
Academic Research Paper

From the mountains to the sea: what tourism for Calabria?

Domenico Tebala

Italian National Institute of Statistics (ISTAT), Italy, Catanzaro, tebala@istat.it. ORCID: 0000-0002-5873-0079

Alessandra Rodolfi

Italian National Institute of Statistics (ISTAT), Italy, Catanzaro, rodolfi@istat.it.

Abstract: Calabrian tourism is predominantly coastal, but this work aims to analyze, through a multidimensional analysis at municipal level, whether Calabrian tourism, especially on the supply side, diversifies between mountains, hills and sea. To describe the phenomenon, we chose to use the Istat classifications of Italian municipalities which are based on geo-morphological or urban settlement characteristics, measured for statistical purposes only. Municipalities are assigned a series of attributes, corresponding to some physical and/or anthropological characteristics, in particular the altimetric zones and coastal zones. The altimetric zones are homogeneous zones deriving from the aggregation of contiguous municipalities based on altimetric threshold values. They are divided into "mountain area", "hill area" and "plain area". Furthermore, to consider the moderating action of the sea on the climate, the first two altimetric zones were divided, respectively, into internal mountains and internal hills and, if these were bathed by the sea or close to it, coastal mountains and coastal hill. Coastal areas are defined based on the degree of proximity to the coast and are represented by municipalities located on the coast or having at least 50% of the surface at a distance from the sea less than 10 km, to which are added the enclaves (non-coastal municipalities surrounded by adjacent coastal municipalities). The rest of the municipalities are classified as non-coastal areas. Since the objective of the work is to analyze Calabrian tourism from the mountains to the sea, a new classification is proposed as a synthesis of the previous ones, i.e. mountain, hill and coast where the coastal areas represent the coast while the non-coastal areas are divided into mountains and hill. To describe the tourism potential municipal, 22 indicators have been identified at municipal level divided into 3 macro areas: tourist offer, flows and determinants, presence of farmhouses and bed and breakfasts, employment in the tourism sector. To have an even more complete picture of the phenomenon, a focus was also developed on the municipalities classified as "non-tourist" based on tourist density, i.e. those municipalities where there are no accommodation facilities and/or with zero tourist flows. For this purpose, big data deriving from Tripadvisor reviews were analyzed.

Keywords: Calabria; municipality; indicators; big data

JEL Codes: Z32; C10

1. Introduction

In recent years, Istat is committed to building, guaranteeing and improving an up-to-date and comparable international information framework on the characteristics and evolution of tourism, with particular attention to the territorial interpretation of phenomena.

It has also promoted numerous initiatives aimed at encouraging the strategic management of the sector, pursuing in particular the following objectives: - the extension of the variables detected: e.g. information on the accessibility of facilities and the reasons for travel and tourist choices of domestic tourists, as well as design studies on the use of big data for statistical purposes; - the increase in territorial detail: data on tourist movements and the capacity of accommodation facilities, as well as register of accommodation facilities and structural information on businesses (Frame territorial), declined at municipal level; - the strengthening of the capacity for territorial analysis, with new classifications of Italian municipalities based on "tourist density" and "tourist brands".

About the latter point, the territorial dimension of tourist phenomena is also of priority importance for the Strategic Plan for the development of tourism. For this reason, Istat's effort has been focused primarily on the production of municipal data, which allow to build information on specific territorial contexts (e.g. areas with a specific tourist vocation, major destinations, villages, itineraries, cities of art, etc.) and to draw and describe new geographies, which do not necessarily correspond to traditional administrative partitions (Istat, Atto del Governo n. 39, 2023).

In this context, we insert the following paper that in an innovative way aims to analyze, through a multidimensional analysis at municipal level, whether Calabrian tourism, especially on the supply side, diversifies between mountains, hills and sea.

