

Research article

Using farmhouse and food to enforce a tourism sustainable development model: empirical evidence from Italy

Fabrizio Antolini^{1,*} and Francesco Giovanni Truglia²

¹ Department of Business Communication, University of Teramo, Campus Aurelio Saliceti, Via Renato Balzarini 1, Teramo, TE 64100, Italy

² Istat, Directorate for Environmental and Territorial statistics, Rome, Italy

* **Correspondence:** Email: fantolini@unite.it.

Abstract: Environmental sustainability plays a crucial role in influencing policy actions and people's behavior. The 2030 Agenda highlights the Sustainable Development Goals (SDGs), which can be achieved through tourism, particularly in its most sustainable form, such as ecotourism. Ecotourism provides an ideal platform for experimenting with new lifestyles oriented towards sustainability and well-being. Additionally, ecotourism emphasizes territorial identities, particularly through the promotion of food and wine, which can contribute to the creation of sustainable tourism areas. Food quality production serves as evidence of the attention paid by producers to the sustainability of territories and a lifestyle that prioritizes well-being. European citizens are increasingly recognizing the environment as a resource for good living. In Italy, agritourism, which includes activities offered by 25 certified quality agricultural producers, is becoming increasingly popular among tourists. Within this context, sustainability can be experienced through tourism, which offers an opportunity to live differently. This paper examines two Italian regions (Tuscany and Apulia) where farmhouse, food and tourism (FFST) areas have been successfully implemented as a form of sustainable tourism. The study demonstrates that FFST areas can be defined using spatial analysis, and then can become a model for sustainable tourism development. In conclusion, environmental sustainability holds ethical significance and can be achieved through tourism, specifically through ecotourism and FFST areas, which enable tourists to experience sustainable lifestyles while emphasizing territorial identities.

Keywords: environmental sustainability; ecotourism; territorial identities; agritourism; sustainable tourism development

JEL Codes: Q01, Q56, L83, Q18, R11

1. Introduction

The tourism industry is currently undergoing a significant transformation in response to cultural changes that have been rapidly spreading in recent years. Tourists' motivations for selecting a particular destination often condition their choices; as such, it is not accurate to refer to tourism as a singular entity, but rather to consider the existence of multiple forms of tourism (referred to as "tourisms"). Engaging in tourism is not limited to visiting a place but rather involves seeking out experiences that can evoke emotions. As a result, the ability to organize visits that stimulate a sense of beauty can enhance the traditional supply chain in the tourism sector. It is important to note that tourists' behavior is also influenced by their cultural background.

In contemporary times, there has been a growing awareness among European citizens towards the environment, which can influence the type of tourism they choose to explore. The interplay between sustainable development and tourism is characterized by a reciprocal relationship, where tourism can contribute to the attainment of development goals, and sustainable development can promote a resilient and conscious form of tourism, benefiting both producers and consumers. The 2030 Agenda has emphasized the Sustainable Development Goals (SDGs), which place a greater emphasis on sustainability and the conservation of the natural environment. Consequently, new forms of tourism have emerged, where tourists seek to engage in eco-sustainable experiences. Focusing on food and wine has proven to be an effective means of achieving this, as the desire to live well is often associated with indulging in high-quality products.

In contemporary society, individuals, including tourists, are searching for environments that evoke positive feelings. Consequently, there exists a correlation between sustainable tourism and ecotourism, with the latter being viewed as a by-product of the former (Pforr, 2001; Fennell, 2001). Food is an excellent way to summarize many of these elements. When food is intertwined with tourism, it generates a specific type of activity called "gastronomic tourism" (Hall and Mitchell, 2007; Gheorghe et al., 2014) or more recently referred to as rural tourism, slow tourism, or ecotourism. The SDGs encourage evaluating how the agricultural and tourism sectors can be merged to realize sustainable territorial development. "Regional tourism development initiatives are increasingly incorporating locally-produced foodstuffs and beverages to: fortify tourism product areas; enrich visitors' experiences; and aid in sustaining and enhancing the viability of local food production and processing sectors" (Boyne et al., 2003). Rural tourism or ecotourism is beyond a type of tourism; rather, it embodies a lifestyle that tourists desire to experience while promoting sustainability.

In the context of sustainable tourism, ecotourism is defined as "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people and involves interpretation and education" (TIES, 2015). Additionally, it involves the possibility of certifying products and organizations (i.e., companies and local authorities) according to sustainable principles. Food and wine can serve as drivers for ecotourism and sustainable tourism destinations more broadly. The relationship between food and sustainable development is complex as it relates to the concept of quality of life. Food has become a marker of high quality of life and a significant factor in making travel decisions, allowing geographical areas to become tourist destinations. Furthermore, food represents the traditions and identity of a place, contributing to its attractiveness. Food is an important element of the tourist

experience and one of the most significant motivations for travel. Changes in tourism preferences and tastes can influence tourist behavior, and local food is becoming a tourist attraction, generating new tourist expectations that alter tourist destinations. (Hornig and Tsai, 2011; Richards, 2015; Everett & Aitchison, 2008; Hall et al., 2003).

This paper aims to identify ecotourism areas as a form of sustainable tourism, with a specific focus on the development of rural tourism in certain Italian regions that are now particularly prone to producing quality food. This paper is structured as follows. First, the importance of tourists' motivation in choosing travel destinations and determining the activities they engage in during their trips is highlighted. Second, the significance of environmental preservation and approaches for maintaining a resilient and conscious tourism sector are discussed. Third, the changes in product certification and production models, along with other factors, to transition to sustainable tourism are analyzed. Finally, the methodology applied to identify food vocation areas (or farmhouse, food and tourism; FFT) as sources of ecotourism that have developed as a result of the growth in sustainable tourism in some Italian regions is presented.

