

Exploring sustainable tourism through winter sports events: An analysis of local agri-food systems

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Abstract

Sporting events can positively impact sustainable development of local socioeconomic systems. This study examined the role of sports events in enhancing sustainability, with a particular focus on the agri-food sector. An exploratory survey was conducted in Austria, Italy and Slovenia (1,511 respondents), and a choice experiment was used to analyse potential tourists' preferences for vacations in places where winter sports events are held (e.g., the European Winter Youth Olympic Festival). Respondents pointed out the importance of an accommodation being environmentally sustainable. From our findings, heterogeneity in respondents' preferences emerged, and opportunities to strengthen local food systems were identified. These results can be a starting point for the creation of appropriate tourism offers for the benefit of tourism operators and local stakeholders in agri-food systems.

Keywords: Sporting event, sustainable tourism, accommodation, local food, choice experiment, environmental sustainability

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1. Introduction

Sports events create both positive and negative socioeconomic and environmental impacts on a territory, which has been highlighted in the literature (e.g., Johnston *et al.*, 2023; Mair *et al.*, 2023; Mair & Smith, 2022; Valeri, 2023). The United Nations 2030 Agenda for Sustainable Development identifies sports as a tool for and facilitator of local sustainable development (Schulenkorf & Siefken, 2019; Van Rheenen *et al.*, 2021; WTO, 2005). Sports events can add value in several other ways, such as by supporting community identity and building destination image (e.g., Andersson & Getz, 2008; Daniels, 2007; Fotiadis *et al.*, 2016; Gibson *et al.*, 2002, 2003; Kim & Petrick, 2005; Morgan *et al.*, 2021; Taks *et al.*, 2015).

Holding such events is often perceived as an opportunity to promote tourism and enhance local development in both the short and long term (Daniels & Norman, 2003; Fytopoulou *et al.*, 2021). However, Polcsik & Perenyi (2023) pointed out the importance of analysing the potential social impacts of sports events on the overall success of these events among local communities. More specifically, Teixeira *et al.* (2023) identified sports events as ‘catalysts’ for both socioeconomic and environmental sustainability.

The enhancement of a local agri-food system is among the potential positive effects of a sports event. Studies have demonstrated the positive impacts that sports events have had on agri-food systems (e.g., Csobán & Serra, 2014; Thomson *et al.*, 2019). These kinds of systems encompass the primary production of both food and non-food agricultural goods, as well as in food storage, aggregation, post-harvest handling, including transportation, but also different types of processing, distribution, marketing, disposal and last not least consumption. Within agri-food systems, food systems comprise all food products that originate from crop and livestock production, forestry, fisheries and aquaculture, and from other sources, and that can be considered for human consumption. To the best of our knowledge, no studies have analysed the characteristics of people who attend sports events conducted during the winter season and identified their preferences for environmentally sustainable accommodations and locally produced food. Given this lack of focused studies, it seems useful for researchers to gain a holistic understanding of these topics.

The aim of this study was twofold. First, we investigated winter sports participants’ preferences when choosing accommodations and drew some suggestions about its ideal features to try to maximise the attractiveness and desirability of sports event destinations. This kind of investigation could transform participants from potential to future destination tourists. Environmentally sustainable accommodations were investigated. Second, because, according to the literature (Estrada *et al.*, 2024), the presence of local food reinforces the perception of sustainability, we analysed winter sports event participants’ preferences regarding the supply of local agri-food offered by accommodations. This analysis could be used in market segmentation by tourism decision-makers and those involved in the tourism sector.

This present study was conducted at the European Winter Youth Olympic Festival (EYOF). This high-level European multisport event was held January 21–28, 2023 at 10 locations in Italy’s Friuli Venezia Giulia Region as well as in Spittal, Austria and Planica, Slovenia.

The festival was launched in 1991 to promote Olympism among youth. The EYOF is hosted biennially, in both summer and winter editions. Its participants are between 14 and 18 years old and nominated by their respective national Olympic committees. This event is organised on behalf of the European Olympic Committee, which has exclusive rights and is under the patronage of the International Olympic Committee. According to the findings of a previous research study (Heinonen, 2023), the EYOF seems to be able to boost local systems and support tourism by involving many participants. It attracts

spectators and participants at the national and international levels. For example, the 2023 EYOF winter edition involved more than 1,300 athletes from 47 countries and 1,200 volunteers, who spent at least one week in the Friuli Venezia Giulia Region. Furthermore, this international sports event attracts tourists to a destination and creates a positive image of the location for foreign tourists (Candrea & Ispas, 2010). To reach the objective of our study, a survey was carried out among potential participants in Austria, Italy and Slovenia before the 2023 EYOF to better understand the role of local agri-food products among respondents' preferences when choosing an accommodation. The purpose of this study is to provide support to decision-makers for developing effective, sustainable accommodation offers.

The rest of the paper is organized as follows. The second section of this paper is devoted to analysing the literature review, and the third section describes the methodology applied and the materials used. The fourth section presents the results and discusses the findings. A conclusion is then provided in the fifth section.