To describe the phenomenon, we chose to use the Istat classifications of Italian municipalities which are based on geo-morphological or urban settlement characteristics, measured for statistical purposes only. Municipalities are assigned a series of attributes, corresponding to some physical and/or anthropological characteristics, in particular the altimetric zones and coastal zones.

The altimetric zones are homogeneous zones deriving from the aggregation of contiguous municipalities based on altimetric threshold values. They are divided into "mountain area", which includes reliefs higher than 600/700 meters in height, "hill area" with masses of lower height and "plain area" for the flat or hilly territory not higher than 300 meters above sea level. Furthermore, to consider the moderating action of the sea on the climate, the first two altimetric zones were divided, respectively, into internal mountains and internal hills and, if these were bathed by the sea or close to it, coastal mountains and coastal hill.

Coastal areas are defined based on the degree of proximity to the coast and are represented by municipalities located on the coast or having at least 50% of the surface at a distance from the sea less than 10 km, to which are added the enclaves (non-coastal municipalities surrounded by adjacent coastal municipalities). The rest of the municipalities are classified as non-coastal areas.

Since the objective of the work is to analyze Calabrian tourism from the mountains to the sea, a new classification is proposed as a synthesis of the previous ones, i.e. mountain, hill and coast where the coastal areas represent the coast while the non-coastal areas are divided into mountains and hill. Moreover, big data deriving from Tripadvisor reviews were analyzed.

2. Methodology

To describe the tourism potential municipal, 22 indicators have been identified at municipal level divided into 3 macro areas: tourist offer, flows and determinants, presence of farmhouses and bed and breakfasts, employment in the tourism sector. These indicators, compared with the regional average, were extracted from the Istat database [IstatData](#), which refers to data from the permanent population census and the survey on the capacity of accommodation services, and from the information system [Amisuradicomune](#), which is a multi-source system with the aim of providing an integrated information framework of indicators available at municipal level, useful for the planning, programming and management tasks of Local Authorities (Table 1)

Table 1. Macro areas, indicators and calculation formulas

Macro area	Indicator	Calculation formula
Tourist offer, flows and determinants	Total level of accommodation infrastructure	Total beds per 1,000 inhabitants
	Density of accommodation, hotel and non-hotel establishments	Total beds per square kilometre
	Level of accommodation infrastructure of high-end hotel facilities	Bed spaces in 4 and 5 star hotels per 1,000 inhabitants
	Level of accommodation infrastructure of non-hotel facilities	Bed spaces in non-hotel establishments per 1,000 inhabitants
	Museums and similar institutions	Museums, galleries, archaeological sites and monuments for 100 thousand inhabitants
	Public and private libraries	Libraries registered in the National Library Registry per 100 thousand inhabitants
	Bookshops	Bookshops for 100 thousand inhabitants

	Visitors to museums and similar facilities	Visitors to museums, galleries, archaeological sites and monuments per 100 inhabitants
	Old age index	Ratio between the population aged 65 and over and the population aged 0-14 years, multiplied by 100
	Commuting rate	Total daily trips for study or work per 100 inhabitants
	Incidence of the working age population	Population aged 15-65 years out of the total population.
	Density of farmhouses	Farmhouses per square kilometre
	Farmhouses with accommodation	Farmhouses with accommodation/ total farmhouses per 100
	Farmhouses with catering	Farmhouses with catering / total farmhouses per 100
Presence of farmhouses and bed and breakfasts	Farmhouses with tasting	Farmhouses with tasting/total farmhouses per 100
	Farmhouses with other activities except the previous ones	Farmhouses with other activities except the previous ones / total farmhouses per 100
	Density of bed and breakfasts	Bed and breakfast per kmq
	Incidence of bed and breakfasts	Bed and breakfast beds per 1,000 inhabitants
Employment in tourism	Incidence of employment in the tourism sector	Employees of the local tourist units/Total employees of the local units of the Municipality per 100