2. Tourism and the importance of understanding the motivations of tourists and travelers

In measuring the competitiveness of a tourism destination, one of the most significant limitations is the intangibility of certain services provided, such as the beauty of a landscape and the hospitality of the community (Lo et al., 2019). Organizing forms of entertainment for personal well-being and introducing food and wine tours as tourist attractions are examples of intangible assets. Moreover, the boundary between tangible and intangible assets has a reciprocal influence on the competitiveness of a tourism destination. In general, while places are tangible goods, the emotions that their beauty can generate are intangible (Argyle, 1996). Therefore, the ability to create emotions is a crucial skill in managing tourist destinations, but first, the place must have “attractors” around which to build the tour and stimulate tourist emotions (Antolini et al., 2017). Food is becoming one such attractor.

Tourists' motivations for travel vary significantly from person to person, with each having a different idea of what they want to experience during their journey. However, the ultimate goal of travel remains personal fulfillment (Coltman, 1989), as tourists seek to engage in slow and relaxing activities, away from city noises, that cannot normally do in their daily lives. Tourism increasingly provides an opportunity to “live in the moment” and focus on happiness (Woodside, 2005). Over the years, there has been growing attention to environmental protection, and rural tourism can become a crucial driver in realizing sustainable tourism destinations. Tourism linked to food can represent sustainable consumption and production, particularly when agricultural goods are produced circularly and organically. The World Food Travel Association (2017) defines food tourism as “the act of traveling for a taste of places to get a sense of place”. Therefore, gastronomy plays a crucial role in shaping how tourists experience a destination (Kivela and Crofts, 2006).

3. The preservation of the environment: different approaches

The relationship between tourism and the environment has been the subject of extensive debate because the tourism industry has a proclivity to view nature as a mere “factor of production”.

Consequently, tourism flows can generate anthropogenic pressures on the environment. While for the tourism industry, on the other hand, conservation and enhancement of landscape heritage is a factor

that is able to increase its value chain. An unsustainable tourism industry jeopardizes its primary source of funding and investment, whereas a conservation-focused approach ensures that the places attracting future tourist flows are preserved (Garau et al., 2011; Mandras & Garau, 2015).

Preserving a territory entails three equally important types of actions. The first type involves the production supply chain, which encompasses both direct and indirect tourism industries (Jones et al., 2003). Intervening in their production models to incorporate environmentally friendly practices across all production stages is possible. This necessitates identifying different levels of ecological enterprises. The first level encompasses enterprises with low environmental impacts (Li et al., 2006), focusing primarily on waste collection and, more broadly, the potential effects that production models have on the environment, including air, water and land pollution. The second level pertains to primary resources used for production and emphasizes the use of environmental resources derived primarily from natural resources with minimal environmental impact, such as photovoltaic systems. The third level pertains to company management and involves the adoption of sustainable work practices for a company's employees. In this case, sustainability expands to include achieving ecosystem balance holistically, incorporating flexible forms of work that offer respectable hourly wages with few overtime hours.

The second approach to preserving a territory is to focus on the demand side, considering that consumers prefer to buy goods and services from eco-friendly companies. This presents an opportunity to encourage a conscious and resilient consumption model by examining the production process that determines the final products. In this regard, tourism can play a significant role in promoting ethical principles in both the supply chain and the individual and households demands (Hills & Argyle, 1998).

The significance of environmental protection is increasingly becoming a crucial aspect that influences tourists' experiences and destination choices. The connection between personal behavior and the environment, viewed as a value, is confirmed by the Eurobarometer survey (European Commission, 2017). Specifically, 94% of European citizens surveyed reported that environmental protection is important to them, with 56% indicating that it is "quite important." However, the vast differences in sensitivity towards the environment among countries illustrate the influence of the local cultural system on people's attitudes toward environmental issues.

Among the main aspects listed to summarize the concept of environmental protection were climate change, air pollution and the disposal of waste. According to the survey, 81% of Europeans stated that environmental problems affect their daily lifestyle and health; 74% identified the impact of plastics as one of the problems that should be solved to avoid negative effects on the environment, while 94% declared that they are afraid of chemicals found in household products. These findings confirm the argument presented in this paper, which suggests that there is a possibility for promoting resilient and conscious consumption practices, and tourism can be employed as a tool to implement sustainable lifestyles.

Moreover, the appeal of a region to tourists is determined by three factors: the presence of natural, cultural, or entertainment-related attractions; the existence of infrastructure or services that facilitate access to the location (i.e., accessibility) and movement during the visit; and the warmth of the community in which the tourist resides. These three dimensions contribute to making an area an attractive tourist destination, while sustainability pertains to how these three dimensions interact with the environment and the local population (Hunter, 1997). The link between tourism and sustainable development is a contentious issue in the literature (Cronin, 1990; Kontogeorgopoulos, 1999; Sharpley, 2000). It has been suggested that the principles and policies of sustainable tourism do not always align with or contribute to sustainable development. The concept of sustainable development is closely

linked to a vision of the environment that is not uniform (Wilbanks, 2007). The UNWTO (2005) defines sustainable tourism development as “Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities”. The link with the SDGs is particularly significant for applying a progressing pattern of Sustainable Consumption and Production (SCP) and achieving a sustainable tourism model. This implies that the tourism sector is a crucial component in contributing to the 17 SDGs (Liu, 2003).

Despite efforts to develop the 17 Sustainable Development Goals (SDGs) and their related targets, food and sustainable agriculture have not been adequately represented. Nevertheless, the 8.9 target aims to devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products. The importance of sustainable tourism can be found also in SDG target 12.b. which aims to develop and implement tools to monitor sustainable development impacts, especially to create and promote local culture and products. Finally, SDG 15, concerning the preservation of biodiversity, can be relevant for the development of ecotourism.