2. Literature background

The organising of sports events and associated activities, as well as communicating about and managing them, is becoming important for enhancing tourist destinations (Bowdin *et al.*, 2012; Kaplanidou & Vogt, 2007; Stokes, 2008). Several studies have analysed event management, including sports events (Richards *et al.*, 2025). According to Bowdin *et al.* (2023), event management can play a fundamental role in economic growth. Sport events can directly boost a local economy both socially and economically (Chersulich Tomino *et al.*, 2020; Gibson *et al.*, 2012; Gratton *et al.*, 2020; McChartey *et al.*, 2010; Raso & Cherubini, 2024; Roche *et al.*, 2013; Sallent *et al.*, 2011; Schulenkorf *et al.*, 2024). Moreover, sports event organisers are increasingly engaging in environmentally related initiatives that aim to reduce negative impacts (Martins *et al.*, 2024; Thormann & Wicker, 2024), especially regarding climate change (Herold *et al.*, 2024).

The above-mentioned economic, social and environmental dimensions of sports events embrace each sustainable development principle (Bowdin *et al.*, 2023). Furthermore, the capability of sports events to support sustainable tourism has been demonstrated by several studies (e.g., Csobán & Serra, 2014; González-García *et al.*, 2022; Morfoulaki *et al.*, 2023; Perna *et al.*, 2019). According to Budeanu *et al.* (2016), tourism has a long tradition of establishing definitions and principles for sustainable tourism since it has rapidly transitioned from being merely about meeting economic goals to having wider sustainability implications. Mehmood & Kaewsang-on (2024) stated that eco-friendly tourism practices can i) substantially reduce carbon dioxide emissions and ii) make progress towards achieving the Sustainable Development Goals by 2030. Within this framework, it seems that sports events can contribute to supporting tourism sustainability with some positive environmental, economic and social impacts (Gibson *et al.*, 2012).

As stated by Chalip & Leyns (2002), sports event organisers have the most to gain by fostering and coordinating local business leveraging. Among the economic activities impacted by these events, agri-food system actors seem to play a significant role. Specifically referring to a local agri-food system, Csobán & Serra's (2014) study demonstrated that sports events can positively impact local food systems because of participants' behaviours. Furthermore, because of media exposure, a positive impact on a local agri-food system could be related to increased attraction from large numbers of tourists to an area hosting a sports event (Thomson *et al.*, 2019).

Preuss (2007) defined the strengthening tourism location effect with the event legacy concept, which describes the long-term or permanent effects created in favour of an area due to hosting an event. Exploring the legacy of sports events, an increase in tourist visits has often emerged (Preuss, 2018). For certain events, the issue of legacy plays a central role in deciding whether to host an event (Thomson *et*

al., 2013). However, it should be noted that Máté *et al.* (2024) also identified a negative effect, which is local citizens' fear of unfamiliar situations created by sports events.

Zhang *et al.* (2019) pointed out that the consumption of local food is an element of sustainable tourism. Also, United Nations Environment Programme-UNEP (2015) indicated that local food is a best practice to support responsible food purchases when considering hospitality. As stated by Apak & Guerbuez (2023), tourists' demand for local food is both increasing and, in accordance with the findings of Galati *et al.* (2021), directly proportional to consumers' growing interest in and awareness of sustainable products and services. Furthermore, Choe & Kim (2018) found that a preference for local food helps enhance tourism's sustainability and increases a region's attractiveness.

Local food has been described as being more sustainable than processed food since it reduces negative environmental impacts associated with transportation and packaging while supporting a local economy, helping the preservation of local cultures and having a positive impact in reducing costs associated with transportation (Gössling *et al.*, 2011). In addition, Apak & Guerbuez (2023) found local food to have a positive effect on the economic, socio-cultural and environmental aspects of sustainable tourism.

Sengel *et al.* (2015) pointed out that the impact of local food on tourists' experiences is often neglected. Nonetheless, some studies have analysed tourists' behaviours, attitudes and preferences towards local food (Parrilla-González *et al.*, 2024). Sims (2009), collecting data from qualitative interviews with tourists and food producers, demonstrated that local food has the potential to enhance visitors' experiences by connecting them to a territory and its culture and heritage. More recently, Baratta & Simeoni (2021) stated that local food stimulates very positive behavioural intentions among tourists across multiple factors, such as one's hotel selection process, expectations and willingness to pay a higher price.

A number of studies (e.g. Choe *et al.*, 2023; Lyu, 2021; Lyu *et al.*, 2023) explored tourists' preferences for sports event travel packages by using the choice experiment (CE) method to discover the distinctive importance of each product attribute used by tourists. This method is widely used in the tourism field, as can be seen in the rich literature on this subject. For example, Lin *et al.* (2022) analysed sports tourists and found that participants appreciated the experience of authentic cuisine. To the best of our knowledge, no studies have used the CE method to estimate a latent class (LC) model to consider winter sports event participants' preferences regarding accommodations (including the supply of local agri-food products).

3. Methods and materials

With the CE method, a good or service is evaluated according to its most important characteristics (i.e., 'attributes'). This methodology assumes that goods and services can be described by their characteristics and that an individual's evaluation depends on the intensity ('level') with which these attributes are present in a good or service offered. For each attribute considered relevant and selected by a group of stakeholders during a specially organised discussion, a number of levels are then defined.

A CE is composed of several choice sets or groups. A choice set contains a purchase situation that is presented to a respondent with some alternatives from which to choose. According to Bennett and Adamowicz (2001), the respondent is asked to choose a good or service from a previously pointed out group of hypothetical alternatives while making complex trade-offs among attributes. Choice sets typically include two or more goods/services, each with different combinations of attributes, including a monetary component, which can be the price or cost.

