed interesting differences between the 2 clusters green mountain wine consumers and unconcerned consumers (data not shown). The former submitted significantly higher bids (+€1.40) for wines with a mountain product logo. This, in contrast, had a negative effect for the unconcerned consumers: they made significantly lower bids (−€0.94) for wines with a mountain product logo. Finally, we found some significant differences among clusters in the distribution of sociodemographic variables. The green mountain wine consumers were older than the potential mountain wine consumers and of higher formal education than the unconcerned consumers.

FIGURE 2 *K*-means cluster centroids.



Conclusion

This work has analyzed the marketing potential of the EU mountain product quality term applied to mountain wines from a consumer perspective. The category of mountain wines was excluded from this labeling scheme by the European legislature, although recent literature seems to suggest positive implications both for mountain wine growers and for the fragile ecosystems of mountain areas.

Prior work on the EU quality term for mountain products has documented its positive but low impact on specific products, especially dairy and beef. However, the majority of these studies either have not included the category of mountain wines or have focused on stated and not revealed preference for wines grown at high elevations. By using an online auction with a sample of Italian consumers, this work has measured the effect of the logo of the EU mountain term on purchasing a bottle of wine represented by the bid.

The results of the bids did not disclose significant differences in prices offered in the presence or absence of the logo. Visual nudges did not seem to be more effective than textual information at the level of the whole sample. Indeed, our results seem to suggest that the mountain product logo might not have much effect on wine choices compared to textual information. As a first conclusion, we infer that for mountain wine growers who sell to an undifferentiated market, the investment in this kind of logo alone might possibly not be worth the effort.

However, the findings from the cluster analysis suggest that 2 segments of consumers value the mountain product logo. Specifically, potential mountain wine consumers and

TABLE 5 Mean value of bids by cluster (€).

Potential mountain wine consumers	Green mountain wine consumers	Green-inclined consumers	Unconcerned consumers
2.81[b]	1.98[b]	1.75[ab]	0.59[a]
(n = 80)	(n = 94)	(n = 43)	(n = 43)

Note: Mean bid values of clusters with different letters differ significantly ($P < 0.05$).

green mountain wine consumers displayed the 2 highest bids for a wine bottle with the mountain product logo. The existence of the latter cluster, which was the largest cluster in the sample (35%), is particularly relevant for both scholars and practitioners, given these consumers' green lifestyle and potential interest in mountain wine. Previous research has already demonstrated that consumers of mountain products prioritize environmentally friendly products (Tebby et al 2010), but no compelling evidence had emerged for mountain wines so far. Indeed, this study extends the previous findings of Oliveira et al (2021) and Oliveira, Sidali, Fischer, Bossi Fedrigotti, et al (2022), confirming the relationship between green behavior and preference for mountain wine.

Using the bid as a proxy of purchasing behavior, our results suggest a higher WTP for a bottle of wine with the EU mountain product logo among consumers interested in mountain wine. The findings of our study add to previous research on mountain products in relation to mountain wine. Previous studies about mountain products in general indicate positive associations by consumers of such products with naturalness and perceived healthiness.

For practitioners, these results show that a logo such as the EU mountain product logo would encourage green consumers, as it would clearly identify wines of the mountains as congruent with their lifestyle. The use of the EU quality term for mountain wines could also be beneficial for organic wine producers in the mountains, as such a logo could enhance the positive perception of organic labeling.

For the scientific community, the innovative contribution of our work relies on the replication and further validation of previous work such as the green behavior scale of Haws et al (2014) and the replication and improvement of the ranking of mountain wine attributes of Oliveira, Sidali, Fischer, Bossi Fedrigotti, et al (2022).

Our study has limitations and provides avenues for further research. As the research was conducted during the onset of the COVID-19 pandemic, there is a potential for bias in the results stemming from the respondents' particular emotional states. Moreover, the study could only be assessed and documented with a delay due to the pandemic, resulting in a 3-year gap between the time of data collection and the publication of the study. On the other hand, since one postpandemic effect is precisely a boost in visitor numbers in rural and mountain areas (Wipf et al 2023), it is plausible to think that consumer preference for mountain wines might have increased. Therefore, this study could be replicated to survey any change in preference patterns for wines of mountain origin among both city dwellers and mountain residents. Another possibility would be to design a cross-country study, for instance, among rich and emerging economies.

Finally, taking into consideration the multiplication effects of food and beverage consumption of mountain tourists, the mentioned scales could be implemented in rural tourism studies as an avenue of future research. In summary, this work should be considered a starting point for further research on mountain food and beverage products as a strategy for developing areas that are lagging behind, such as mountain and rural areas.

USE OF GENERATIVE ARTIFICIAL INTELLIGENCE

When preparing this work, the authors used ChatGPT to improve readability and language. After using this tool, the authors reviewed and edited the content as needed. The authors take full responsibility for the content of the publication.