Incidence of employment in the tourism sector with accommodation	Employees of local tourist units with accommodation/Total employees of local tourist units per 100
Incidence of employment in the tourism with catering sector	Employees of local tourist units with catering/Total employees of local tourist units per 100
Incidence of employment in the tourism sector with travel agency services, tour operators and booking services and related activities	Employees of local tourist units with travel agency services, tour operators and booking services and related activities / Total employees of local tourist units per 100

Source: Istat

To have an even more complete picture of the phenomenon, a focus was also developed on the municipalities classified as "non-tourist" based on tourist density, i.e. those municipalities where there are no accommodation facilities and/or with zero tourist flows. For this purpose, big data deriving from Tripadvisor reviews about these municipalities were analyzed. In particular, webscraping techniques and detailed reading were used to extract information on municipalities classified as "non-tourist" included in Tripadvisor customer reviews and updated to 2024.

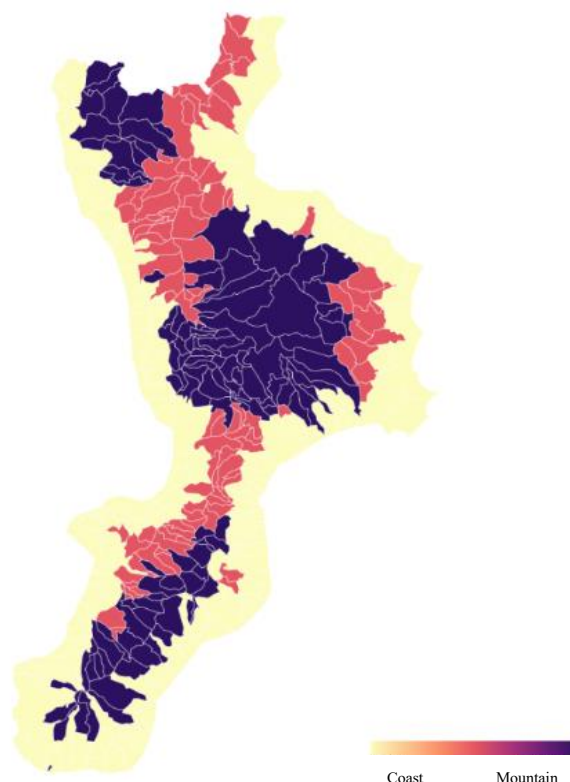
3. Data Analysis

Table 2 and Figure 1 confirm the predominance of coastal areas due to both a greater presence of population and a greater territorial extension. In detail, it is observed that 191 municipalities out of 404 (47.3%) are located on the coast and more than one million inhabitants live there (1,206,812; 65.3%) on an area equal to 6,801.4 km² (44.7%).

Table 2. Macro areas, indicators and calculation formulas

CLASSIFICATION	Number of Municipalities	POPULATION	% SURFACE	%
Mountain	114	269,019	14.6	34.3
Hill	99	370,779	20.1	21.0
Coast	191	1,206,812	65.3	44.7
Total	404	1,846,610	100.0	100.0

Source: Istat

Figure 1. Territorial distribution of municipalities by classification. Year 2023

Source: Istat

At a tourism level, this evidence is not so clear (Table 3). In fact, if the coast undoubtedly has the highest values in the capacity of accommodation establishments, cultural tourism is more widespread in hilly and mountain municipalities. In particular, the levels of accommodation infrastructure and the density of accommodation establishments record a significant difference in favor of the coastal municipalities (178.6 beds per 1,000 inhabitants and 33.2 beds per square kilometer) compared to the mountain ones (39.7 and 2.1) and above all hilly (18 and 1.7). The trend is reversed concerning the presence of libraries (hill 40.1, mountain 35.5, coast 23.7), of bookshops (hill 37.7, coast 22.1, mountain 18.1) and museums, galleries, archaeological sites and monuments (hill 14.6, mountain 13.5, coast 9.9) per 100 thousand inhabitants. Furthermore, this last indicator influences the influx of visitors which reaches the highest value in mountain municipalities (23.4) followed by coastal ones (16.6) and hilly ones (11.5).