However, the utilization of locally produced organic food can serve as an important attractor of responsible and conscious tourism flows, thereby reinforcing the sustainability perspective of tourism (Cohen, 2015). It is important to note that food can act as a tourist attraction and simultaneously represent the local traditions of the visited place (McKercher et al., 2008). An examination and understanding of the relationship between food and tourist destinations necessitate a holistic approach that also encompasses the cultural identity of the territories. It can represent a distinct segment of the tourism market as a model of well-being and lifestyle (Ignatov and Smith, 2006).

4. Well-being and sustainable lifestyle: the importance of the environmental certifications to become a sustainable tourism destination

The definition of ecotourism encompasses three key components: responsibility, sustainability and an approach to the environment that is distinct from the one described previously and is succinctly referred to as ethical behavior. However, these elements are not only relevant to the environment but are also important in minimizing physical, social, behavioral and psychological impacts (Uskul & Oishi, 2018). The underlying assumption is that our thoughts and emotions are influenced by the ecology of the environment. Cultural heritage and, in particular, the sense of the beauty of a region, are intangible assets with intrinsic value (Antolini, 2013). The ability to evoke emotions is one of the distinctive features of food, as achieved through taste and it also represents an element of socialization that can foster cohesion and local identity. Lewin’s (1939) theory contends that social-ecological factors are fundamental conditions for an individual’s well-being, thereby highlighting that it is socio-ecological psychology and is a theory of perception (Gibson, 1979). This theory further underscores that ecotourism is not solely concerned with the landscape or environment but also entails a lifestyle and philosophy of economic growth.

The concept of sustainability is often described by the environment action program (EAP) as “Living well, within the limits of our planet” (Lane 1994a; Lane 1994b; UNWTO, 2018). The sustainability of a territory can be certificated by eco-management and audit schemes (EMS) (European Commission, 2009) and products with a reduced environmental impact (Ecolabel) (European Commission, 2010) within the European Union Council Regulations. Europe has the highest number of environmental certifications among all continents. The primary objective of EMS

is to improve the environmental performance of various economic activities by providing maximum transparency in their management through an environmental statement. The registration of the environmental declaration is a critical step for public institutions in promoting the enhancement of territories. Furthermore, it is particularly important for territories that have established themselves as tourist destinations to create a sustainable territorial cluster.

In the tourism industry, the adoption of EMS has been limited to hotels in some countries, such as Italy. Conversely, Ecolabel provides information on certified products, services and accredited laboratories, and the EU Ecolabel for Businesses has over 72,000 products and services available in the European market. The Eurobarometer Report (2017) highlights that environmental protection is important to 94% of Europeans, and 85% agreed that EU institutions should allocate more funds to support environmental and conservation programs. Nevertheless, environmental awareness varies across countries.

Overall, there appears to be a significant increase in the number of products and licenses evolving over the years. Concerning the data on licenses, it is crucial to highlight that certain fluctuations in certain years are attributed to revisions of the criteria that limit the obtainability of comparable data, as demonstrated in Figure 1. In Europe, a total of 1,623 licenses have been granted for 77,358 products (including goods and services) currently available in the market, which represents almost double the amount of EU Ecolabel products available in 2016 (European Commission, 2019).

Among the product groups, Textiles (+3,282 products), Indoor and Outdoor Paints and Varnishes (+2,105 products), Tissue Paper (+730 products), Hand Dishwashing Detergents (+205 products) and Rinse-Off Cosmetics (+128 products) have recorded the highest growth in terms of product numbers and were registered in the last reporting period. Spain, Italy, France, Portugal and Germany are the countries that have granted the most licenses and approved the most products. However, there is considerable variation among the countries. Italy and Spain have notably intensified their efforts towards environmental protection measures for products but have displayed relatively lesser progress in terms of licenses (as depicted in Figures 2 and 3).

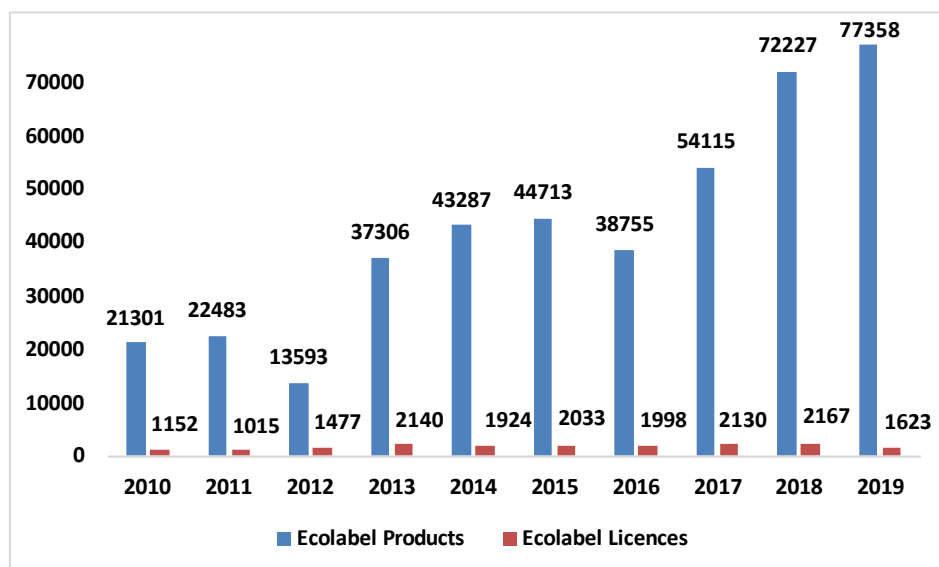


Figure 1. Ecolabel licenses and products in Europe.

Source: European Commission (2019).