CEs are based on questionnaire surveys, in which participants are presented with the afore identified choice groups containing alternatives, each described by the attributes and relative levels considered.

Respondents are asked to indicate for each choice set which of the alternatives they would choose if they had to make a purchase. Among the alternatives, 'no choice' is also usually included to represent, with fidelity, the real market, where a person may decide not to purchase a good or service for a variety of reasons.

Respondents' choices allow for the identification of an underlying utility function, to identify what attributes and the levels of presence of these in a good or service being chosen increase or decrease consumer satisfaction. In data analysis, it is assumed that a respondent, based on the axioms of rationality and monotonicity of preferences, chooses among the alternatives that can provide him or her with the greatest utility or degree of satisfaction. This methodology usually combines random utility theory, consumer theory, experimental design theory and econometric analysis and can estimate the utility function and decisiveness of single attributes and their levels among respondents (McFadden, 1974).

This method makes it possible to investigate respondents' willingness to pay for a certain characteristic and allows for an understanding of the exchange relationships between different assessed attributes. This methodology is very flexible and, via a single questionnaire, allows for the assessment of respondents' behaviours under different hypothetical scenarios, thus enabling the exploration of respondents' preferences for different attributes of valued goods.

3.1. *The survey*

To achieve the aim of this study, we conducted a survey. For its implementation, a company was identified via a special administrative procedure to professionally provide the service of administering questionnaires and collecting related information. This company also provided the translation of the Italian questionnaire into the official languages of Austria and Slovenia, where the survey was also carried out.

The survey yielded 1,511 completed questionnaires, of which 910 were collected in Northeast Italy (304 in Friuli Venezia Giulia, 303 in Veneto and 303 in Trentino-Alto Adige Regions), 301 in Austria (149 in Ostösterreich, 66 in Südösterreich and 86 in Westösterreich) and 300 in Slovenia (152 in Vzhodna Slovenija and 148 in Zahodna Slovenija). The survey was carried out according to what was shared with the company. In detail, respecting the required target population in Italy and abroad (respondents 18 years of age or older) and making sure to collect a non-probabilistic statistical panel structured based on the respondents' geographic area and gender (+/- 10% odds ratio) were the main shared conditions. Since this kind of sample can be characterised as a convenience one, the results should not be considered definitive evidence, although they are useful considering the explorative aim of this study. The questionnaire, requiring about 15 minutes, was administered by computer-assisted web interviewing mode over a period of 16 days (November 29–December 14, 2022). It included different sections. In addition to the usual sociodemographic questions, the questionnaire was designed to gather information about winter sports event participation, including questions about behaviours and expenses during such events. Furthermore, to identify respondents' preferences when they chose to purchase a tourism package, the above-mentioned CE method was used. Respondents were asked to imagine enjoying a future holiday in EYOF locations, the above-mentioned winter sports event, and to define their willingness to pay for certain features of an accommodation.

As part of the survey, the typical CE methodological procedure was applied. Two focus groups were conducted to identify the characteristics to be used in the study and to discuss the questionnaire in general. Some stakeholders (i.e., technicians, operators in the tourism and agri-food sectors and researchers) were invited. Following discussions during focus groups, five characteristics were pointed out as part of this survey to describe the three-day (two-night) vacation to be spent at one of the EYOF

2023 venues. After identifying the attributes deemed relevant, we proceeded to define their relative levels. The aim was to enable us to arrive at an exhaustive and thoughtful choice of the three-day (two-night) vacation to be spent in one of the places of the EYOF 2023 sports event. This study allocated two or three levels to each of these attributes, as shown in Table 1.

According to the focus group discussion, in this study, ‘€ 90’ was set as the base level of the price/night/person attribute, which was the average price of accommodation facilities offering half board in the region hosting the sports event (Regione Autonoma Friuli Venezia Giulia, 2022). Subsequently, taking into consideration the information collected from the participants in the focus group discussion, two additional levels were identified to represent different accommodation solutions (i.e., ‘€ 70’ and ‘€ 120’). A brief explanation of the CE method was included in part of the questionnaire preceding the choice sets. The respondents were asked to assume that they were in a situation where they had to consider buying a ‘package vacation’. In such a hypothetical situation, they were asked to choose a solution that, based on their preferences regarding the above-mentioned attributes, including their ability to spend, would be preferred. In detail, this choice situation is presented as follows:

‘Now imagine that you are planning a three-day (two-night) vacation to be spent in one of the places where the EYOF 2023 sports events are held. We ask you to choose the type of accommodation you prefer from the following six scenarios. Please also take into consideration your income/available financial resources’.