With reference to exogenous factors, these take on more favorable values in coastal municipalities rather than in mountain and hilly ones (the old age index is equal to 225.2 compared to 266.4 in the hills and 278.4 in the mountains; the commuting is equal to 39.6 on the coast, 39.4 in the hills and 38.9 in the mountains; the incidence of the working age population is equal to 62.6 on the coast, 62.5 in the mountains and 61.4 on the hill).

Table 3. Tourist offer, flows and determinants

Location	Total level of accommodation infrastructure	Density of accommodation, hotel and non-hotel establishments	Level of accommodation infrastructure in high-end hotel facilities	Level of accommodation infrastructure for non-hotel facilities
Mountain	39.7	2.1	4.2	20.4
Hill	18.0	1.7	2.6	12.8
Coast	178.6	33.2	47.5	75.8
Calabria	100.0	16.7	24.3	44.8

Location	Museums, galleries, archaeological sites and monuments	Libraries	Bookshops	Visitors to museums, galleries, archaeological sites and monuments
Mountain	13.5	35.5	18.2	23.4
Hill	14.6	40.1	37.7	11.5
Coast	9.9	23.7	22.1	16.6
Calabria	12.1	31.1	24.8	17.3

Location	Old age index	Commuting rate	Incidence of the working age population
Mountain	278.4	38.9	62.5
Hill	266.5	39.4	61.4
Coast	225.2	39.6	62.6
Calabria	250.3	39.4	62.3

Source: Istat

In Calabria, the incidence of bed and breakfasts and farmhouses is low regardless of the location (Table 4). Nonetheless, the coastal municipalities confirm their leadership in terms of density of bed and breakfasts (0.295 per kmq compared to 0.085 on the hills and 0.050 on the mountains) and farmhouses (0.045 per kmq vs 0.036 on the hills and 0.035 on the mountains), especially in activities with tasting (29.9% compared to 25.4% on the hills and 27.9% on the mountains). Farmhouses with accommodation represent the most frequent form (equal to 88.4% of the total farmhouses at regional level) and are mainly found in the mountains (89.1%) and on the coast (88.9%). The percentage of farmhouses with catering is also high (80.8% at regional level) with 80.8% in the hills, 81.7% in the mountains and 80.6% in the hills).

Table 4. Presence of farmhouses and bed and breakfasts

Location	Density of bed and breakfasts	Incidence of bed and breakfasts	Density of farmhouses	Farmhouses with accommodation	Farmhouses with catering	Farmhouses with tasting	Farmhouses with other activities except the previous ones
Mountain	0.050	5.5	0.035	89.1	80.6	27.9	75.8
Hill	0.085	6.2	0.036	86.5	81.7	25.4	81.0
Coast	0,295	9.0	0.045	88.9	80.6	29.9	77.1
Calabria	0.174	7.3	0.040	88.4	80.8	28.3	77.5

Source: Istat

The last macro-area analyzed is that of employment in the tourism sector which includes companies with Ateco codes 55 (Accommodation), 56 (Restaurant service activities) and 79 (Travel agency service activities, tour operators and travel services, booking and related activities). The municipalities that attract the most employment in the tourism sector are the coastal ones, with a percentage of employees in local tourist units equal to 1.4% of the total (compared to 1% in the mountains and 0.9% in the hills). Among the tourist activities, catering is the one with the most employees (equal to 80.2% of the total employees in local tourist units) and is mainly developed in the hills (90.1%) and in the mountains (87.8%) (Table 5).

