Profiling tourist movements in rural areas with wine protected designations of origin: Analyzing tourist spending & accommodation patterns

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Abstract

This paper aims to analyse Spain's inbound tourism in low-populated areas (under 5000 inhabitants) within its wine-protected regions. Based on data retrieved from 2015 to 2023 from the national survey on tourism expenditure (EGATUR) and employing a Latent Class Model research method, we will segment Spain's inbound tourism (in terms of their expenditure, motivations and accommodation patterns) into four classes from the most profligate to the thriftiest while consuming tourism services in Spain's regions less populated, where the international demand is lower than Spain's average international demand for tourism services. The paper includes a statistical analysis (Wilcoxon and Lenven's tests) of the economic patterns of each class, concluding that it is essential to encourage Europeans to come to these destinations to improve the rural economy and their long-term sustainability.

Keywords*: Depopulated areas, Tourism demand diversification, Spain's wine-protected areas, Inbound tourism, Sustainable tourism, Latent class model.*

1. Introduction

Spain is a world leader in tourism production, a top destination for international demand, and the EU's most competitive and sustainable tourism industry since 2015 (Gago de Santos, 2022, WTTC, 2023; WEF, 2024). However, like other major European destinations[1], it presents several deep challenges regarding sustainability due to the extreme concentration of its international demand on the coastline[2] and significant urban destinations like Madrid, Barcelona, Granada, or Malaga (the capital of Málaga province). Tourism seasonality is also

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[1] Particularly France, the United Kingdom, Germany and Italy though even more, smaller countries such as Croatia, Greece, Cyprus, Malta or Austria; to name the ones more overwhelmed by international demand at the peak season.

[2] Catalonia, Balearic Islands, Canary Islands, Andalusia, Valencia and Madrid account for over 90% of Spain 's international demand (Frontur, 2023).

quite pressing, particularly in the third quarter (Barreal *et al*., 2023a).

Concentration in space and time of international demand is a significant concern for Spain's tourism management (García-Buades *et al*., 2022). In this scenario, boosting international demand in less populated areas would bring plenty of benefits at different economic levels. For example, at the macroeconomic level, it would alleviate the pressure borne by the regions already suffering from congestion (Mihalic and Kuščer, 2021). On the other, at the microeconomic level, it would bring socioeconomic benefits[3] to those regions and people that make up the so-called "emptied Spain[4]", alluding to the territory being emptied of people (particularly young people) due to the massive exodus to the cities (Barreal *et al*., 2023b).

In recent years, but particularly since the surge of international demand in the aftermath of the Covid-19 pandemic crisis, Spain's tourism planning authorities have faced one of its most profound challenges in deviating some of its international demand to less saturated territories (Donaire *et al*., 2021). In such areas, other types of tourism services, such as rural tourism, ecotourism, agrotourism, wine tourism and gastronomy, among others, are being offered and remain still with great demand potential (Belanche *et al*., 2021). Thus, given the importance of international tourism in Spain and how it can represent an essential flow of financial resources and employment for rural areas, this research is relevant to the Spanish economy.

The impact of wine Protected Designations of Origin (PDO) in Spain is the largest compared to other agro-alimentary sectors because it implies a gross economic impact in 2022 of about 4.313 million euros (M€) and the remaining 2.417 M€ (including all types of protections and all products) (MAPA, 2023a; MAPA 2023b). Also, the economic impact of international markets is quite different; for the wine PDOs, it implies next to 41% of the total, and for the remaining product, it is slightly more than 17%. It underlines the robust brand that wine-protected labels have in international markets. It is also noteworthy because Spain has one of the highest wine consumption rates in the world. It is one opportunity to attract tourists to lower-density areas by taking advantage of the powerful international brand that provides the wine PDO for these destinations.

In short, our study aims to analyse Spain's inbound tourism from 2015 to 2023 in depopulated areas within wine-protected areas to understand their behavioral patterns concerning the activities they carry out, type of accommodation, and daily spending to help these regions attract a more desirable tourist profile. Our results show that the market of international tourists in these wine designations of origin is heterogeneous, reaching up to 4 different segments and identifying a series of strategies for each of these segments that can help the managers of these destinations to identify the most optimal tourist profile according to their nationality, expenditure, length of stay or travel motivations. It contributes to fill the gap in the current literature by providing a statistical method that could help depopulated areas with PDO to adapt their offerings by better understanding the international tourist demand and addressing socio-demographic issues.

The paper follows the structure below. It starts with a brief literature review and the research questions that the paper should address. The following section will describe the research methods and present the database that should support the response to the previous hypothesis. The latter sections will present the results and their implications for the topic as a previous step to depict the main paper conclusions.

2. Literature review

2.1. *An overview of wine tourism in depopulated rural areas—Wine tourism as a tool to soften seasonality*

Enotourism embraces visits to wine cellars, vineyards, wine tasting and wine festivals, among

[3] Employment and income, mostly.

[4] In Spanish this phenomenon has been coined as "España vaciada".

other wine-related experiences (Damijanić *et al*., 2016). Getz (2000) considered wine tourism from three different perspectives: "a form of consumer behaviour", "a strategy for destinations to develop" and "a marketing opportunity for wineries to sell directly to their customers and educate them on wine culture". Mitchell and Hall (2003) reckoned that seasonal tourism demand is one key reason for developing wine tourism regions, given the potential of enotourism to develop tourism flows during the non-peak season. Their study in New Zealand showed evidence of wine tourists' preference for late summer and fall seasons. So, this would open a win-win situation for host communities and the country's travel and tourism industry as a whole. In Spain, international wine demand is still far from its potential (Jannes & Barreal, 2024) and exploring ways to foster it will, on the one hand, help to alleviate the international demand pressure, particularly in the third quarter of the year and on the other, diversify the tourism offer. Along the same lines, other studies have focused on other types of tourism related to the Mediterranean basin, such as oleotourism (Vena-Oya and Parrilla-González, 2024). This type of gastronomic tourism has been identified as another driver of international tourist influx to these areas, as has been confirmed in various studies (Vena-Oya and Parrilla-González, 2024). It is an important factor in tourist satisfaction with these areas (Murgado-Armenteros *et al*., 2025) and generates certain income streams towards these regions (Parrilla *et al*., 2024).