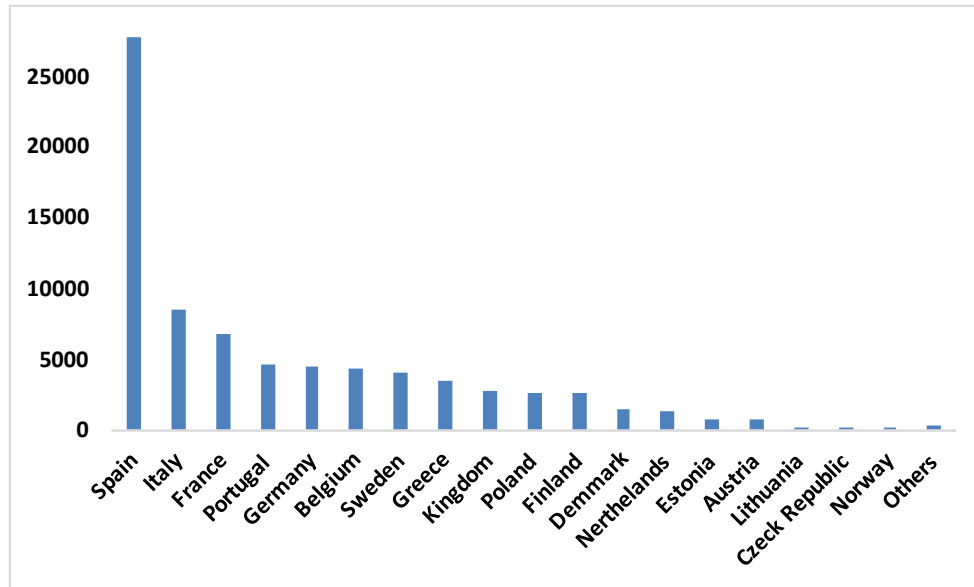


Figure 2. Ecolabels products (number), by country.
Source: European Commission (2019).

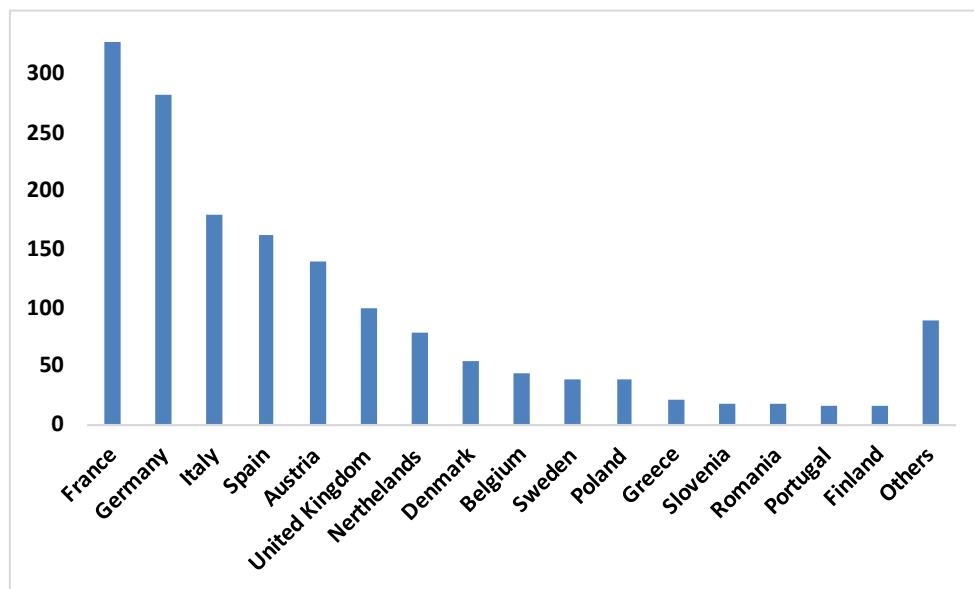


Figure 3. Ecolabel licenses.
Source: European Commission (2019).

These data should be interpreted with caution as some countries from Northern Europe, which are typically known for their emphasis on utilizing renewable sources and promoting the green economy, have recorded lower values in environmental certification of licenses and products. One possible explanation for this could be that such countries may not require resorting to environmental certification as their companies and families are implicitly “culturally green”.

5. Food and Tourism political implications to realize sustainable areas: a new geographical approach

5.1. Agricultural products and sustainable environment

Agricultural activities are widely recognized as being particularly effective in embodying the green values of an economy. Efforts to ensure environmental protection can be seen in the production of high-quality agricultural products such as PDO (Protected Designation of Origin), PGI (Protected Geographical Indication) and TSG (Traditional Specialities Guaranteed) products. Similarly to agritourism or farmhouses being categorized as part of the tourism industry, accommodation establishments with the lowest environmental impact are vital to ecotourism experiences in inland areas. In Italy, for example, farmhouses are primarily situated in hilly (52.5%) and mountainous (31.4%) areas, with fewer being present in the country's plain regions (16.1%). The evolution of agritourism has involved not only the increase in the number of companies but also the expansion of services offered. Initially, in Italy at least, agritourism only provided accommodation and sometimes food services. However, in recent years, agritourism farms have begun producing food and wine to offer as part of their catering services in response to an increasingly discerning tourist market concerned with food quality and sustainability practices. However, not all farms across the country have reorganized their services in the same way, as differences in entrepreneurial spirit characterizing each region have impacted the level of diversification. Italy boasts the highest number of EU-conferred PDO, PGI and TSG products (see Figure 4). PDO products, representing the highest level of EU-certified quality and protection, are specific to a particular area as they can only be produced and processed within that territory. PGI products include agricultural and food specialties unique to a particular geographic area, and TSG products comprise items that have traditional ingredients, a traditional recipe, or other traditional components. In Italy, 295 agri-food products have received certification, accounting for 21% of all EU products. Other Mediterranean countries offering their high-quality products include France (245), Spain (195) and to a lesser extent, Portugal and Greece (138 and 106 products, respectively; (Italian INs, 2018).