Table 5. Employment in the tourism sector

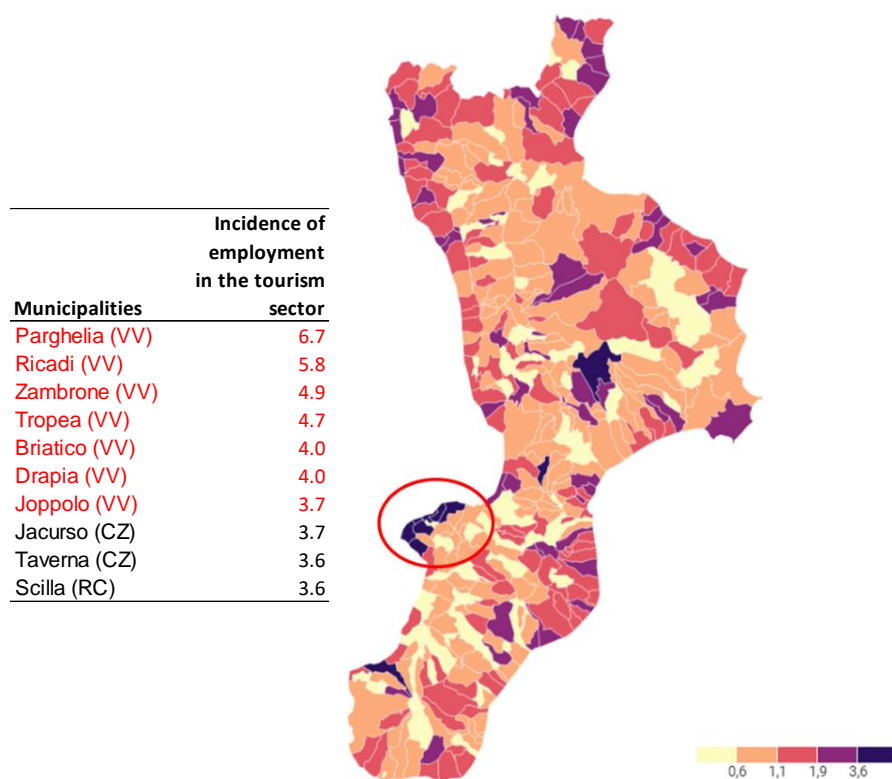
Location	Incidence of employment in the tourism sector	Accommodation	Food service activities	Activities of travel agency services, tour operators and booking services and related activities
Mountain	1.0	11.0	87.8	1.2
Hill	0.9	8.1	90.1	1.8
Coast	1.4	21.0	76.8	2.2
Calabria	1.2	17.8	80.2	2.0

Source: Istat

Seven municipalities in the province of Vibo Valentia are confirmed among the coastal municipalities with the highest employment municipalities (Figure 2); these municipalities characterize the brand tourism of the “Costa degli Dei”, the only Calabrian brand among the twenty-one classified by Istat in the 2023 Istat Annual Report and defined as “those places to which a typical tourist context corresponds, commonly recognizable and recognized in the collective imagination, because it is strongly characterized by environmental elements, cultural and landscape identities such as to distinguish it and make it unique as a destination and market segment”. Also worth mentioning are the municipalities of Jacurso (Cz), Taverna (Cz) and Scilla (Rc) which have a number of employees

three times higher than the Calabrian average.

Figure 2. Territorial distribution of municipalities by incidence of employment in the tourism sector. Year 2022



Source: Istat

To have an even more complete picture of the phenomenon, a focus was also developed on the municipalities classified as "non-tourist" based on tourist density. According to this classification, non-tourist municipalities represent almost half of the Calabrian municipalities (45.3%) and in most cases are in the hills (60.6% of the hill municipalities) and in the mountains (57.9% of mountain municipalities).

Nevertheless, are they all "non-tourist" municipalities really? To try to answer this question, we considered the big data deriving from Tripadvisor that is we analyzed the reviews of Calabrian non-tourist municipalities and from which 142 out of 183 municipalities defined as non-tourist have, however, at least one tourist attraction. 77.6% of these municipalities are mountainous; they are distributed in all the provinces, especially that of Cosenza (48 of which 17 mountainous and 17 hilly) and Reggio Calabria (39 of which 17 mountainous and 16 coastal), and among these stand out Lungro (CS), Martone and Oppido Mamertina (RC) which have more than ten tourist attractions.