In this sense, tourism sustainability embraces social, economic, and environmental dimensions (Blancas *et al*., 2010). Particularly from the social dimension, touristification and the excess of tourism carrying capacity in top international destinations have brought concerns in host communities before 2019 (Zelenka & Kacetti, 2014; Peeters *et al*., 2018; Milano *et al*., 2019). On the other hand, other host communities not suffering so strongly from the perception of over-tourism in their territory, which is more typical of cultural and coastal destinations (Vena-Oya *et al*., 2022), seek to attract tourists to obtain new and diversified sources of income to alleviate the effects of the seasonality of their principal activity, eminently agricultural in rural environments (Mercadé-Melé *et al*., 2018). Besides, these regions in Spain are facing serious issues such as depopulation (Vilar *et al*., 2017), income seasonality (Mercadé-Melé *et al*., 2018) or hardship in attracting the most profitable tourist segments to their territory (Barreal *et al*., 2023b). Among those destinations that seek to attract tourists away from overcrowded destinations, providing a slow and sustainable tourism experience (Li *et al*., 2024), we are witnessing a rapid boom in wine tourism in the main wine-producing countries (Sellers-Rubio *et al*., 2024). Moreover, wine tourism and food pairing may act as a contributor to tourist destination sustainability and competitiveness (Serra *et al*., 2021; Marco-Lajara *et al*., 2024). In this scenario, Spain shows a competitive advantage as the world's second most visited destination as well as one of the leading wine producers with a large number of protected designations of origin for wine (PDO), considered as a significant indicator of quality in wine production and as a differentiating factor in attracting the attention of international tourists (Tahar *et al*., 2021; Sellers-Rubio *et al*., 2024).

2.2. *Tourism in wine-producing regions*

The study of tourism in wine-producing regions has recently aroused the curiosity of the scientific community (Damijanić *et al*., 2016). This interest is partly due to the enormous potential these producing regions have in attracting tourists to areas that traditionally have not been top-rated destinations. (Gurgu & Fîntîneru, 2023), This allows the promotion of the destination and local produce (Gómez-Carmona *et al*., 2023), which can result in extra income beyond the tourism activity itself. Thus, recent literature has focused on the wine tourism experience itself, trying to analyse the emotions it arouses. (Wang *et al*., 2024), the experience lived in these destinations (Sellers-Rubio *et al*., 2024) or the motivations that lead a tourist to visit these destinations (Vorobiova *et al*., 2020; Santorinaios *et al*., 2023). Other authors have focused on more traditional topics, such as the profitability of these tourists over others with different motivations (Stone, 2023), on the opportunities that the attraction of international tourists to these

regions can bring to rural areas (Jannes & Barreal, 2024) or on the relationship between the sale of other non-wine products by tourists visiting these destinations (Yang *et al*., 2023). On the other hand, besides spending, another factor of vital importance for tourist destinations is the length of time tourists stay. Some authors have conducted studies on this topic; however, these focused more on regions not so specialised in wine production (De Simone *et al*., 2024) or on other types of products, such as EVOO-producing regions (Barreal *et al*., 2023b). Thus, bearing in mind these three key factors in the generation of sustainable tourism (motivations, spending and stay length), segmentation is a vital tool for analysing the most interesting tourist profiles for wine-producing regions (Murgado-Armenteros *et al*., 2021; Barreal *et al*., 2023b). Other attempts to segment the tourists visiting these regions have been found in the literature; however, they focus on those exclusively engaged in wine-related activities and not on the tourists who used to visit these wine-producing regions. (Cho *et al*., 2017; Szolnoki, 2018; Santos *et al*., 2020; Gómez-Carmona *et al*., 2023).

Moreover, another essential factor in analysing tourism demand is the type of accommodation tourists prefer in a destination. Recent studies have shown how these preferences have changed in the wake of the COVID-19 pandemic, especially regarding the choice of international tourists, who increasingly opt for individual rather than shared accommodations (such as Airbnb) (Ye *et al*., 2023). Other works segment tourists based on what they are willing to pay for accommodation, the length of stay and their principal motivation in the destination in urban tourism (Liu *et al*., 2015). If we focus on tourism in rural areas, Frías-Pérez *et al*. (2021) also found differences in preferences between resident and non-resident tourists visiting national parks, concluding that non-residents opted for more sustainable options such as apartments or campsites, especially in high season. Finally, other authors such as Nutsugbodo *et al*. (2022) found that other sociodemographic factors such as age, sex or income level could also influence the choice of accommodation type. All in all, this paper aims to analyse the profile of tourists visiting wine PDOs regions based on their motivations, spending profile and length of stay, for which the following research questions are formulated:

RQ1: Depending on the main motivations, are there differences in tourists' behaviour in Spain's low-populated wine PDO areas?

RQ2: Are there distinguishable accommodation patterns among international tourists in depopulated areas of Spanish wine PDO?

RQ3: What role do accommodation types play in increasing the daily revenue of this tourist market in the area?

3. Methodology & data - research methods

In the early stages of wine tourism research in the 1990s, most of the data were collected at the wine cellar, which may be well suited to measure wine consumer satisfaction but not so well suited for determining the latent demand that may exist within a given target market (Getz & Brown, 2006). That is why in this paper we employ data provided by EGATUR (INE, 2024a), Spain's national survey to account for international tourism spending, in order to offer responses of the international demand while traveling to highly depopulated areas within wine protected areas. The questionnaire is implemented when the tourist departs from Spain, and it includes questions related to their socioeconomic characteristics, the activities enjoyed during the stay, and the payments made in origin and in the country (INE, 2024b), among others. As in the survey, there is a question which provides data about what the principal destination during their visit was. Therefore, the paper will only use the data provided by the tourist that affirms their principal destination was in a Spanish wine PDO, which council population is lower than 5.000 inhabitants in 2023 (INE, 2024c). EGATUR, managed by INE started in October 2015, so the analysis initiates the database at this point and finishes the same month for 2023. Considering only the respondents who declare a principal destination to Spanish wine PDOs with low-populated councils, the final database has 13.499 questionnaires, representing a risk of

Table 1 - Summary variables implemented in clustering.