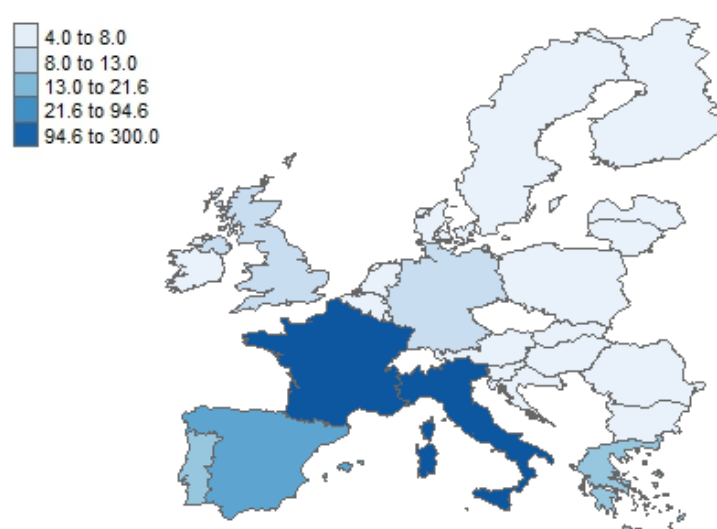


Figure 4. PDO, PGI and TSG products in Europe.

Source: Italian Ins (2019).

5.2. Farmhouses and food as sustainable tourism areas

To identify Farmhouse, Food and Sustainable Tourism areas, it is imperative to consider certain aspects that serve as the foundation of the adopted methodology. The aforementioned term, which is used to describe these specific locations, enables us to comprehend the fundamental concept behind the classification of such areas as sustainable tourism zones. To achieve this, we employ a spatial statistics methodology (Arbia, 1989; Chainey et al., 2002; Levine, 2004), which enables us to ascertain the presence of zones where farmhouses concentrate, and that (1) produce certified agri-food products and (2) have a high concentration of tourists staying overnight. As demonstrated by Antolini and Truglia (2019), the proposed methodology has been implemented in the regions of Tuscany and Apulia. Additionally, these regions have a well-developed territorial food culture and have experienced a surge in the number of agritourists in recent times.

In comparison to Apulia, Tuscany exhibits a robust entrepreneurial culture that influences the farmhouses' ability to provide a range of services. While several holiday farms in Tuscany have been able to manufacture food and wine over time, in Apulia, farm holidays primarily offer lodging and catering services without local food production.

As highlighted by Antolini and Truglia (2019), identifying the FFST zones entails the following three steps. The initial step involves determining the barycenter (center of gravity) for farm holidays (farm holidays/square kilometers), DOC-PGI products (DOC-PGI/square kilometers) and nights spent. Figure 5 demonstrates that the gravitational points for farm holidays and high-quality food products (PDO and PGI) are more proximal in Tuscany than in Apulia. In Apulia, the distance between the barycenter of PDO and PGI and the farm holiday is much greater than it is in Tuscany, indicating that the services offered by these establishments have not evolved. This implies that farm holidays in Tuscany have altered their organization by also offering DOC and PGI products.

With regards the barycenter of nights spent, in Tuscany, is influenced by the city of Florence, which attracts a significant number of tourists. In Apulia, the geospatial distribution of this indicator appears to be more accurate, indicating that there is no interference or distortion in the space localization of nights spent.

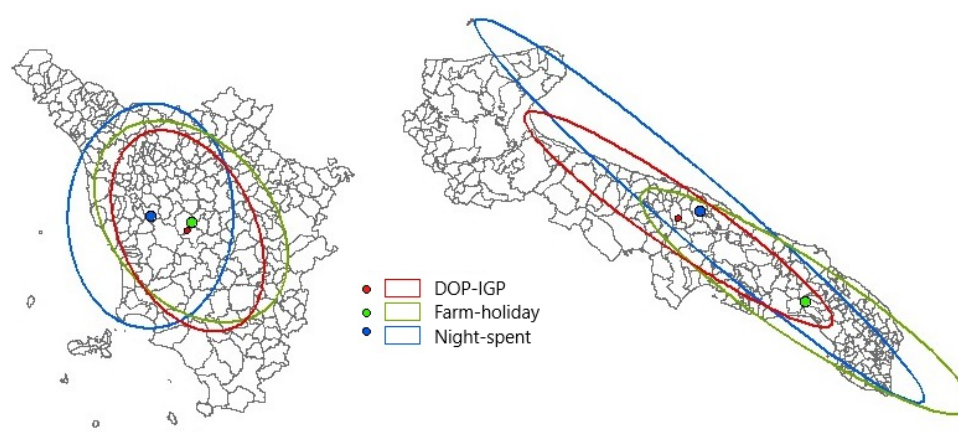


Figure 5. Barycenter and standard deviation ellipse, PDO-PGIs density, farm-holidays density and nights spent density in *Tuscany* (left side) and *Apulia* (right side).

Source: Elaboration made by authors

The second step is the application of the K function of Ripley (Reply, 1976; Diggle, 1983).

$$K(h) = \frac{E[N_0(h)]}{\lambda} \quad (1)$$

where $N_0(h)$ is the number of events within the h circle around the centers of gravity. In this step, $N_0(h)$ is obtained by weighting the municipality (the data used are at the municipal level) with the number of farm holidays, the PDO-PGI products and the nights spent. Likewise, λ is the intensity of the process. In the case of a homogeneous Poisson process, $K(h) = \pi h^2$, consider that in an H circle, an average expected number of points is equal to $E(N_0(h)) = \lambda$ and the “area of the circle of radius h ” = $\lambda \pi h^2$, where there is an aggregation process if $K(h) > \pi h^2$, and it is regular if $K(h) < \pi h^2$. An estimation of K can be obtained following the distance between the hypothetical S_i and S_j :

$$K_{(h)}^* = \frac{1}{\lambda^2 |A|} \{(s_i, s_j) \text{ with distance } < h\} \quad (2)$$

Meanwhile, an estimation of λ^* is represented by:

$$\lambda^* = \frac{\text{number of observation } (N)}{\text{Area in the Region } |A|} \quad (3)$$

The Ripley transformation is used for the “neighborhood analysis” (Boots & Getis, 1988).