Table 1. Attributes and vacation levels of three days (two nights) to be spent at one of the EYOF 2023 sports event venues used in the choice experiment

Attributes	Levels
Price/person/night (half board)	€ 70; € 90; € 120
Environmentally sustainable management of accommodation	No; Yes, energy and water resource reduction; Yes, differentiated waste collection
Availability of recreational facilities nearby (e.g., tourist guides, organized ludic/sport activities, shops and cafés, etc.)	Scarce; High
Meals prepared with local food and wine products	Yes; No
Accommodation near:	Well-protected landscape, environmental resources; Well-preserved historic-cultural resources; Fruit and vegetable cultivations

The different types of accommodations for the hypothesized vacation were presented to the respondents using only verbal descriptions. Each respondent was presented successively with the six choice sets, each consisting of three alternatives plus the ‘no choice’ alternative (‘none of the proposed accommodations’). This last option allowed to replicate a real purchase scenario, in which respondents were not forced to choose an accommodation that did not satisfy them (Hensher *et al.*, 2005). An example of a choice set used during the survey is shown in Figure 1. As recommended by the CE literature (Kløjgaard *et al.*, 2012), the questionnaire, the choice task and the attribute levels were pretested with a pilot study. A total of 30 individuals participated.

	Accommodation 1	Accommodation 2	Accommodation 3	None
Accommodation near...	well-protected landscape, environmental resources	well-preserved historic-cultural resources	fruit and vegetables cultivations	
Availability of recreational facilities nearby (e.g. tourist guides, organized recreational- sports activities, shops and cafés, etc.)	scarce	high	scarce	None of proposed accommodations
Environmentally sustainable management of accommodation	no	yes, water and energy resources reduction	yes, waste collection	
Meals prepared using local food and wine products	no	no	yes	
Half board price/person/night	€70	€90	€120	
I prefer...	☐	☐	☐	☐

Figure 1. *Choice set example*

Given that it is possible to point out several combinations of the above attributes and their levels, using SPSS® software a fractional factorial orthogonal design was generated. Consequently, six sets (i.e., ‘choice groups’) were administered to the respondents, each containing three alternatives – three ‘types’ of vacation connoted by different presence of the identified attributes – one of which was monetary (price).

4. Results and discussion

4.1. Respondents’ profiles

The respondents (N=1,511) (see Appendix) present a substantial balance for self-reported gender (only 0.3% prefer not to answer), with slight male dominance in North-Eastern Italy (50.5%) and Slovenia (52.0%), as opposed to Austria (48.5%). In terms of age groups, the young-adult group prevails, with 51.8% of respondents falling in the 30–54 age group; those under the age of 30 are 18.7% overall (rising to 21% in Slovenia).

The educational background of the respondents is medium-high, given that the stated educational qualification is for about 72% at least a high school diploma, with values approaching 80% for Italy while dropping to 41% in Austria, where a three-year vocational diploma prevails (38.2%).

Most (61.8%) of the respondents were employed (5.5% belonging to the tourism sector) and cohabiting with a partner for 60.7%, of whom 30.3% also had children.

With a 5-point Likert scale a number of respondents’ fruition factors were analysed. They were asked to rate the importance of various characteristics influencing their choice for attending sporting events, with five possible answers, ranging from “not at all important” to “extremely important”. It was found that the most important factors (i.e. those that collected at least half of the answers ‘extremely important’ and ‘very important’) were the beauty of the landscape (65.5%), followed by the costs of attending the event (56.9%). However, 45.5% of respondents considered extremely or very important the environmental sustainability of the event. Taking into consideration the area of residence, Italian respondents stated to pay more attention to this last aspect of sustainability in comparison with the other interviewees (52.2%). More in detail, respondents from Trentino-Alto Adige Region declared the highest level of importance (54.1%) of this factor.

4.2. Preferences and willingness to pay for vacation accommodation: Results of the choice experiment

The number of CE observations collected among the 1,511 respondents was 9,066. The CE data were analysed with the Nlogit 6.0® programme, through which a multinomial logit (MNL) base model was first developed. This MNL base model assumes homogeneity among the respondents' preferences. Generally, this model violates the independence of irrelevant alternatives (IIA) assumption, which is a critical requirement. In detail, it indicates that the ratio of the probabilities referred to the choice of any two alternatives is completely not affected by the systematic utilities of any other alternative (Lyu, 2021). Despite above mentioned violation of the IIA assumption, MNL is often used for exploratory purposes in data analysis. This model offers an overview of the average respondents' preferences and proves to be useful for analysing the relative marginal utility of the attributes of the whole sample. However, the scholar can choose among different models for a CE study (Boxall & Adamowicz, 2002). To consider the existence of preference heterogeneity in the sample, alternative models were also used in this study. Specifically, a LC model was estimated. This model proved to be quite informative and interesting to analyse the issue of preferences heterogeneity. In more detail, it had an informative value in pointing out the existence of latent groups in the total demand for accommodation. According to Greene and Hensher (2003), the LC model generalises the MNL model. Moreover, it controls for preference heterogeneity, which is not explained, since it assumes the presence of latent segments in the sample with systematically heterogeneous preferences. An LC model hypothesises that there is a finite number of discrete preference groups and that each respondent has a probability of being in each group. Both estimated models used the same utility function (1), which was expressed as a linear function of the given accommodation attribute vector and an ASC for capturing the utility of an alternative that was obtained by choosing one proposed option over the opt-out option (Adamowicz *et al.*, 1994). In detail, the linear utility function specification was:

$$U(x_i) = \beta_{ASC} * ASC_i + \beta_{Landscape} * Landscape_i + \beta_{Historical} * Historical_i + \beta_{Localfood} * Local\ food_i + \beta_{Recreation} * Recreation_i + \beta_{Waste} * Waste_i + \beta_{Reduction} * Reduction_i + \beta_{price} * Price_i \quad (1)$$

where *ASC* was a dummy for the no-choice option (opt-out); *Landscape* was a dummy that indicated the presence of well-protected landscape, environmental resources near accommodation; *Historical* was a dummy that indicated the presence of well-preserved historic-cultural resources near accommodation; *Local food* was a dummy that indicated meals prepared using local food and wine products; *Recreation* was a dummy that indicated high availability of recreational facilities nearby accommodation; *Waste* was a dummy that assumed a value of 1 if waste collection took place; *Reduction* was a dummy that assumed a value of 1 if the use of water and energy resources was reduced; and finally, *Price* was the price variable.