Variable	*Level Definition*	*Rate*
Nationality	Lv.1: Benelux	16,36%
	Lv.2: UK	17,31%
	Lv.3: Germany	20,70%
	Lv.4: France	21,10%
	Lv.5: Others	24,54%
Season	Lv.1: Winter	19,14%
	Lv.2: Spring	23,73%
	Lv.3: Summer	36,00%
	Lv.4: Autumn	21,13%
Visitors	Lv.1: Alone	28,63%
	Lv.2: Couple	40,07%
	Lv.3: Group	31,30%
Daily Activities. Expenditures	Lv.1: Lower than 4,05€ (Q1)	25,00%
	Lv.2: From 4,05€ to 8,84€ (Q2)	25,00%
	Lv.3: From 8,84€ to 17,27€ (Q3)	25,00%
	Lv.4: Upper to 17,27	25,00%
Daily Shopping Expenditures	Lv.1: None Expenditure (Q1)	43,07%
	Lv.2: Until 1.64€ (Q2)	6,93%
	Lv.3: From 1.64€ to 6,16€ (Q3)	24,99%
	Lv.4: Upper to 6,16€	25,00%

Variable	*Level Definition*	*Rate*
Main Motivation	Lv.1: Cultural & Leisure	34,34%
	Lv.2: Sun and Beach	39,36%
	Lv.3: Family visit	15,57%
	Lv.4: Others	10,73%
Sports	No	70,01%
	Yes	29,99%
Shows	No	93,50%
	Yes	6,50%
Party	No	81,22%
	Yes	18,78%
Shopping	No	46,88%
	Yes	53,12%
Museum	No	74,06%
	Yes	25,94%
City Tour	No	34,84%
	Yes	65,16%
Beach	No	35,83%
	Yes	64,17%
Gastronomy	No	81,77%
	Yes	18,23%

error of 1,11% with a confidence level of 99% (p=q=0,5).

Some different statistical techniques should be required to answer the research questions. Then, to solve the RQ1, the paper proposes segmentation by following the Linzer and Lewis (2011) methodology. These authors propose a Latent Class Model (LCM) with covariates, which first develops a clustering outcome by considering a set of factors. Later, they perform a logistic regression to analyse how some exogenous variables could condition the class membership. They also propose a double-check to set the number of clusters the model should calculate, first considering the AKAIKE and Log-Likelihood ratio parsimony and later analysing if the groups or class are significant enough to be included in the model. The ratios should find the number of clusters where introducing one more does not imply a considerable ratio reduction/increment. On the other hand, the different clusters should be big enough to be representative and be coherent with the data and literature.

The analysis will consider the principal motivation to visit Spain, the origin, travel companions, the visit season, and the daily expenditure on activities and shopping (clothing, jewelry, typical products, or souvenirs) to implement the clustering. It aims to describe the socioeconomic and touristic profile; however, the paper will also contemplate their activities, such as those related to sports, shows, parties, shopping, city tours, beach enjoyment or gastronomy. Table 1 describes all these factorial variables by indicating their levels and representation in the database. The outcome highlights, for example, that around 75% of questionnaires are from four countries and more than 70% visit Spain accompanied. Following the activities, the responses note that most tourists get to know cities, go to the beach, and go shopping; however, a remarkable 18% declare that they enjoy gastronomy activi-

Table 2 - Covariates summary considering complete EGATUR survey and study sample.

		Hotel	*Rental Accom.*	*Other Market Accom*	*Owned dwellings*	*Family & Friends Accom.*	*Other non-Market Accom.*
Accommodation	*Research Sample*	32,73%	10,15%	9,46%	18,52%	26,42%	2,73%
	EGATUR database	54,88%	6,25%	3,41%	9,23%	24,87%	1,36%
		Min	*Q1*	*Q2*	*Mean*	*Q3*	*Max*
Stay Length (in days)	*Research Sample*	1	5	7	11,59	14	180
	EGATUR database	1	4	7	9,80	10	300

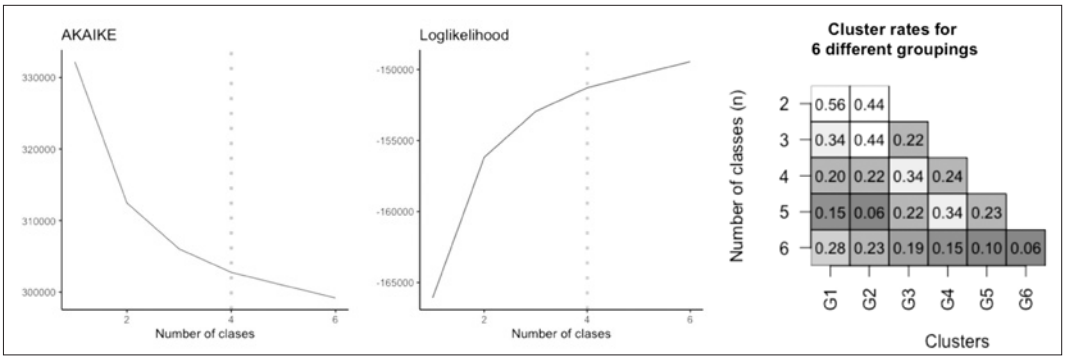
ties, and 25% visit museums. The results present lower values than the national data for the same study period, with the respective rates of 20,32% and 36,16%. The lack of identification of gastronomic activities could be the main reason for this lower value; as Gil and Barreal (2024) suggested, international tourists may not identify some activities as gastronomic even though they really enjoyed them during their visit. It highlights the importance of developing specific programs to promote the characteristics of gastronomic activities among international visitors.

The EGATUR database provides monetary data at current prices, which should be constant to aggregate in quartiles and compare the values between periods. Therefore, the pre-analysis processing considers the Consumer Price Index (CPI) based on 2021 to convert current prices into constant with the same temporal scope (INE, 2024d).