The third step regards the non-parametric interpolation by kernel density estimation (KDE; Chainey et al., 2002) to identify the FFST areas. Keep in mind that KDE is a three-dimensional mobile function that weighs events within its sphere of influence depending on their distance from the point from which the intensity is estimated (Bailey & Gatrell, 1995) and can be formalized as follows:

$$\lambda_s^* = \sum_{i=1}^n \frac{1}{\tau^2} g\left(\frac{s - s_i}{\tau}\right) \quad (4)$$

where λ_s^* is the estimate of the intensity of the point-event distribution observed in the locality s ; S_i defines the point-event; $g(\cdot)$ represents the three mobile functions (in our case, we have a normal distribution, as in Levine, 2004) of kernel; and τ is the parameter controlling the smoothing effect and that considers the spatial variability of observations in the region. The results of the FFST areas in the regions considered are quite different, as shown in Figures 6 and 7.

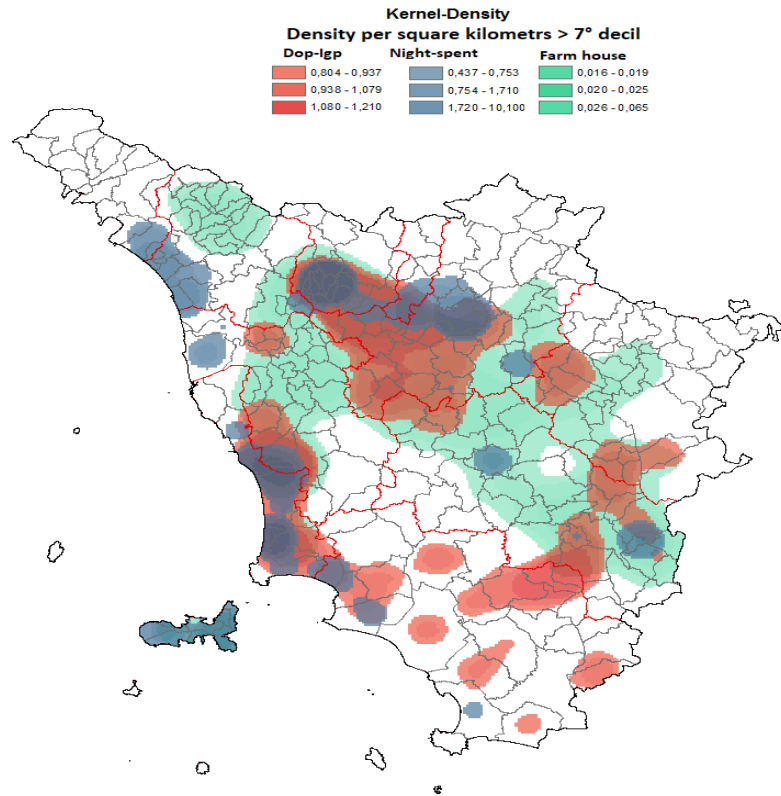


Figure 6. FFST areas in Tuscany.
Source: Elaboration made by authors.

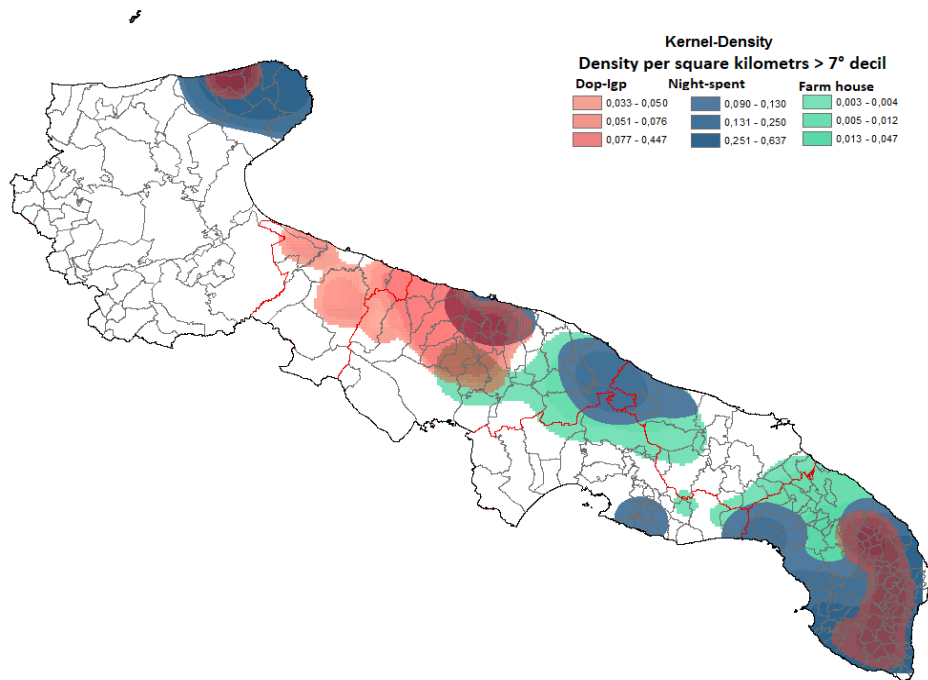


Figure 7. FFST areas in Apulia.
Source: Elaboration made by authors.