Table 2 includes the results of the basic MNL and LC models.

The β coefficients can be considered as marginal utilities of each attribute of the utility function. The values shown in Table 2 in the second column regarding the coefficients of the variables considered and listed in the first column are the average values common to the survey respondents, taken as a whole.

All coefficients obtained by processing the MNL model were found to be statistically significant. The signs of the coefficients were consistent with expectations. In fact, the price had a minus sign, indicating that as the price increased, respondents decreased their demand for accommodations for the vacation hypothesised in this present study. This is in line with the economic rationality that characterises consumer behaviour, as stated in economic theory.

The results of MNL estimation showed that the most important attribute in the respondents' choice of accommodation was the reduction of water and energy use in the management of their chosen accommodations. Respondents seem to like aspects of environmentally sustainable management of an

accommodation, since also the implementation of separate waste collection appears to be particularly appreciated. Estimates indicate that respondents were also concerned about the opportunity to use several recreational facilities near the accommodation. In addition, the presence of well-preserved historical and cultural resources near the accommodation increases the utility of respondents. Findings describe local food as a component able to affect respondents' utility. Although lower than previous ones, the coefficient of local food offer has a positive mean coefficient sign, which reflects respondents' preferences for meals prepared using local food and wine products. The marginal utility of well-preserved landscape–environmental resources in the nearby of accommodation displays the lowest value. The variable 'ASC' is found to be statistically significant and negative, signalling the fact that respondents derive greater utility from choosing one of the proposed vacation packages than from 'not choosing'.

Table 2. Results of the multinomial logit and latent class models estimation

Variable	MNL		Latent Class Model				
			Class 1	Class 2		Class 3	
	Coeff. (S.E.)	Coeff. (S.E.)	WTP# (€/night)	Coeff. (S.E.)	WTP# (€/night)	Coeff. (S.E.)	WTP# (€/night)
ASC	-1.62 (0.08)***	-1.26 (0.17)***	/	-5.17 (0.30)***	/	-3.56 (1.05)***	/
Price	-0.02 (0.00)***	-0.00 (0.00)**	/	-0.04 (0.00)***	/	-0.10 (0.01)***	/
Landscape	0.17 (0.04)***	0.17 (0.07)**	54.37	-0.15 (0.16)	/	0.91 (0.43)**	8.74
Historical	0.22 (0.05)***	0.59 (0.08)***	194.15	-0.52 (0.20)***	-12.09	-1.27 (0.76)*	-12.11
Local food	0.20 (0.05)***	0.30 (0.07)***	97.12	0.42 (0.19)**	9.80	2.50 (0.55)***	23.89
Recreation	0.35 (0.06)***	0.68 (0.10)***	223.85	0.46 (0.28)	/	4.46 (0.76)***	45.57
Waste	0.43 (0.05)***	0.20 (0.09)**	66.46	0.88 (0.16)***	20.35	-1.68 (0.54)***	-16.06
Reduction	0.47 (0.06)***	0.23 (0.10)**	76.11	0.65 (0.19)***	15.01	-1.09 (0.69)	/
Average probability		0.50		0.39		0.11	
Theta in class probability model:							
female		-0.47 (0.19)**		-0.03 (0.20)		0.0 fixed parameter	
Z Slovenia		-0.07 (0.27)		-0.84 (0.31)***		0.0 fixed parameter	
OstAustria		-0.29 (0.30)		-0.52 (0.31)*		0.0 fixed parameter	

***, ** and * Significance at 1%, 5% and 10% level; # willingness to pay – WTP

From the results obtained with the baseline model, it is interesting to note that accommodation management respecting some aspects of environmental sustainability is an important feature for respondents when choosing a vacation package for visiting the geographical context of sports events. This could be attributed to people's increased awareness of environmental issues and the resulting increased sensitivity to reducing the negative impacts created by carrying out their activities. Similarly, consumers' attention to the presence of services that facilitate the recreational experience associated with accommodation is emphasised. Although respondents exhibited preference for local food, the coefficient suggest they were more interested in other characteristics when choosing accommodation. In comparison with the other attributes, the presence of meals prepared with local food and wine

products does not emerge in the same relevant way. According to Xuan *et al.* (2024), choosing accommodation on occasion of a sports event could imply that respondents pay more attention to environmental aspects, including the impacts of their fruition experience on the quality of local environmental resources, which characterise the context hosting the competitions. The results of the baseline model are in line with the respondents' replies to the questions presented in the previous section of the questionnaire. The above-mentioned preference towards environmental factors of fruition also emerged among the CE findings.