The modelisation employs a logistic regression after the clustering analysis to determine how the class membership could fluctuate considering two exogenous variables: the stay length (in days) and accommodation choice. The model also considers the cross-effect of these two variables. This point is vital to solving the RQ2 because of the relevance of regression coefficients and forecasting different stay lengths according to each type, which could help better understand how the segment representation could change if the accommodations are modified. It is a novelty in the accommodation sector derived from the model's capability to help regional and rural managers adapt their offerings according to their market position targets. Table 2 summarises the covariates according to the current study sample and EGATUR database and it depicts differences between accommodations and stay length. The whole questionnaire shows a strong influence of hotels, in which half of the respondents declare they will use these accommodations; meanwhile, for the study area, it drops to a third. The stay length is, on average, lower for the entire database than the study sample.

The last step involves analysing significant differences and comparing variance between clusters to solve the RQ2 and RQ3. The stay length and expenditures are the variables implemented to learn more about cluster differences and how they could change if public and market policy focused on one group instead of the others. The first involves an ANalysis Of VAriance (ANOVA) (Chambers *et al*., 1992)., which considers the null hypothesis (Ho) that cluster means are equal. The alternative hypothesis (H1) proposes that at least one is unequal. The variable should be normally distributed, so the Jarque-Bera test should be run to confirm or reject it (Jarque and Bera, 1987). In case of rejection, the analysis will consider a non-parametric analysis denominated Kruskal-Wallis test to know if at least one group differs from the others. Previous tes is general, so, in case of rejecting the null hypothesis, then the analysis should perform the Wilcoxon rank sum test with continuity correction, which lets cluster paired analysis and identify the groups with different patterns (Wilcoxon, 1945; R Core Team, 2022). The test to compare the variance ratio will expand the analysis. It allows us to compare two variances between groups (σclassi/

Figure 1 - AKAIKE and Log-Likelihood ratio and classes relevance in the function of the number of clusters implemented.



σclassj for all i=/=j) by analysing whether the variances are similar or different. The F test could be applied; however, it is sensitive under non-normal variable distribution, and its confidence intervals are not robust. So, if the data present this characteristic, the research will employ Levene's Test (Fox and Weisberg, 2019). That is, a variance ratio analysis is performed in which if the variances are equal (Ho), the ratio is one and otherwise, it will be different (H1), being less than 1 when σclassi>σclassj and greater otherwise (Yanagida, 2024).

4. Results

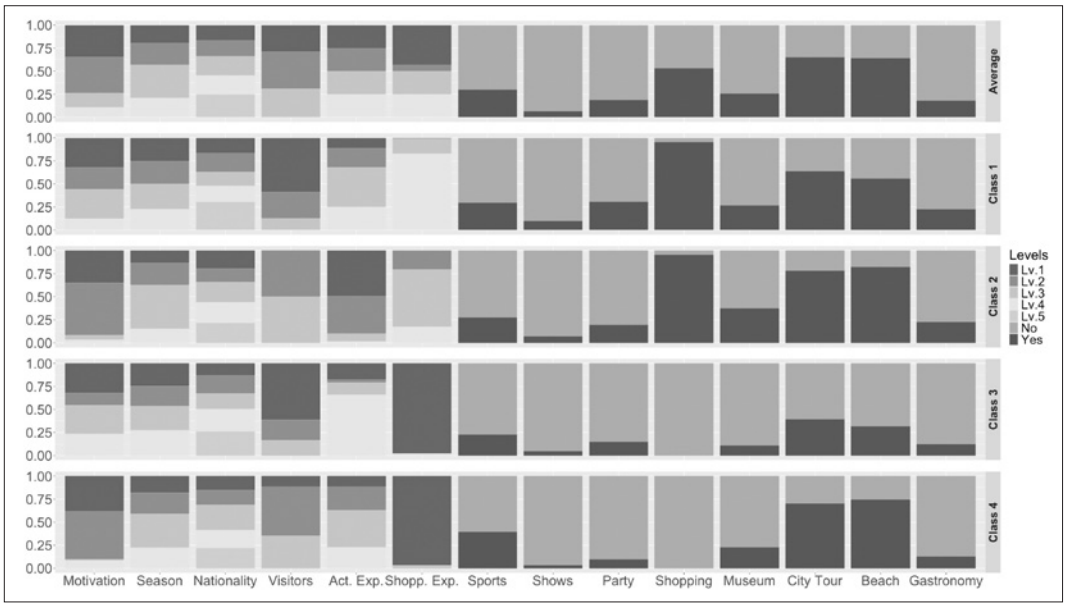
The analysis shows that the best number of samples to use in the segmentation is four. This is supported by the fact that it is the point where the AKAIKE statistic is reduced the most and where the Log Likelihood increases the most, in addition to offering groups or classes of considerable volume and with a qualitative analysis that allows describing the classes with tourist relevance. Following Figure 1, if the number of segments is increased, then the statistics do not improve as much as in the case of the increase from three to four, and some groups are tiny.

Applying the segmentation with four classes, their characteristics are obtained following the factors implemented to get them. The first row summarises the distributions for the total sample for each variable. This is arranged to facilitate the understanding and differentiation of each segment for the overall market. Each of the following classes can be classified according to their characteristics:

- *Class 1. Consumerist traveller (22,68%):* Lone low-season tourist who spends much more on shopping than the rest, coming mainly from the United Kingdom[5] plus other markets not considered main markets for Spain. In terms of activities, he/she mostly does shop, while the remaining activities are below the average of the sample.
- *Class 2. High peak season cultural and shopper traveler (32,94%):* These are mainly cultural tourists who visit accompanied during the high season (summertime). Their spending on shopping is high, though low in activities, which are mainly urban tourism, museums, and sun and sea tourism.
- *Class 3. Selective solitary European traveler (20,43%):* A *lone visitor from Germany* or other countries visiting during the fall-winter season who spends a lot on activities but nothing on shopping but does activities, so in the ones he does, he/she ends up spending a great deal of money.
- *Class 4. Active summer travelers (23,95%):* French travelers or from other major tourist-sending countries who travel in summer accompanied and do not spend money on shopping but on activities, especially sports, visits to cities or the beach.