6. Conclusions

The motivations of tourists can vary considerably, affecting both the choice of travel destination and their behavior while on the trip, including the level of expenditure incurred. Therefore, it would be more appropriate to refer to “tourisms” (such as ecotourism or cultural tourism) rather than a hypothetical singular form of tourism. Nonetheless, tourism is also influenced by the cultural models that characterize different countries, which have undergone significant changes over time. One of these new values is the concept of a sustainable economy, specifically sustainable development, which has been addressed by the 17 United Nations Sustainable Development Goals.

European citizens perceive that actions aimed at environmental protection and conservation are tools for enhancing their quality of life and their lifestyles. The desire to experiment with new habits is the foundation for the further development of sustainable tourism. However, the relationship between sustainable development and sustainable tourism remains undefined. Tourism utilizes natural resources and landscapes as a “factor of production” and therefore has an interest in preserving these places and territories. Nevertheless, the influx of tourists exerts anthropogenic pressure on these areas, with a high probability of causing damage to the natural environment. Sustainable tourism is only partly the result of the 17 objectives of sustainable development. The aforementioned targets and indicators must be supplemented to ensure full convergence between sustainable development and sustainable tourism.

In many instances, sustainable tourism is motivated by a desire to experience a lifestyle that differs from the one encountered in everyday life. It manifests itself through low-impact food and accommodations and serves to explain how farmhouses further promote growth. Within Europe, an increasing number of certified products are being utilized by public institutions and enterprises as part of their organizational models. Food, particularly products that have obtained quality certification (e.g., PDO, PGI, TSG), represents both the tradition of the place where it is produced and a healthy lifestyle. Based on these considerations, this research identifies FFST areas in two regions of Italy. These zones are characterized by the presence of typical local products (Food), food producers (Farmhouses) and tourist presences (Tourism) that combine to define an FFST area. Specifically, the research indicates that one of the most significant changes that has occurred is in the farmhouses, particularly in Tuscany, which has expanded their offerings to include the production of local, high-quality food in addition to their accommodations and catering services. These areas have experienced a high influx of tourists because they are particularly suitable for sustainable tourism experiences. Furthermore, the spatial statistics model applied to these two regions reveals a significant disparity between Tuscany and Apulia.

This analysis represents an attempt to define policies capable of developing sustainable areas of tourist attraction. Certified agricultural products can be a potential tool for implementing these policies, even if to define sustainable areas, should be necessary to introduce also some environmental aspects that in this paper are not be considered.

Acknowledgments

We would like to thank you for following the instructions above very closely in advance. It will save us a lot of time and expedite the process of your paper’s publication.

Conflict of interest

All authors declare no conflicts of interest in this paper.

References

- Antolini F (2013) Conti patrimoniali, beni culturali ed informazione statistica: le criticità nella loro compilazione. *Riv Stat Uff* 2: 51–70.
- Antolini F, Giusti A, Grassini L (2017) Attrattività dei Territori e flussi turistici: l'importanza di una corretta programmazione settoriale.
- Antolini F, Truglia FG (2019) Conference Paper at Statistics for health and well-being, Ecotourism and food geographical areas, in Book of Abstract Brescia.
- Arbia G (1989) Spatial data Configuration in *Statistical Analysis of regional Economic and Related Problems*, Springer Dordrecht. <https://doi.org/10.1007/978-94-009-2395-9>
- Argyle M (1996) *The social psychology of leisure*, Penguin.
- Bailey TC, Gatrell AC (1995) Interactive spatial data Analysis. *Ecology* 22.
- Boots B, Getis A (1988) Point Pattern Analysis. Available from: <https://researchrepository.wvu.edu/cgi/viewcontent.cgi?article=1013&context=rri-web-book>.
- Boyne S, Hall D, Fiona W (2003) Policy, Support and Promotion for Food-Related Tourism Initiatives. *J Travel Tour Mark* 14: 131–154. https://doi.org/10.1300/J073v14n03_08
- Chainey S, Reid S, Stuart N (2002) When is a hotspot a hotspot? A procedure for creating statistically robust hotspot maps of crime.
- Cohen MJ (2005) Sustainable consumption in national context: an introduction to the special issue. *Sustain: Sci Pract Policy* 1: 22–28. <https://doi.org/10.1080/15487733.2005.11907962>
- Coltman MM (1989) *Introduction to Travel and Tourism: An International Approach*, Van Nostrand Reinhold.
- Cronin L (1990) A strategy for tourism and sustainable developments. *World Leisure Recreat* 32: 12–18. <https://doi.org/10.1080/10261133.1990.10559117>
- Diggle PJ (1983) *Statistical analysis of spatial point patterns*, Academic Press, London.
- European Commission (2009) Regulation No 1221/2009 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS), Bruxelles.
- European Commission (2010) Regulation No 66/2010 on the EU Ecolabel, Bruxelles.
- European Commission (2017) Attitudes of European citizens towards the environment, Special Eurobarometer 468.
- European Commission (2019) Ecolabel Products. Retrieved January 15, 2020. Available from: <https://ec.europa.eu/environment/ecolabel/>.
- Everett S, Aitchison C (2008) The role of food tourism in sustaining regional identity: A case study of Cornwall, South West England. *J Sustain Tour* 16: 150–167. <https://doi.org/10.2167/jost696.0>
- Fennell DA (2001) A Content Analysis of Ecotourism Definitions. *Curr Issues Tour* 4: 403–421. <https://doi.org/10.1080/13683500108667896>
- Gheorghe G, Tudorache P, Nistoreanu P (2014) Gastronomic tourism, a new trend for contemporary tourism. *Cactus Tourism J* 9: 12–21.
- Gibson JJ (1979) *The ecological approach to visual perception*. Hillsdale, NJ: Erlbaum.