Table 6. Distribution of Calabrian municipalities by tourist density

Location	Tourist municipalities										Non-tourist municipalities		Total
	Municipalities with a cultural, historical, artistic and landscape vocation	Municipalities with a maritime vocation	Municipalities with a cultural, historical, artistic and landscape vocation	Municipalities with a mountain vocation	Municipalities with a mountain vocation and with a cultural, historical, artistic and landscape vocation	Other tourist municipalities with other vocations	Tourist municipalities not belonging to a specific category	Total	%	Total	%		
Mountain	3			3	6		36	48	42.1	66	57.9	114	
Hill	3						36	39	39.4	60	60.6	99	
Coast	3	60	24			5	42	134	70.2	57	29.8	191	
Calabria	9	60	24	3	6	5	114	221	54.7	183	45.3	404	

Source: Istat

In total, 380 attractions were identified, of which 28.2% are represented by museums-libraries, 26.3% by castles, towers and palaces and 21.8% by historical and religious sites/archaeological sites/ancient ruins (Table 7 and Figure 3). In this way, we have discovered the potential of the big data of Tripadvisor that can improve the accuracy of the statistics produced and consequently it was found a Calabrian great potential tourism that needs to be valorized and promoted.

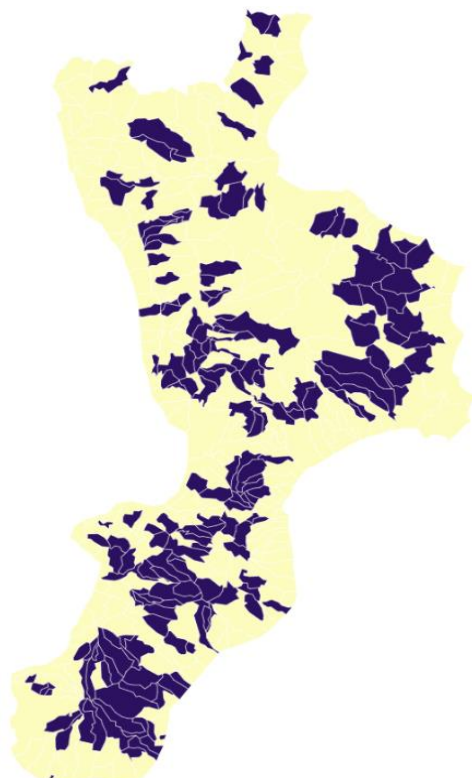
Table 7. Non-tourist Calabrian municipalities' characteristics (absolute values and percentages)

Location	Municipalities with at least one tourist attraction	Points of interest and/or landscapes	Castles, Towers and Palaces	Historical & Religious Sites/Archaeological Sites/Ancient Ruins	Caves and trails	WWF Nature Reserves and Oases	Parks & Gardens	Villages/Squares	Bridges and aqueducts	Springs, waterfalls and lakes	Libraries, museums	Total
Mountain	52	13	37	36	7	9	7	0	1	7	44	161
Hill	45	11	29	21	4	3	2	2	0	3	35	110
Coast	45	10	34	26	4	0	5	0	0	2	28	109
Calabria	142	34	100	83	15	12	14	2	1	12	107	380