[5] The United Kingdom is Spain's largest source market for inbound tourism.

Figure 2 - Class classification by factorial clustering variables.



We can thus answer the first of our research questions, which asked whether there were differences in the motivations of international tourists visiting the wine PDOs. Thus, we see how these differences are indeed evident between the different classes, where the first class, mainly British, are much more interested in shopping activities than the others. On the other hand, we find tourists whose main motivation is urban-cultural in Class 2, who prefer to visit these destinations in high season. The third class, called "solitary tourists" are mainly Germans who prefer to travel in the cold season and perform different activities related to the destination itself, showing less interest than the previous classes in shopping. Finally, the fourth class is mainly composed of French tourists, mostly motivated by a more active tourism.

Moving to the other RQs, in this segmentation, the average length of stay was 13.09 nights in Class 1, the highest of the four classes. In turn, and respectively, the averages of 12.61, 9.07 and 10.89 nights were recorded. Almeida *et al*. (2021) suggest that the impact of distance and the first country visit has significant implications on stay length; so, rural areas do not have fast and accessible connectivity and provoke that international tourists should spend more time to arrive than other destinations, implying a higher cost opportunity that only more extensive stays could palliate. The data also shows that more than 90% of each group is the first country visit, so previous arguments could explain why rural areas record higher lengths than the national average. Thus, Class 1 has more extended stays than the rest and has more accentuated shopping patterns, making it a very interesting class on which to focus the sale of local products. By contrast, it is observed that this result can be deviated by 16.20 nights, while for the rest, this deviation is smaller (11.46, 12.17 and 10.31, respectively). To better understand the relevance of each class, we can observe which is more interesting, taking into account the daily expenditure; thus, the one that spends the most on average is Class 3 (97.21€), followed by Class 1 (85.70€), 4 (68.34€) and 2 (45.40€). This implies that Class 3 is the most interesting in terms of strengthening the economic flows derived from international tourism.

Following Nutsugbodo *et al*. (2022), the relevance of socioeconomic variables such as gender, age, or income on the identified groups is analyzed. In this regard, Pearson's Chi-squared test is applied to examine whether there is a dependency between these factors. As shown

Table 3 - Proportion of socioeconomic descriptors by class.

	Class 1	*Class 2*	*Class 3*	*Class 4*	*Pearson's Chi-squared test*
Age					
Less than 24	34,51%	24,42%	21,99%	19,08%	p-value: < 0.001
From 25 to 44	22,64%	32,75%	20,82%	23,79%	
From 45 to 64	20,93%	34,72%	20,20%	24,15%	
More than 65	18,76%	36,43%	18,80%	26,01%	
Gender					
Man	19,62%	34,07%	21,76%	24,54%	p-value: < 0.001
Woman	25,24%	33,17%	18,31%	23,28%	
Income					
High	22,54%	33,18%	20,21%	24,06%	p-value: < 0.001
High/mid	19,96%	37,50%	18,28%	24,27%	
Mid	22,68%	32,89%	20,60%	23,83%	
Mid/low	24,37%	22,64%	28,30%	24,69%	

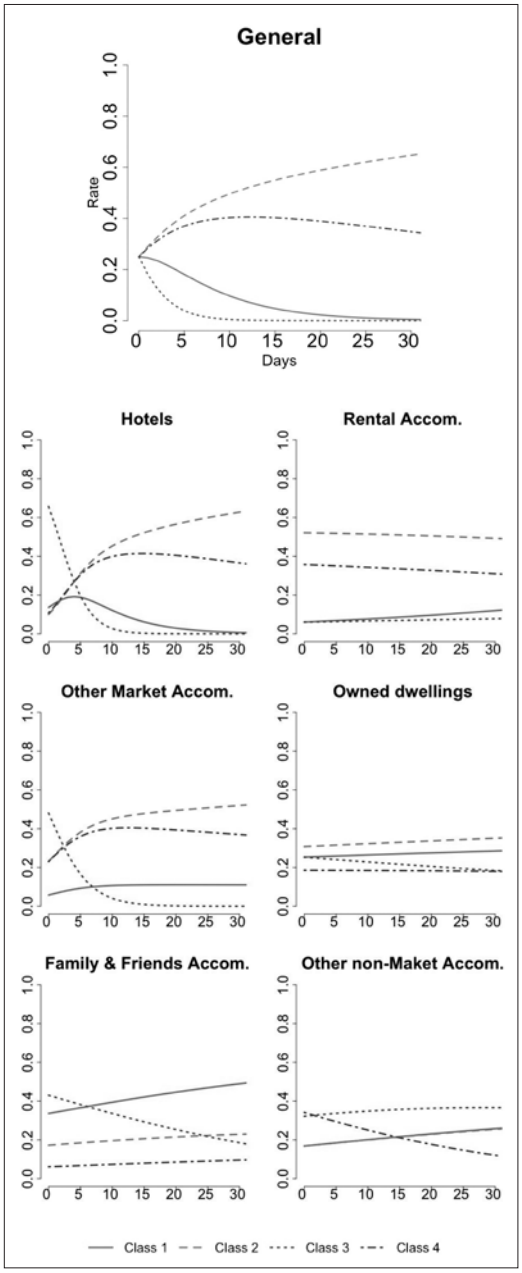
in Table 3, there is evidence of dependency between the obtained classes and the selected socioeconomic variables. The p-values are less than 0.001, indicating statistically significant associations between the variables and classes. There is a clear trend showing that younger individuals are overrepresented in Class 1, while older individuals, especially those over 65, are more concentrated in Class 2. In gender terms, the men are more represented in Class 2 and Class 3, whereas women are more represented in Class 1. Finally, high/mid income are predominantly in Class 2, whereas those with mid/low income are most represented in Class 3.

Once the classes had been identified, a logistic regression was applied to obtain the elasticities of the exogenous variables and determine the percentage of each class according to these variables. The results of the regression can be consulted in Appendix 1. From these results, the forecast of each class according to the type of stay and its duration has been made, as shown in Figure 3. With this, it is observed that Class 2 will grow as the length of stay increases, a similar case to that of Class 4, but once the ten days are passed, it begins to decrease. Class 3 is only present in very short stays; it disappears from the market when it exceeds five days. A similar situation occurs with Class 1, although its gradual decrease is more prolonged.