REFERENCES

Bassi I, Carzedda M, Gori E, Iseppi L. 2022. Rasch analysis of consumer attitudes towards the mountain product label. *Agriculture and Food Economics* 10:2–25. https://doi.org/10.1186/s40100-022-00218-7.

Bassi I, Carzedda M, Grassetti L, Iseppi L, Nassivera F. 2021. Consumer attitudes towards the mountain product label: Implications for mountain development. *Journal of Mountain Science* 18:2255–2272. https://doi.org/10.1007/s11629-020-6616-z.

Becker GM, DeGroot MH, Marschak J. 1964. Measuring utility by a single-response sequential method. *Behavioral Science* 9:226–232. https://doi.org/10.1002/bs.3830090304.

Bentivoglio D, Savini S, Finco A, Bucci G, Boselli E. 2019. Quality and origin of mountain food products: the new European label as a strategy for sustainable development. *Journal of Mountain Science* 16:428–440. https://doi.org/10.1007/s11629-018-4962-x.

Bonadonna A, Duglio S, Bollani L, Peira G. 2022. Mountain food products: A cluster analysis based on young consumers' perceptions. *Sustainability* 14:1–14. https://doi.org/10.3390/su141912511.

Brun F, Zanchini R, Mosso A, Di Vita G. 2020. Testing consumer propensity towards novel optional quality terms: An explorative assessment of "mountain" labelled honey. *AIMS Agriculture and Food* 5:190–203. https://doi.org/10.3934/agrfood.2020.2.190.

Castriota S. 2020. *Wine Economics*. Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/11106.001.0001.

Cei L, Defrancesco E, Gatto P, Pagliacci F. 2023. Pay more for me, I'm from the mountains! The role of the EU Mountain Product term and other credence attributes in consumers' valuation of lamb meat. *Agriculture and Food Economics* 11:12. https://doi.org/10.1186/s40100-023-00253-y.

Gori F, Castellini A. 2023. Alternative food networks and short food supply chains: A systematic literature review based on a case study approach. *Sustainability* 15(10):8140. https://doi.org/10.3390/su15108140.

Hair JF. 2010. *Multivariate Data Analysis: A Global Perspective*. 7th edition (1st edition 1979). Upper Saddle River, NJ: Pearson/Prentice-Hall.

Haws KL, Winterich KP, Naylor RW. 2014. Seeing the world through GREEN-tinted glasses: Green consumption values and responses to environmentally friendly products. *Journal of Consumer Psychology* 24:336–354. https://doi.org/10.1016/j.jcps.2013.11.002.

ISTAT. 2020. Education levels and participation in training. Rome, Italy: ISTAT. https://www.istat.it/it/files//2021/10/REPORT-LIVELLI-DI-ISTRUZIONE-2020.pdf; accessed on 22 April 2024.

***ISTAT.* n.d.** IstatData. Rome, Italy: ISTAT. https://esploradati.istat.it/databrowser/#/it/dw/categories/IT1, POP,1.0/POP_POPULATION/DCIS_POPRES1/IT1,22_289_DF_DCIS_POPRES1_2,1.0; accessed on 22 April 2024.

Lockshin L, Corsi AM. 2012. Consumer behaviour for wine 2.0: A review since 2003 and future directions. *Wine Economics and Policy* 1(1):2–23. https://doi.org/10.1016/j.wep.2012.11.003.

Lusk JL, Feldkamp T, Schroeder TC. 2004. Experimental auction procedure: Impact on valuation of quality differentiated goods. *American Journal of Agricultural Economics* 86:389–405. https://doi.org/10.1111/j.0092-5853.2004.00586.x.