- Hall CM, Mitchell R (2007) Gastronomic tourism: Comparing food and wine tourism experiences. In: Novelli, M., *Niche tourism*, Routledge, 87–102. <https://doi.org/10.4324/9780080492926>
- Hall CM, Sharples E, Mitchell R, et al. (2003) *Food Tourism Around the World: Development, Management and Markets*, Butterworth-Heinemann.
- Hills P, Argyle M (1998) Positive moods derived from leisure and their relationship to happiness and personality. *Pers Individ Differ* 25: 523–535. [https://doi.org/10.1016/S0191-8869\(98\)00082-8](https://doi.org/10.1016/S0191-8869(98)00082-8)
- Horng JS, Tsai CT (2011) Culinary tourism strategic development: An Asia-Pacific perspective. *Int J Tour Res* 14: 40–55. <https://doi.org/10.1002/jtr.834>
- Hunter C (1997) Sustainable Tourism as an adaptive paradigm. *Ann Tour Res* 24: 850–867. [https://doi.org/10.1016/S0160-7383\(97\)00036-4](https://doi.org/10.1016/S0160-7383(97)00036-4)
- Ignatov E, Smith S (2006) Segmenting Canadian culinary tourists. *Curr Issues Tour* 9: 235–255. <https://doi.org/10.2167/cit/229.0>
- Jones C, Munday M, Roberts A (2003) Regional Tourism Satellite Accounts: A Useful Policy Tool? *Urban Stud* 40: 2777–2794. <https://doi.org/10.1080/0042098032000146894>
- Kivela J, Crotts JC (2006) Tourism and Gastronomy: Gastronomy's Influence on How Tourists Experience a Destination. *J Hosp Tour Res* 30: 354–377. <https://doi.org/10.1177/1096348006286797>
- Kontogeorgopoulos N (1999) Sustainable tourism or sustainable development? Financial crisis, ecotourism, and the 'Amazing Thailand' campaign. *Curr Issues Tour* 2: 316–332. <http://dx.doi.org/10.1080/13683509908667859>
- Lane B (1994a) What is rural tourism? *J Sustain Tour* 2: 7–21. <https://doi.org/10.1080/09669589409510680>
- Lane B (1994b) Sustainable rural tourism strategies: A tool for development and conservation. *J Sustain Tour* 2: 102–111. <https://doi.org/10.1080/09669589409510687>
- Levine N (2004) CrimeStat III: a spatial statistic program for the analysis of crime incident locations.
- Lewin K (1939) Field theory and experiment in social psychology: Concepts and methods. *Am J Sociol* 44: 868–896. <https://doi.org/10.1086/218177>
- Li W, Zhang Q, Liu C, et al. (2006) Tourism's impacts on natural resources: a positive case from China. *Environ Manage* 38: 572–579. <https://doi.org/10.1007/s00267-004-0299-z>
- Liu Z (2003) Sustainable Tourism Development: A Critique. *J Sustain Tour* 11: 459–475. <https://doi.org/10.1080/09669580308667216>
- Lo MC, Chin CH, Law FY (2019) Tourists' perspectives on hard and soft services toward rural tourism destination competitiveness: Community support as a moderator. *Tour Hosp Res* 19: 139–157. <https://doi.org/10.1177/1467358417715677>
- Garau G, Mandras G, Schirru L (2011) A Statistical Information System supporting Environmental Policies. Available from: <https://crenos.unica.it/crenos/sites/default/files/WP11-22.pdf>.
- Mandras G, Garau G (2015) Economy-wide rebound effects from an increase in efficiency in the use of energy: the Italian cas.
- McKercher B, Okumus F, Okumus B (2008) Food Tourism as a Viable Market Segment: It's All How You Cook the Numbers! *J Travel Tour Mark* 25: 137–148. <https://doi.org/10.1080/10548400802402404>
- Pfarr C (2001) Concepts of Sustainable Development, Sustainable Tourism, and Ecotourism: Definitions, Principles, and Linkages. *Scand J Hosp Tour* 1: 6–22. <https://doi.org/10.1080/15022250127788>

- Richard G (2015) Evolving gastronomic experiences: from food to foodies to foodscapes. *J Gastron Tour* 1: 5–17. <https://doi.org/10.3727/216929715X14298190828796>
- Ripley BD (1976) The Second-Order Analysis of Stationary Point Processes. *J Appl Probab* 13: 255–266. <https://doi.org/10.2307/3212829>
- Woodside G (2005) Testing theory of Planned versus realized tourism behaviour. *Ann Tour Res* 32: 905–924. <https://doi.org/10.1016/j.annals.2004.07.012>
- Sharpley R (2000) Tourism and Sustainable Development: Exploring the Theoretical Divide. *J Sustain Tour* 8: 1–19. <https://doi.org/10.1080/09669580008667346>
- The International Ecotourism Society (TIES) (2015) TIES Announces Ecotourism Principles Revision. Available from: <https://ecotourism.org/news/ties-announces-ecotourism-principles-revision/>.
- UNWTO (2005) Making Tourism more sustainable (MST)—A guide for policy makers.
- UNWTO (2018) Measuring Sustainable Tourism: A call for Action—Report of the 6th International Conference on Tourism Statistics, Manila, Philippines. <https://doi.org/10.18111/9789284418954>
- Uskul A, Oishi S (2018) *Socioeconomic environment and human psychology: Social, ecological, and cultural perspectives*, Oxford University Press. <https://doi.org/10.1093/oso/9780190492908.001.0001>
- Wilbanks TJ (2007) Sustainable Development in Geographic Perspective.



AIMS Press

© 2023 the Author(s), licensee AIMS Press. This is an open access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>)