On the other hand, when types of establishments are broken down, we observe that rental accommodation and owned dwellings are the most inelastic establishments for the length of stay. While in hotels and other market accommodations, the composition of demand is susceptible to short stays and less to extended stays. Regarding the remaining accommodations, we find that there are sustained patterns of changes as the stay evolves, but not with a very high sensitivity. This is very useful for studying how the market evolves in response to changes in the average length of stay at a global level or by type of accommodation, but it does not indicate whether, in this analysis, there are significant differences within the sample that would allow us to know whether stays are longer or shorter depending on the class and/or type of establishment.

Table 3 summarises the stays for each class and analyses whether there are significant differences between accommodations in Table 4, showing that there are, in general terms, with a very high level of confidence, except between Class 1 and 4, which drops considerably. However, it is still significant for p-values above 0.2%. The analy-

Figure 3 - Cluster membership rates depending on the accommodation and stay length (x-axis).



sis considers the Wilcoxon statistic because all data present a non-normal distribution according to Jarque-Bera test results. This means that there may be no difference in length of stay between these two classes, so attracting any of these two classes may not result in any change in length of stay. On the other hand, the shift from Class 3 to 4 significantly increases the average length of stay.

The analysis can also be replicated to study the differences in stays between establishments within each class. Thus, hotel stays are shorter than in vacation rental accommodations or owned housing. This can be framed in terms of the cost since it is the most expensive on average among all the options considered. Out of the other options, the difference between other market and non-market accommodations is positive when Class 3 is studied and negative when Class 4 is studied, with no significant differences detected for the rest of the classes.

Class 2 and 1 generally have more extended average stays, while Class 1 and 3 have the highest daily expenditures. Therefore, it seems essential to promote the segment of spenders because they are a segment that will guarantee higher occupancies or to encourage the class group of solitary Europeans who are very selective in their activities if what is sought is to promote daily spending. Note that the analysis does not consider the variable dispersion in the class, so if its variability is high, it will imply that it is a class with more uncertainty in income guarantees. As the data is non-normal distributed, the paper considers Leven's test to know if variances between classes could be equal. In global terms, the analysis shows that Class 1 and 2 present the highest stay length however, the variance analysis indicates that Class 1 presents more highly significant variability than Class 2. Daily and total expenditure is higher in Class 1 and 4, but the first oscillates much more than the second.

In an analysis by type of accommodation, it is observed that the hotels in Class 2 and 4 present many days of stay but with low daily expenditure, while the remaining ones are the opposite. However, Class 3 shows much more relevant variability in daily spending than Class 1, while it is the opposite regarding stay and total expenditure. In total terms, Class 1 and 4 are those that spend the most, but if the volatility of both is analysed, it is much higher in Class 1. This means that group 4 seems to be the most desirable in this type of accommodation as it presents higher occupations and less variability in income.

Table 3 - Average terms of stay length, daily expenditure and total expenditure by class and accommodation type.

		Class 1	*Class 2*	*Class 3*	*Class 4*
General	Stay Length	13,09	12,61	9,08	10,89
	Daily Expenditure	85,70	45,40	97,21	68,34
	Total Expenditure	890,56	481,20	606,70	647,10
Hotel	Stay Length	6,20	9,08	3,70	8,56
	Daily Expenditure	139,15	62,10	158,98	85,52
	Total Expenditure	882,35	540,90	573,75	713,60
Rental Accom.	Stay Length	20,45	11,53	13,36	11,23
	Daily Expenditure	116,92	45,80	129,01	65,70
	Total Expenditure	1796,21	471,06	1167,70	653,05
Other Market Accom.	Stay Length	12,56	12,78	4,45	11,35
	Daily Expenditure	111,03	48,68	127,15	67,48
	Total Expenditure	1094,46	543,82	525,58	702,26
Owned dwellings	Stay Length	20,22	20,69	15,54	18,17
	Daily Expenditure	66,18	27,69	76,72	36,10
	Total Expenditure	1088,95	504,74	778,62	580,30
Family & Friends Accom.	Stay Length	12,57	12,02	9,04	12,98
	Daily Expenditure	66,22	26,68	69,66	33,22
	Total Expenditure	726,17	291,80	517,03	406,89
Other non-Market Accom.	Stay Length	9,97	11,67	9,14	5,69
	Daily Expenditure	78,89	30,14	88,69	54,82
	Total Expenditure	677,23	300,15	551,47	265,57

Table 4 - Class comparisons using the Wilcoxon rank sum test with continuity correction.

	1-2	*1-3*	*1-4*	*2-3*	*2-4*	*3-4*
General	> 0,001	> 0,001	0,002	> 0,001	> 0,001	> 0,001
Hotel	> 0,001	> 0,001	> 0,001	> 0,001	> 0,001	> 0,001
Rental Accom.	0,404	1,000	1,000	0,012	0,006	0,534
Other Market Accom.	0,001	> 0,001	0,082	> 0,001	> 0,001	> 0,001
Owned dwellings	> 0,001	> 0,001	0,313	> 0,001	0,001	> 0,001
Family & Friends Accom.	0,001	> 0,001	0,012	> 0,001	0,649	> 0,001
Other non-Market Accom.	0,044	0,432	0,216	0,003	> 0,001	0,735

In rental accommodations, Class 1 presents the highest total expenditure; however, it has the most significant and elevated variance ratio compared to the remaining groups. So, if the market is focused on this group, they should provide more resources to withstand the possible economic fluctuations. For the owned dwelling, the stay length is higher in Class 1 and 2; however, the expenditures are higher in Class 1 and 3. In variance terms, in the first case, the variance analysis shows a significant and positive difference for Class 1, and in the latter, the variance is more considerable to Class 1 than 3 for total expenditure but the opposite for daily.

Thus, and taking into account the different analyses performed above, we can answer RQ2 (Dif-

Table 5 - Variance ratio and Levene`s test coefficient signification codes.