The above-presented MNL model assumes that there is no heterogeneity in the choices among the participants, as previously mentioned. This represents a weakness that can be addressed by estimating alternative models, which allow preference heterogeneity to be analysed and investigated in the sample, in particular by looking at common choice attributes referred to local food offer and allowing the potential market segmentation to be analysed.

To overcome this critical issue and better understand whether the low value of the local food supply attribute is due to heterogeneity in the sample, an LC model was estimated. The result of this estimate is reported in Table 2, which also includes the willingness to pay estimates since the LC model allowed us to investigate these differences among the classes. According to McFadden and Train (2000), the willingness to pay was calculated by dividing β coefficients by β price ($-\beta/\beta$ price).

A three-LC model was created. The definition of the best number of classes in these kinds of models is an exogenous process without an unambiguous rule. The number of classes is usually pointed out by considering Akaike information criterion, Bayesian information criterion, Hannan–Quinn information criterion and the value of the log-likelihood function (Ruto *et al.*, 2008). Based on the consideration of the values of the mentioned specific indicators, a three-LC model was estimated, with the probability of the respondents belonging to each of these classes being 50%, 39% and 11%.

To better explain class probability and preferences, the respondents' socio-demographic and behavioural characteristics (i.e., gender, age, education, income and residence region) were included in the model estimation. Neither age classes nor education seem to play a role as well as the actual level of income. Then we retained only those characteristics that were statistically significant (i.e., gender-female; geographical area-Zahodna Slovenija/ Ostösterreich Austria) (Table 2). The model possesses an acceptable ability to interpret the phenomenon in question; the McFadden pseudo-R-square obtained (equal to 21%) can be considered good given the specific type of models considered here.

The LC model made it possible to isolate two groups of consistent size (Classes 1 and 2 were headed by a 50% and 39% probability of membership, respectively) and a class of lower dimensions, with an 11% probability of respondents belonging to it. By observing the values taken by the coefficients of the variables, we can see the existence of heterogeneity in these different classes regarding the appreciation of the attributes used in the CE. However, all classes present both a positive coefficient for local food offerings and a positive Willingness to pay (WTP) for this attribute. These results are in line with previous studies (e.g., Lyu *et al.*, 2023).

Although, in a preliminary step of the analysis, we included all collected socio-demographic and behavioural variables in the LC model estimation process to better explain class probability, we found that they were not generally significant in explaining the probability of groups membership. In a second step, consequently, we retained only the most significant socio-demographic variables and included them in classes description.

Class 1, distinguished by a 50% probability of belonging to it, is headed by individuals who show that they place importance on the presence of a wide range of recreational facilities in the vicinity of the accommodation. For this characteristic, the respondents would be willing to pay a premium price of €224 per person per the proposed one-night accommodation. They also highly value the presence of well-preserved historical and cultural resources in the vicinity (willingness to pay of €194 per person per night). The choice of the presence of meals based on local food and wine products obtains a low level of importance among this class. However, it is possible to calculate a willingness to pay of €97 per person per night in favour of this characteristic. This group of individuals is also attentive to other aspects of environmentally sustainable management of accommodation, although with less utility contribution of these features than the previous ones. Female respondents were less likely to belong to this class. We can refer to this group as ‘recreational services supporters’.

The second class (39% probability of membership) seems to prefer, above all, an accommodation managed according to environmental sustainability. The respondents highlight their willingness to pay for the reduction of water and energy use in accommodation management an amount, per person per night, of €20.35. In addition, the premium price that they are willing to pay for having in the accommodation the presence of waste sorting is €15. €12.1 is the amount the respondents would like to receive as a compensation for the perceived negative effect related to the presence of historical and cultural resources near an accommodation. The members of this class are willing to pay €9.8 to have meals prepared with local food and wine products. The respondents from Ostösterreich and Zahodna Slovenija were less likely to belong to this class. This group can be identified as ‘lovers of environmental sustainability’.

Class 3, which is characterized by a probability of membership of 11%, gathers the respondents who appreciate the presence of nearby recreational facilities and have a significant preference for the use of local products in the preparation of meals (€23.89). They dislike waste collection. Garbage collection arouses an aversion in the respondents, who ask for a compensation (negative willingness to pay) of €16 per person per night. Similarly, this group does not derive satisfaction from the presence of well-preserved historical and cultural resources in the vicinity, as evidenced by the negative willingness to pay (i.e., willingness to accept a compensation) of €12.1 per person per night, while they look favourably on well-preserved landscape–environmental resources (willingness to pay €8.7). Consequently, we can define this group as ‘fun and local food supporters’.

5. Conclusions

This study analysed the role of winter sports events in contributing to sustainable development, with a focus on local agri-food systems, which proved to be a reinforcement tool for sustainability (Estrada *et al.*, 2024). A survey was conducted to investigate the participants’ preferences for winter sports events when choosing sustainable accommodation options and to identify their specific preferences regarding the supply of local agri-food. To explore the characteristics of preference heterogeneity among different respondents’ groups a LC model was estimated and a positive willingness to pay valuation was estimated.

Our study adds to the current literature, because it considered participants’ preferences regarding accommodations’ supply of local agri-food products on the occasion of winter sports events. It also utilised the CE method to elicit preferences for diverse accommodation alternatives and estimated a LC model to identify preference heterogeneity. Our results allow for the identification of respondents’ general preferences among respondents. A class of respondents who declared a particular appreciation for local food products was identified.