Location	Municipalities with at least one tourist attraction	Points of interest and/or landscapes	Castles, Towers and Palaces	Historical & Religious Sites/Archaeological Sites/Ancient Ruins	Caves and trails	WWF Nature Reserves and Oases	Parks & Gardens	Villages/Squares	Bridges and aqueducts	Springs, waterfalls and lakes	Libraries, museums	Total
Mountain	78.8	3.4	9.7	9.5	1.8	2.4	1.8	0.0	0.3	1.8	11.6	42.4
Hill	75.0	2.9	7.6	5.5	1.1	0.8	0.5	0.5	0.0	0.8	9.2	28.9
Coast	78.9	2.6	8.9	6.8	1.1	0.0	1.3	0.0	0.0	0.5	7.4	28.7
Calabria	77.6	8.9	26.3	21.8	3.9	3.2	3.7	0.5	0.3	3.2	28.2	100.0

Source: Elaboration on Tripadvisor reviews

Figure 3. Territorial distribution of non-tourist Calabrian municipalities *



*Non-tourist municipalities are dark in color

Source: Elaboration on Tripadvisor reviews

4. Discussion, conclusions and implications

From the twenty-two Istat municipal indicators divided into three zones (mountains, hills and coast) and into three macro areas (tourism offer, flows and determinants, presence of farmhouses and bed and breakfasts, tourism sector employment) and from Tripadvisor's big data Calabrian tourism emerges mainly along the coast and in the Vibo Valentia area (as regards supply and employment). There are few farmhouses and bed and breakfasts, but also cultural tourism more widespread in the hilly and mountain municipalities but also a strong tourist presence in the municipalities classified “non-tourist”, which denote enormous tourist attractiveness in every territorial area.

From this work, for an overall view of the phenomenon, emerges the importance of integration between various data sources, official statistics, administrative data, big data; promote initiatives to integrate and coordinate information on tourism, creating an integrated and interconnected information ecosystem between operators, administrations and institutions, in order to overcome the limits of the high fragmentation of information with respect to the different strategic sectors and different areas of intervention to identify new sources of information for the description of "undeclared tourism" and experiment with the use of data from OTA platforms (Booking, Expedia, Agoda, Airbnb) for the real-time observation and measurement of "non-residential" tourist presences in the territory" (Istat, Atto del Governo n. 39, 2023).

Moreover, in Calabrian context, it is essential to improve accessibility and increase greater tourism promotion through an effective marketing and promotion, which can help, make all the locations known to a wider audience and increase the influx of tourists. It all depends on the motivation and will of Calabrian stakeholders who have the obligation to consider statistics, official and otherwise, for a sustainable tourism development of their territories. Infact the results of this work are easy to understand as well as detailed and therefore could be an important tool for improving one's territory.

Conflict of interest

All authors declare no conflicts of interest in this paper.

References

Istat (2023), Atto del Governo n. 39, recante schema del piano strategico di sviluppo del turismo per il periodo 2023-2027, “Audizione dell’Istituto nazionale di statistica Dott. Sandro Cruciani Direttore della Direzione Centrale per le statistiche ambientali e territoriali”, X Commissione (Attività produttive, commercio e turismo) della Camera dei Deputati

Istat (2023), Rapporto annuale 2023 La situazione del Paese. ISBN 978-88-458-2107-3

Istat (2023), Il turismo culturale in Italia: analisi territoriale integrata dei dati. ISBN 978-88-458-2110-3

Istat, <https://dati.istat.it>

Istat, <https://www.istat.it/statistica-sperimentale/aggiornamento-degli-indicatori-del-sistema-informativo-a-misura-di-comune/>

Istat, <https://esploradati.istat.it>

Istat, <https://www.istat.it/classificazione/classificazione-dei-comuni-in-base-alla-densita-turistica/>

Turistica-Italian Journal of Tourism applies the [Creative Commons Attribution \(CC BY\) license](https://creativecommons.org/licenses/by/4.0/) to everything we publish. Developed to facilitate Open Access, this license lets authors maximise the impact or their research by making it available for anyone, anywhere in the world to find, read and reuse. Under this license, authors agree to make articles legally available for reuse, without permission or fees, for virtually any purpose. Anyone may copy, distribute, or reuse these articles, as long as the author and original source are properly cited.