		1-2	*1-3*	*1-4*	*2-3*	*2-4*	*3-4*
General	Stay Length	1,41***	1,33***	1,57***	0,94.	1,11***	1,18***
	Daily Expenditure	2,07***	0,87***	1,58***	0,42***	0,76***	1,82***
	Total Expenditure	2,41***	1,69***	1,79***	0,70***	0,74***	1,06*
Hotel	Stay Length	1,17	2,04***	1,12	1,74***	0,96	0,55***
	Daily Expenditure	2,05***	0,74***	1,46***	0,36***	0,71***	1,97***
	Total Expenditure	2,86***	2,13***	1,84***	0,74***	0,64***	0,87
Rental Accom.	Stay Length	4,27***	1,94**	3,03***	0,46***	0,71*	1,56***
	Daily Expenditure	1,84***	0,66	1,34**	0,36***	0,73***	2,03***
	Total Expenditure	6,94***	2,51**	3,71***	0,36***	0,53***	1,48**
Other Market Accom.	Stay Length	1,48***	4,96***	1,52***	3,34***	1,02	0,31***
	Daily Expenditure	1,50**	0,93.	1,73.	0,62***	1,15**	1,86***
	Total Expenditure	1,22***	2,28***	1,27***	1,87	1,04**	0,56*
Owned dwellings	Stay Length	1,17**	1,22**	1,26***	1,04	1,08	1,04
	Daily Expenditure	2,97***	0,57***	2,09***	0,19***	0,70***	3,66***
	Total Expenditure	2,66***	1,52***	1,98***	0,57***	0,75*	1,31***
Family & Friends Accom.	Stay Length	1,39***	1,25***	1,13*	0,89	0,81*	0,91*
	Daily Expenditure	4,18***	1,30	3,73***	0,31***	0,89*	2,87***
	Total Expenditure	3,23***	1,44***	1,97***	0,45***	0,61***	1,37*
Other non-Market Accom.	Stay Length	1,49	1,01	2,57***	0,68	1,73***	2,55***
	Daily Expenditure	2,76***	0,56**	1,38.	0,20***	0,50***	2,47***
	Total Expenditure	3,86***	1,13	3,39***	0,29***	0,88	3,01***

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*

ferences in accommodation patterns) and RQ3 (accommodation patterns + daily revenue). First of all, different accommodation patterns are observed between classes (RQ2). While, in general, Classes 1 and 3 are the most attractive in terms of expenditure, it is Classes 1 and 2 that have the longest overall length of stay. Looking at the different types of accommodation, the most profitable type, or in other words, the one that represents the highest average daily expenditure, would undoubtedly be the hotel, especially for those classes of British (1) and German (3) tourists.

On the other hand, if what is sought is to retain the tourist in the destination, rental accommodation would be the most recommendable option for the different classes. Returning to daily profitability (RQ3), it is undoubtedly (see Table 3) the option of staying with friends and family that is the least recommendable, as it does not seem to transfer the saved lodging expenses to other activities (Vena-Oya *et al*., 2022). In general, and in response to research questions 2 and 3, different patterns of behavior can be observed in terms of spending and days of stay based on the types of accommodation for the different classes found. Thus, in a strategy of daily profitability, Class 3 (Germans) would be the most interesting in a strategy more focused on the rotation of tourists, while Class 1 (British) would be the most advisable in a strategy of renting and obtaining income in the longer term.

5. Discussion & conclusion

Prior studies have tried to segment the tourist visiting a wine-producing destination based on their motivations, spending or length of stay (e.g. Szolnoki, 2018; Santos *et al*., 2020; Gó-

mez-Carmona *et al*., 2023); however, one of the main contributions of this paper is that it focuses on international tourists visiting these regions, not just wine tourists. In addition, many of those studies focused on data from tourists who engaged in wine tourism (surveys in wineries and restaurants, among others), so the present study expands the analysis to those who do not consider that they travel to consume wine tourism. Thus, at the academic level, it is observed how, through segmentation, Destination Management Officers (DMOs) can focus their attention on the different tourist profiles, trying to better adapt the offer to their expectations and demands, thus trying to generate stable income flows from tourism in areas traditionally excluded from tourism activity (Barreal *et al*., 2023b). On the other hand, the study of the behavior of tourists visiting destinations whose main activity is not tourism has been studied in depth. Thus, differences have been observed in terms of spending profile, average stay and motivations, as suggested by different authors on the heterogeneity of these markets and the possibilities of obtaining higher income that their correct identification entails (Hristov and Zehrer, 2019; Sigala, 2020).

In terms of accommodation, our study data shows that, generally speaking, in Spain, on average, almost 55% of inbound tourists prefer staying at hotels, but in our research sample, barely 33% of the inbound tourists in those destinations choose a hotel for their accommodation. As far as rental accommodations are concerned, in our research sample, almost 10% of the sample chose to rent accommodation, a share higher than in Spain's general database (around 6%). In our sample, other non-market accommodation[6] options have almost the same share (10%) as rental accommodation. This share is much more relevant in our sample than Spain's average accommodation preference dataset (3,5%). Finally, we also state that in these less populated regions, owned dwellings by non-residents and their stays in family and friends accommodations are much more relevant than in Spain's general sample (see Table 2), moreover, taking into account the higher daily expenditure, this option does not seem to shift expenses to other activities (Vena-Oya *et al*., 2022).

Taking into account, therefore the profiles found, a series of contributions are made at the management level of these destinations. Firstly, it is observed that it is the segments of tourists who travel mainly alone (1 and 3) that show the highest spending profile. These tourists prefer to travel in times of low tourist demand, which is highly attractive in order to minimise tourist seasonality and the problems that this entails (Barreal *et al*., 2023a). Tailoring activity packages according to their profile (mainly an active tourist who wants to do as many activities as possible in the destination) will be key to attracting their attention. On the other hand, tourists in segments 2 and 4 have a lower spending profile than the previous ones, they do prefer to travel during high season and reveal different motivations. While tourists in the second segment prefer cultural tourism activities, those in the fourth segment are more active, and managers must adapt to these profiles as well. Taking this into account, from a sustainability perspective it seems reasonable for tourism planners to promote the demand of groups 1 and 3 who show a higher spending rate and a tool to soften tourism seasonality.