5.1. Practical Implications

Our findings highlight some aspects usable both by tourism decision-makers and those involved in the tourism sector to improve market segmentation. This study demonstrated that preferences vary among a variety of potential tourist segments, referring to the characteristics of an accommodation and allowing for the identification of specific market niches. Also, the results could help improve the sustainability of the tourism sector related to winter sports events, particularly regarding agri-food supplies.

Analyses of the data revealed that all of the LCs appreciated local food offerings, although with different preference rankings in comparison with other characteristics. The respondents mainly declared that they appreciate the presence of recreational activities, and managing accommodation according to environmental resource protection seemed to be highly evaluated. However, the offering of local food was well regarded. In detail, a class of respondents stated their willingness to pay for local food. These results are in line with the majority of studies, as outlined by the literature review conducted by Thomson *et al.* (2019), who found that in several analysed contexts, people were willing to pay a premium price for the opportunity to consume local food. Consequently, the opportunity to enhance local food consumption among tourists linked to winter sports events as an element of sustainable tourism emerged from the findings, which supports Zhang *et al.* (2019) and UNEP (2015).

Our findings are also in line with studies that have demonstrated the propensity to adopt more sustainable alternatives when booking accommodations (Hosseininezhad *et al.*, 2025). To put this research into practice, our research on respondents' behaviour, which included the investigation of the tourist profiles of visitors to a specific winter sports event (i.e., EYOF), could provide useful insights for tailoring agri-food supplies to target different individuals' preferences when choosing an accommodation. Our findings could improve the quality of segmentation in pricing sustainable packages and allow decision-makers, when combining various attractions, to consider differences among tourists' preferences. Specifically referring to agri-food systems, our results provide evidence of a large local food preference and willingness to pay among respondents. The results of our study could be useful because they seem to suggest that a number of strategies of accommodation diversification, such as the supply of local food, which do not necessarily involve an increase in accommodation costs and may allow a premium price to be obtained, which could enhance the producers. This kind of diversification strategy should highlight the local origin of food production, emphasizing the local supply chains of the product, an indicator that is probably easier both to be communicated and understood by tourists.

According to Jia *et al.* (2024), the development of short food supply chains to support the organizing of winter sports events could produce positive impacts in terms of socioeconomic and environmental sustainability. The creation of such networks, which connect actors involved in winter sports events mutually and cooperatively working together, could be recommended (Aouinait *et al.*, 2022). They can contribute to enhancing rural development and a sense of community (Stein & Santini, 2022). Short food supply chains can enhance the integration of local agri-food systems into sustainable tourism packages (Argyropoulou *et al.*, 2019).

It can be concluded that the CE seems to be a useful tool to investigate participants' preferences, at least with reference to the winter sport events. This kind of methodology, to a certain extent, supports in identifying market strategies that could be useful to the tourism operators to enhance their market share.

5.2. *Limitations and Suggestions for Future Research*

This study has a number of limitations. It examined behavioural intentions rather than real behaviours. Accordingly, there needs to be further work on real markets that addresses how winter sports events might change attitudes and behaviours by promoting local products and enhancing sustainability in general. Furthermore, future studies focusing on different geographical contexts could be conducted. Despite the limited relevance of local agri-food systems in some contexts, our findings should be useful for operators in areas where the environmental sustainability of accommodations can be an important element for improving the competitiveness of the tourism sector and, therefore, for increasing tourism revenue.

Based on the sample used in this study, there could also be concerns about generalizability. We are aware that our survey was based on a non-probability sampling approach. While the panel pool of the company that carried out the survey was employed for this study, the respondents cannot be representative of all potential tourists; consequently, our research findings cannot be used for statistical inference. However, as this was an exploratory study, the results could be used to improve knowledge about this topic. Repeating the survey by using probability sampling both in the same countries and in different contexts, would provide the opportunity to compare findings and increase the probability of being useful for decision-makers. Future research on these issues among different sports events remains an important area.