Lusk JL, Shogren JF. 2007. *Experimental Auctions: Methods and Applications in Economic and Marketing Research*. Cambridge, United Kingdom: Cambridge University Press.
Mazzocchi C, Orsi L, Sali G. 2021. Consumers' attitudes for sustainable mountain cheese. *Sustainability* 13(4):1743. https://doi.org/10.3390/su13041743.
McMorran R, Santini F, Guri F, Gomez-y-Paloma S, Price M, Beucherie O, Monticelli C, Rouby A, Vitrolles D, Cloye G. 2015. A mountain food label for Europe? The role of food labelling and certification in delivering sustainable development in European mountain regions. *Journal of Alpine Research* 103:1–17. https://doi.org/10.4000/rga.2654.
Mueller S, Osidacz P, Francis IL, Lockshin L. 2010. Combining discrete choice and informed sensory testing in a two-stage process: Can it predict wine market share? *Food Quality and Preference* 21:741–754. https://doi.org/10.1016/j.foodqual.2010.06.008.
Ölander F, Thøgersen J. 2014. Informing versus nudging in environmental policy. *Journal of Consumer Policy* 37:341–356. https://doi.org/10.1007/s10603-014-9256-2.
Oliveira M, Sidali KL, Busch G. 2021. Mountain beef and wine: Italian consumers' definitions and opinions on the mountain labelling-scheme. *Economia agro-alimentare* 23(1):5. https://doi.org/10.3280/ecag1-2021oa11549.
Oliveira M, Sidali KL, Fischer C, Bossi Fedrigotti V, Begalli D, Busch G. 2022. Assessing preferences for mountain wine and viticulture by using a best-worst scaling approach: Do mountains really matter for Italians? *Wine Economics and Policy* 11:15–29. https://doi.org/10.36253/wep-10342.
Oliveira ML, Sidali KL, Fischer C, Gauly M, Busch G. 2022. Assessing Italians' preferences for mountain beef production using a best–worst scaling approach. *Mountain Research and Development* 42(3):R8–R15. https://doi.org/10.1659/MRD-JOURNAL-D-21-00021.1.
Pagliacci F, Cei L, Defrancesco E, Gatto P. 2022. The EU mountain product voluntary quality term as a valorization tool for livestock farms: Challenges and opportunities in an alpine context. *Sustainability* 14(6):3292. https://doi.org/10.3390/su14063292.
Resano H, Sanjuán AI. 2018. Exploring the role of mountain origin and autochthonous breed on urban consumers' acceptability. *Sustainability* 10(12):4423. https://doi.org/10.3390/su10124423.
Sanjuan AI, Khliji S. 2016. Urban consumers response to the EU food mountain labelling: An empirical application in Southern Europe. *New Medit* 15:72–80.
Santini F, Guri F, Gomez y Paloma S. 2013. *Labelling of Agricultural and Food Products of Mountain Farming*. EUR 25768 EN. Luxembourg, Luxembourg: Publications Office of the European Union. https://doi.org/10.2791/67942.
Schäufele I, Hamm U. 2017. Consumers' perceptions, preferences and willingness-to-pay for wine with sustainability characteristics: A review. *Journal of Cleaner Production* 147:379–394. https://doi.org/10.1016/j.jclepro.2017.01.118.
Schjøll A, Amilien V, Tufte PA, Revoredo-Giha C, Leat P, Kupiec B, Lamprinopoulou C. 2010. Promotion of mountain food: an explorative a study about consumers' and retailers' perception in six European countries. *In:* Darnhofer I, Grötzer M, editors. *Building Sustainable Rural Futures: The Added Value of Systems Approaches in Times of Change and Uncertainty.* 9th European IFSA Symposium, 4–7 July 2010, Vienna, Austria. Vienna, Austria: University of Natural Resources and Applied Life Sciences, pp 1558–1567.
Sidali KL, Scaramuzzi S. 2014. Group heterogeneity and cooperation in the governance of geographical indications: The case of Parmigiano Reggiano "mountain product." *Politica Agricola Internazionale/International Agricultural Policy* 2014(1):21–31. https://doi.org/10.22004/AG.ECON.32.
Slapø HB, Karevold KI. 2019. Simple eco-labels to nudge customers toward the most environmentally friendly warm dishes: An empirical study in a cafeteria setting. *Frontiers in Sustainable Food Systems* 3:40. https://doi.org/10.3389/fsufs.2019.00040.
Staffolani G, Bentivoglio D, Finco A. 2022. Consumers' purchasing determinants towards mountain food products. *Sustainability* 14(14):8282. https://doi.org/10.3390/su14148282.
Stiletto A, Trestini S. 2022. When less isn't more and more isn't less: Is there an overlap between "protected designation of origin," "mountain product" and "organic" in Italy? *British Food Journal* 125:45–60. https://doi.org/10.1108/BFJ-02-2022-0107.
Tebby C, Giraud G, Amblard C. 2010. Determinants of interest in mountain food products: A European crosscountry study. *In*: Darnhofeer I, Grötzer M, editors. *Building Sustainable Rural Futures: The Added Value of Systems Approaches in Times of Change and Uncertainty.* 9th European IFSA Symposium, 4–7 July 2010, Vienna, Austria. Vienna, Austria: University of Natural Resources and Applied Life Sciences, pp 1568–1578.
Thaler RH, Sunstein CR. 2009. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. New York, NY: Penguin.
Wipf S, Michel AH, Walder D, Poelsma F, Anderwald P, Cruickshank SS, Jaroszynska F, Rossi C, Backhaus N. 2023. Boost in visitor numbers post COVID-19 shutdown: Consequences for an Alpine national park. *Mountain Research and Development* 43:12–21. https://doi.org/10.1659/mrd.2022.00025.
Zanchini R, Di Vita G, Panzone L, Brun F. 2023. What Is the value of a "mountain product" claim? A ranking conjoint experiment on goat's milk yoghurt. *Foods* 12(10):2059. https://doi.org/10.3390/foods12102059.
Zuliani A, Esbjerg L, Grunert KG, Bovolenta S. 2018. Animal welfare and mountain products from traditional dairy farms: How do consumers perceive complexity? *Animals* 8(11):207. https://doi.org/10.3390/ani8110207.

Supplemental material

TABLE S1 Survey constructs and corresponding literature.

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