On the other hand, DMOs should also focus on a differentiation strategy, based on their main strength (being wine PDOs) and on the motivations for wine presented by different segments of the population (mainly middle-aged and older). These strategies should follow an approach based on sustainability and environmental protection, an element that makes these destinations unique, but should also look at the other dimensions of sustainability (Blancas *et al*., 2010), such as economic and social, trying to attract profiles that wish to engage in slower tourism and with higher spending profiles, which corresponds to segments 1 and 3. Furthermore, with regard to the economic sustainability of these destinations, DMOs can take into consideration the segments found in order to establish the most appropriate strate-

[6] Campings, hostels, rural lodgings.

gies for their destination, taking into account the range of activities of the destination. Thus, a high profitability strategy in a destination that wishes to attract tourists for a short period of time would be to focus on Class 3 or German solitary tourists, while for a tourist retention strategy, where the priority is to obtain income by increasing the length of stay, Classes 1, 2 and 4 would be the most recommendable. Thus, the key would be to focus on different segments and offer fully adapted seasonal packages to them, for which this type of work can help destinations to make decisions in this regard (Barreal *et al*., 2023b).

This paper contributes to the existing literature by analysing low-populated areas with some protected primary production, using data from international wine tourists who are not typically engaged with these regions. It builds upon the methodology proposed by Jannes and Barreal (2024) by focusing specifically on low-population areas and placing an emphasis on stay length and accommodation. Additionally, this study extends the work of Vidal-Matzanke and Vidal-González (2022) as well as Ramos-Ruiz *et al*. (2024) to include Protected Designations of Origin (PDO) areas. The tourism implications affect various economic sectors and can help mitigate depopulation trends. The paper also complements the research of López-Sanz *et al*. (2021) by presenting a methodology aimed at balancing tourism offerings with demands in low-populated areas, thereby enabling sustainable development that conserves cultural heritage and the environmental resources.

This research has a number of limitations. Firstly, it focuses on a single destination such as Spain. Despite being one of the world's main wine producers and inbound tourism receiver and exporter, it would be interesting to analyse and compare to other markets such as France and Italy in Europe, the United States in America and Australia in the Asia-Pacific region. Secondly, the data was from international tourist who declared the areas as the primary destination and did not consider their country moving to other places or destinations. The tourist movement analysis requires a separate study to determine how the internal country distance is spent in national routings and its effect on accommodation choice and expenditure patterns. Third, the paper does not involve specific activities linked to the wine PDO; it only includes gastronomic activities, but sometimes the proper visitor does not clearly identify this activity and only associates them with visiting a wine cellar or Michelin restaurant when the gastronomic experience involves more local cultural assets than that.

Following previous limitations, future research should seek to compare and define the different international behaviours between rural and urban areas, including the comparison between rural areas without any specific agro-gastronomic protection and those with it. Furthermore, revealing more about different international patterns between areas could enrich the literature, and it could also be an important argument for producing public and private programs to expand this tourism niche in areas with lower economic development.

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Appendix 1

Table 6 - Latent Class Model model with covariates outcome.

Fit for four latent classes:

1/2	*Coefficient*	*Std. Error*	*t value*	*Pr(>|t|)*
Stay length	0,163	0,011	15,553	0,000***
Hotel	-0,313	0,105	-2,995	0,003**
Rental Accom.	2,150	0,161	13,361	0,000***
Other Market Accom.	1,388	0,164	8,469	0,000***
Owned dwellings	0,195	0,087	2,238	0,025*
Family & Friends Accom.	-0,667	0,093	-7,178	0,000***
Other non-Market Accom.	-0,443	0,336	-1,317	0,188
Stay Lenght * Rental Accom.	-0,188	0,013	-14,800	0,000***
Stay Lenght * Other Market Accom.	-0,158	0,013	-11,886	0,000***
Stay Lenght * Owned dwellings	-0,163	0,011	-15,104	0,000***
Stay Lenght * Family & Friends Accom.	-0,167	0,012	-14,175	0,000***
Stay Lenght * Other non-Market Accom.	-0,164	0,023	-6,991	0,000***

1/3	*Coefficient*	*Std. Error*	*t value*	*Pr(>|t|)*
Stay lenght	-0,308	0,024	-12,695	>0,001***
Hotel	1,573	0,125	12,551	>0,001***
Rental Accom.	0,118	0,212	0,558	0,577
Other Market Accom.	2,120	0,273	7,766	0,000***
Owned dwellings	0,050	0,088	0,563	0,574
Family & Friends Accom.	0,247	0,065	3,793	0,000***
Other non-Market Accom.	0,649	0,206	3,145	0,002**
Stay Lenght * Rental Accom.	0,294	0,025	11,533	0,000***
Stay Lenght * Other Market Accom.	-0,006	0,049	-0,114	0,909
Stay Lenght * Owned dwellings	0,294	0,024	12,014	0,000***
Stay Lenght * Family & Friends Accom.	0,268	0,024	10,934	0,000***
Stay Lenght * Other non-Market Accom.	0,298	0,027	11,154	0,000***

1/3	*Coefficient*	*Std. Error*	*t value*	*Pr(>|t|)*
Stay lenght	0,143	0,011	13,251	0,000***
Hotel	-0,233	0,103	-2,270	0,023*
Rental Accom.	1,773	0,148	11,978	0,000***
Other Market Accom.	1,385	0,160	8,657	0,000***
Owned dwellings	-0,309	0,100	-3,087	0,002**
Family & Friends Accom.	-1,701	0,129	-13,200	0,000***
Other non-Market Accom.	0,708	0,245	2,887	0,004**
Stay Lenght * Rental Accom.	-0,170	0,012	-14,198	0,000***
Stay Lenght * Other Market Accom.	-0,149	0,014	-10,907	0,000***
Stay Lenght * Owned dwellings	-0,148	0,011	-13,144	0,000***
Stay Lenght * Family & Friends Accom.	-0,140	0,013	-11,001	0,000***
Stay Lenght * Other non-Market Accom.	-0,192	0,027	-7,092	0,000***

*Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*