Appendix

Respondents' characteristics

Characteristics		NORTHEASTERN ITALY				AUSTRIA				SLOVENIA				TOTAL
		Friuli Venezia Giulia	Trentino Alto Adige	Veneto	Total	Österreich	Südösterreich	Westösterreich	Total	Vzhodna Slovenija	Zahodna Slovenija	Total		
Number of respondents		304	303	303	910	149	66	86	301	152	148	300	1,511	
Gender	female	47.4%	52.1%	48.2%	49.2%	49.7%	50.0%	54.7%	51.2%	51.3%	43.9%	47.7%	49.3%	
	male	52.3%	47.9%	51.5%	50.5%	50.3%	50.0%	44.2%	48.5%	48.7%	55.4%	52.0%	50.4%	
	I prefer not to answer	0.3%	0.0%	0.3%	0.2%	0.0%	0.0%	1.2%	0.3%	0.0%	0.7%	0.3%	0.3%	
Age (classes)	18-29	17.8%	21.8%	15.2%	18.2%	20.1%	12.1%	17.4%	17.6%	21.7%	20.3%	21.0%	18.7%	
	30-44	26.6%	32.7%	26.4%	28.6%	30.2%	47.0%	29.1%	33.6%	25.7%	35.8%	30.7%	30.0%	
	45-54	25.0%	23.8%	23.1%	24.0%	14.1%	21.2%	18.6%	16.9%	22.4%	17.6%	20.0%	21.8%	
	55-64	20.1%	13.5%	21.5%	18.4%	12.8%	7.6%	27.9%	15.9%	17.8%	11.5%	14.7%	17.1%	
	65-99	10.5%	8.3%	13.9%	10.9%	22.8%	12.1%	7.0%	15.9%	12.5%	14.9%	13.7%	12.4%	
Educational level	None	0.0%	1.0%	0.0%	0.3%	3.4%	1.5%	1.2%	2.3%	0.7%	1.4%	1.0%	0.9%	
	Primary school	0.7%	0.3%	0.0%	0.3%	10.7%	4.5%	4.7%	7.6%	2.6%	2.7%	2.7%	2.3%	
	Lower secondary school	11.5%	5.3%	11.2%	9.3%	10.7%	10.6%	12.8%	11.3%	7.2%	2.0%	4.7%	8.8%	
	Three-year vocational diploma	7.9%	13.5%	9.2%	10.2%	31.5%	48.5%	41.9%	38.2%	11.8%	15.5%	13.7%	16.5%	
	High school	44.1%	49.5%	45.9%	46.5%	20.1%	13.6%	20.9%	18.9%	31.6%	33.1%	32.3%	38.2%	
	Bachelors' degree	11.8%	14.5%	11.2%	12.5%	12.1%	13.6%	11.6%	12.3%	38.8%	37.8%	38.3%	17.6%	
	Degree, PhD	24.0%	15.8%	22.4%	20.8%	11.4%	7.6%	7.0%	9.3%	7.2%	7.4%	7.3%	15.8%	
Professional condition	Employed in tourism sector	6.3%	5.6%	5.0%	5.6%	5.4%	0.0%	8.1%	5.0%	5.9%	5.4%	5.7%	5.5%	
	Employed in other sectors	61.5%	61.1%	58.1%	60.2%	43.0%	59.1%	43.0%	46.5%	50.0%	58.1%	54.0%	56.3%	
	unemployed	8.6%	7.9%	8.3%	8.2%	6.0%	7.6%	5.8%	6.3%	9.9%	7.4%	8.7%	7.9%	
	retired	14.8%	8.9%	16.8%	13.5%	26.2%	22.7%	26.7%	25.6%	21.1%	16.2%	18.7%	16.9%	
	student, housewife	8.2%	13.5%	9.9%	10.5%	9.4%	6.1%	8.1%	8.3%	9.2%	8.8%	9.0%	9.8%	
	other	0.7%	3.0%	2.0%	1.9%	10.1%	4.5%	8.1%	8.3%	3.9%	4.1%	4.0%	3.6%	
Family unit	Alone	17.8%	15.5%	11.9%	15.1%	28.2%	18.2%	19.8%	23.6%	9.2%	15.5%	12.3%	16.2%	
	With son/daughter/children	6.6%	5.9%	5.3%	5.9%	6.0%	9.1%	10.5%	8.0%	13.2%	7.4%	10.3%	7.2%	
	With parents	13.2%	15.8%	18.2%	15.7%	8.7%	7.6%	2.3%	6.6%	8.6%	10.1%	9.3%	12.6%	
	With partner	30.6%	25.4%	26.4%	27.5%	36.2%	31.8%	45.3%	37.9%	36.8%	27.0%	32.0%	30.4%	
	With partner and son/daughter/children	29.6%	33.0%	36.0%	32.9%	16.8%	28.8%	20.9%	20.6%	30.3%	34.5%	32.3%	30.3%	
	Relatives/friends/house mate	1.6%	4.3%	1.3%	2.4%	3.4%	3.0%	0.0%	2.3%	1.3%	3.4%	2.3%	2.4%	
	other	0.7%	0.0%	1.0%	0.5%	0.7%	1.5%	1.2%	1.0%	0.7%	2.0%	1.3%	0.8%	
		37.5%	41.6%	38.6%	39.2%	31.5%	28.8%	39.5%	33.2%	33.6%	39.9%	36.7%	37.5%	
Factors to consider to attend a sporting event	Fun, meeting new people, catching up with family and friends	46.7%	44.9%	48.2%	46.6%	27.5%	24.2%	26.7%	26.6%	38.2%	44.6%	41.3%	41.6%	
	Quality of products sold on the stands	39.5%	33.0%	38.0%	36.8%	34.2%	31.8%	27.9%	31.9%	44.1%	31.8%	38.0%	36.1%	
	Environmental sustainability of the event	48.7%	54.1%	53.8%	52.2%	29.5%	28.8%	39.5%	32.2%	38.8%	37.8%	38.3%	45.5%	
	Landscape beauties	69.7%	68.3%	74.9%	71.0%	51.7%	59.1%	60.5%	55.8%	58.6%	58.1%	58.3%	65.5%	
	Costs of participation	56.9%	57.8%	65.7%	60.1%	45.0%	48.5%	45.3%	45.8%	60.5%	56.1%	58.3%	56.9%	
	Social dimension (post, video, audio of the event on social profiles)	21.1%	22.4%	23.8%	22.4%	10.7%	24.2%	19.8%	16.3%	31.6%	26.4%	29.0%	22.5%	

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